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MECHANICAL PROGRESS.

Annealing in Boiling Water.

An English expert on metal working, Prof. W. Mattieu Williams, is writing a series of articles for the *Metallurgical Review*, entitled "Studies in Sheffield." In one of them we find a few paragraps on annealing by immersion in boiling water. We quote as follows: "I will narrate some curious experiments that I commenced when in Sheffield, but have not satisfactorily completed. They were made at the suggestion of Mr. William Bragge, then a managing director of Sir John Brown's works. He had learned that the steel wire strings of piano-fortes are annealed by what appears a very anomalous process, viz., by making the wire red hot and then plunging it into boiling water. Ordinary experience would suggest that this must harden the steel in some degree, but I tried it upon many samples of steel—mild Bessemer steel, sheer steel of different qualities and the hardest old-fashioned Sheffield "pot steel"—and found that in every case, when the operation was properly performed, the steel was remarkably annealed. I compared samples cut from the same bar, one heated and slowly cooled by burying in ashes under a furnace grate, the other by immersion in boiling water, and found that when subjected to bending tests those which had been cooled in the boiling water would bear a more severe degree of flexure without cracking than the pieces which had been more slowly cooled in the ashes. They were not so soft, as tested by the touch of the file, but unquestionably tougher and more reliable when subjected while cold to violent bending blows of a hammer. It was more effectual than any device of 'oil toughening' or slow cooling I have had opportunities of testing.

"Certain precautions are necessary. In the first place the water should be quite at the boiling point and the steel at a bright red heat; and, secondly, the steel should be fairly surrounded by the water. These conditions being fulfilled, the steel remains red hot under water for some time. It is evidently surrounded by a film of vapor and is not in actual contact with the water, which assumes the so-called 'spheroidal state,' continuing in this condition until the metal has cooled considerably. I suspect that the toughening is due to the uniformity of cooling thus effected.

"I commend this method of annealing or toughening to the attention of manufacturers engaged in the production of all kinds of steel that is to be used for purposes where tenacity rather than hardness is demanded."

Self-Fluxing Iron Ore.

In a recent letter Prof. J. P. Kimball, of the Lehigh University, Bethlehem, Pa., announces that he has just made some successful experiments at the Pittsford Furnace, Vermont, in smelting a magnetic iron ore (chateaugay) from the Adirondacks, without any flux whatever; the ore proving, as it synthetically appeared, a self-fluxing ore. The earthy matter consisted of feldspar, quartz, and chlorite, in such proportions as to form a sufficiently acid cinder, between a singulo-silicate and a bi-silicate. The furnace never worked so uniformly, and it made about double the quantity of foundry iron that it ever made before. How much forge iron it will make remains to be proved, but it has hardly sufficient bight for a large burden. The make of foundry pig iron, Nos. 1 and 2, was from 11 to 12 tons in 24 hours. The ore contains only .004 phosphorus; no sulphur. The pig is remarkably tough and soft. The furnace is still running, having blown in on May 2d. This is the first time in this country that any magnetic ore has been recognized as self-fluxing, or at least used as such. In Sweden several well-known magnetites, the so-called *engaendes* ("going alone"), are smelted in the same way. It may be mentioned that an attempt to smelt the above ore in the usual way—raw, and with 25% of limestone—resulted last year, in the hands of the owner, in chilling the furnace. The owner, Mr. Prichard, has since died. The experiment was undertaken for Naylor & Co., the lessees. It may be further stated that the ore was roasted in heaps, merely to render it more porous. Prof. Kimball believes that the iron made will rank with the Swedish steel-irons from similar ores.

SUPERHEATED WATER.—On the railroad connecting Reveil and Marly-le-Roy, France, the experiment of running locomotives with superheated water has, it is said, given very satisfactory results. The water was introduced at a temperature of 180° C., or 356° F., which is equivalent to a pressure of 146 pounds per square inch. If the trial turned out as well as has been alleged, a motive power of this kind may, for many reasons, be adopted with advantage on street railroads.

MANGANESE BRONZE.—Prof. Genti publishes an analysis of a specimen of manganese bronze from a Transylvania factory. It is nearly of the color of brass, is tenacious and ductile under the hammer, and contains sulphur, manganese, copper, zinc, iron, with traces of silica, tin and carbon. The essential ingredients are 15 parts of copper, four of manganese and one of zinc.

Cooling Steel During Hardening.

Joshua Rose writes to the *Polytechnic Review* concerning the behavior of steel during hardening. He describes with minuteness the changes which occur in the metal, and concludes with these suggestions for practice: After an article is dipped to the required depth, it should, if straightness is of importance, be held quite still until reduced to the temperature of the water, because, if taken out before so reduced in temperature, it is especially apt to crack; and it is better to have a deep tank of water, if the body of the metal is great, so that the steel may be dipped slowly downward and become cooled sufficiently rapidly to harden without any lateral movement, except it be after the steel has lost its redness.

When a piece of steel requires to be hardened at one end only, the dipping must be performed with a view to make the graduation from the soft to the hard metal extend over a broad section of metal, for if the junction of the hardened with the soft metal is abrupt, the hardened end is apt to break short off. The method of dipping, therefore, is, in this case, to plunge the end of the steel vertically into the water, to a depth a little more than equal to the depth it requires hardening, and, after holding it still there until it is black hot (that is, as soon as its redness is gone), dip it slowly a little deeper, and then raise it up to the amount of the increased dipping, and slowly immerse again.

When a piece of metal requires hardening and tempering at one part only, we may heat the steel back of the part to be tempered to redness, and dip the article so as to harden the required part, and leave sufficient heat in the contiguous metal to raise the temperature of the hardened part enough to temper it. This plan is always followed in the tempering of lathe and planer tools, flat drills, etc. If, however, the method of dipping is to hold the steel in the water at an even depth after the immersion, the temper-color will be very narrow, while, if the steel is raised and lowered in the water, the color-band will be broad.

NOTES ON WELDING.—Alexander L. Holley read a paper "On Welding" before the late meeting of the American Institute of Mining Engineers. His proposition may be recapitulated as follows: It is certain that perfect welds are made by means of perfect contact due to fusion, and that nearly perfect welds are made by means of such contact as may be got by partial fusion in a non-oxidizing atmosphere or by the mechanical fitting of surfaces, whatever the composition of the iron may be within all known limits. While high temperature is thus the first cause of that mobility which promotes welding, it is also the cause, in an oxidizing atmosphere, of that "burning" which injures both the weld and the iron. Hence, welding in an oxidizing atmosphere must be done at a heat which gives a compromise between imperfect contact due to want of mobility on the one hand, and imperfect contact due to oxidation on the other hand. This heat varies with each different composition of irons. It varies because these compositions change the fusing points of irons, and hence their points of excessive oxidation. Hence, while ingredients such as carbon, phosphorus, copper, etc., positively do not prevent welding under fusion, or in a non-oxidizing atmosphere, it is probable that they impair it in an oxidizing atmosphere, not directly, but only by changing the susceptibility of the iron to oxidation.

A DRY GOODS PALACE CAR.—A correspondent of the *American Manufacturer* says: "The United States Rolling Stock Company, at their shops in Chicago, are getting up what may be called a new departure. This is a palace dry goods car, to be used on railroads by dealers in dry goods, carrying samples along as well as stock to be delivered when sold. The car is 60 feet long, not including platforms at each end, or 60 feet long over all. It is built as light as possible and yet is strong. The construction of the body is very simple, having only two large windows on each side for lighting purposes, but at each end there is to be a state-room for the traveling merchants to occupy nights or days while on the roads. These state-rooms are lighted by three small windows each. The inside of the car was not finished for use, so we cannot tell just how it is to be arranged, but no doubt convenient for the purpose. This car has a sub-cellar, as they call it, between the fore and aft trucks, where may be stored large quantities of domestic goods while in transit, and it has what may be called a mansard roof, or double deck, for light and ventilation, giving it the appearance of a sleeping car—except the finish. This is a new enterprise, and it remains to be seen, upon trial, if it shall prove a successful one."

TREATING BELTS.—A writer in the *Polytechnisches Notizblatt* recommends the application of a good linseed-oil varnish to leathern, hempen or cotton driving belts when they are new, and its repetition every few months while they are in use. This not only tends to preserve them, but also prevents their either stretching or shrinking with variations of temperature, so that they never sit too tight or too slack when at work. When thus treated they remain quite as supple as unvarnished belts, and are less liable to slip. A similar treatment of shoe soles is recommended, as it renders them water-tight.

SCIENTIFIC PROGRESS.

Growth of the Grasshopper.

The report of the United States Entomological Commission, which will soon be published as a volume of the Hayden Survey reports, will give more accurate information than has heretofore been published on the life history of the Rocky Mountain locust. The area in which the locust breeds each year, in greater or less numbers, the commission says, is approximately 300,000 square miles in extent. It is not to be inferred that the locust breeds continuously over the whole of this area each year, for it is to be understood that the locust within its native permanent habitat is essentially migratory in its habits. For a series of years it may deposit its eggs in a given river valley, in some park, or in some favorable area in some of the plains lying about the mountains, yet it may desert its customary breeding-grounds for adjoining regions, or cross a low range of mountains and breed in a more distant valley. Even in this area the true hatching-grounds are for the most part confined to the river bottoms or sunny slopes of uplands, or to the subalpine grassy areas among the mountains, rather than continuously over the more elevated, dry, bleak plains. The area in which the locust breeds lies mainly between longitude 102°, and 114° West of Greenwich, and latitude 53° and 40° North.

From this general breeding-ground the locust is distributed in all direction. The eastern limit of its range is marked by the commission by the following line: "From the southern end of Lake Winnipeg, by way of Lake of the Woods to Pierce county, Wisconsin; thence directly south to Poweshiek county, Iowa; then southwest to Worth county, Missouri; then south through Montgomery county Arkansas, to Houston, Texas, curving westward from this point to Live Oak county, Texas."

In Manitoba the eastern and also the northern limit corresponds very closely with the timber line. Generally the northernmost limit of distribution extends to Fort Pitt, in latitude 53° 40′, and the northern limit of the range of *Caloptenus spretus*, which is the most troublesome species of the locust, extends nearly to the southern limits of the forests which lie partly upon the 53d parallel, but in a greater part between longitude 104° and 114° and above the projected route of the Canadian Pacific railroad. It is probable that other species range north of these limits, but it is not probable that the *spretus* ranges beyond the line of coniferous trees lying along the north shore of the northern branch of the Saskatchewan river. The extreme western limit of the distribution of these locusts is the eastern flank of the Cascade range in Oregon and Washington Territory, and the Sierra Nevada mountains, though in many parts of the country they do not reach a point so far west.

As to the southern limit, the commission lacked data for determining this line satisfactorily. All that its members are able to say in reference to it is that the locusts have been known to cross the Rio Grande at Eagle Pass, and to penetrate a mile and a half into Mexico; that they have been observed in western Texas as far as the settlements have been extended; that they have penetrated New Mexico on the northeast as far as Las Vegas and Fort Union, and they have passed down in the mountain region from Colorado to Taos, and possibly further south.

FILTER PAPER AND METALLIC SOLUTIONS.—At a recent meeting of the English Chemical Society, Mr. T. Bayley read a paper "On the Behavior of Metallic Solutions with Filter Paper, and on the Detection of Cadmium." The author found by quantitative experiments that filter paper has the power of withdrawing silver salts from solution. Some experiments by Mr. Weston prove that the same action takes place between filter paper and mercury salts. The author then investigated the action which takes place when drops of metallic solutions are placed on filter paper. The extent to which the solutions spread being tested by the action of sulphureted hydrogen. In some cases the solution seemed to concentrate itself in the middle of the spot, and in other cases in a ring round the edge of the spot. The degree of dilution, temperature, and the kind of paper used, have an important influence on this phenomenon. Thus a strong solution of cupric sulphate distributes the copper all over the spot; dilute solutions, on the other hand, concentrate the metal in the center. The salts of silver lead and the persalts of mercury, when moderately concentrated, give a wide-water ring containing no metal, while the salts of copper, nickel, cobalt, and especially cadmium, must be much more dilute to present the same appearance. This property of cadmium to spread itself over the whole drop is so marked that it affords an elegant means of detecting it in the presence of metals whose sulphides are black. The diluted solution is dropped upon filter paper, and the spot allowed to extend as far as possible. On exposure to SH_2 a black patch is formed, surrounded by a vivid yellow ring. A solution containing much nickel cobalt or iron in presence of copper, etc., may be examined successively with SH_2 and $S Am_2$ The presence of free acid increases the mobility of copper salts considerably.

Sprouting of Silver and its Cause.

Theo. Flnegger, Assayer St. Louis Smelting Works, writes as follows: Assayers and chemists all know that great care must be taken with the molten silver obtained in assaying for fineness and quantitative determination of same in ores and furnace products, to prevent what is generally termed sprouting of the silver, which is nothing else but a disengagement of oxygen gas, absorbed by the silver while in a highly-heated state, giving rise to the peculiar arborescent appearance observed on the surface of silver after sprouting and endangering thereby a loss of silver. In order to obtain a reliable assay, the greatest caution is therefore necessary to prevent the sprouting, the cause of which is not generally known, but to prove that it is due to the disengagement of oxygen after the act of solidification and not to the contraction of the outer, cooler layers, as some theorists contend, on the inner mass of metal, any one can convince himself by the following small experiment, which will, no doubt, interest many who have witnessed this remarkable behavior of the silver: 50 grammes of pure silver may be taken and placed in a common scorifier with 10 grammes of borax glass, and heated in a muffle to a white heat (over 1,000° C.) for at least half an hour. The experiment will often fail if heated in less time than above stated. After the expiration of the half hour, the scorifier, with contents, can be taken out of the muffle and placed on a brick or some other cool object. The silver can soon be seen to solidify through the clear borax glass which covers it, but the disengagement of the oxygen will not take place immediately after solidification and varies with the degree of heat and other prevailing circumstances. Blowing and disturbing the scorifier must be avoided. The oxygen will gradually show itself by raising the soft and expansible borax glass, forming, in successful experiments, a large bubble about the size of a walnut. The borax glass solidifies in the shape of a small hemisphere, which contains the oxygen. The usual tests for oxygen may now be applied. A match is charred and allowed to glow, the glowing end is suddenly thrust through the thin side of the hemisphere of borax glass, breaking it and exposing to the oxygen the glowing end of the match, which will immediately burst with a bright flare into a flame, proving the presence of either oxygen or nitrous oxide gas. Binoxide of nitrogen will give the final proof of producing red flames, which are conclusive that oxygen and not nitrous oxide gas is present. To this end several of the bubbles obtained on the scorifiers in the above way were burst under water, the escaping gas allowed to ascend into a receiver and then the binoxide of nitrogen introduced by means of a tube, connected with the generating apparatus, containing copper and dilute nitric acid. This neat experiment was first made and successfully repeated in the laboratory of the St. Louis Smelting and Refining Company.

Prof. Henry's Management of the Smithson Trust.

Prof. Youmans, in his obituary of the late Prof. Henry in the *Popular Science Monthly*, makes the following allusion: Having immortalized himself by these brilliant researches of the laboratory, Prof. Henry was called into a more conspicuous sphere of action as the organizer and administrator of a great public enterprise of national scope in connection with the progress of science. John Smithson, an English chemist and physicist, and member of the Royal Society, had left upward of half a million dollars as a trust to the American Government, to be used for "the increase and diffusion of knowledge among men." How this language was to be construed and how the money was to be expended were open questions. The Washington politicians were in favor of spending it on buildings, libraries, and museums to be established at the national capital, and the whole fund would probably have been buried and lost in this way, but for the influence of Prof. Henry. He was appointed, in 1846, as Secretary and principal executive officer of the institution, and at once applied all his energies to rescue the fund from the misdirection that had been given to it, and to devise more efficient means of obtaining the comprehensive object to which it was devoted. As Smithson was a man of science, and an original investigator of that "natural knowledge" which the Royal Society of Great Britain, of which he was a fellow, was founded to promote, Prof. Henry fairly and justly assumed that the intention of the donor was the increase and diffusion of scientific knowledge—increase and augmentation by research and organized systems of observation, and diffusion by means of extended publication. Henry's policy, therefore, was to diminish expenditures upon buildings, libraries, museums, and art-galleries, that the money might be devoted to wider and more legitimate purposes.

THE MARCH OF THE PHYLLOXERA.—A. Reuter's telegram from Madrid to an English exchange, dated May 14th, conveys the unfortunate intelligence that the *Phylloxera vastatrix* has made its appearance in an area of about 2,000 acres in Portugal.

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

California.

AMADOR.

CENTENNIAL COMPANY.—*Ledger*, June 29: This company are pushing ahead with the development of this quartz claim, situated on Dry creek, two miles from Plymouth. The shaft has explored the bowels of the earth to the depth of 250 feet. From the point of striking the ledge, about 50 feet from the surface, the ore body continues unbroken to the bottom. Its average width is five feet, and the whole of the rock, it is said, will touch the paying standard. A small crushing was had at the Bonanza mill, at Drytown, under unfavorable circumstances, which yielded $4 per ton. The regular quarterly meeting of the stockholders will be held next Monday, at which it is probable some definite action will be taken toward the erection or purchase of a mill. The Centennial is among the most flattering prospects on the mother lode in this county.

VOLCANO ITEMS.—R. C. Downs has 200 tons of ore on the dump ready for crushing. This parcel of rock is conceded to be the richest taken out in that section for a long time. Downs says he will be satisfied if it yields $30 per ton. Experts say, however, that if it does not surrender from $80 to $100 per ton, they will be greatly deceived. The water in the Volcano ditch has failed, and the gravel claims aronnd Volcano are at a standstill in consequence. Several of the principal claims were unable to make a clean-up, owing to the unexpected failure of the water supply.

PLYMOUTH.—The Phenix still continues to crush good rock. The old Hite mine yields good rock. All it lacks is capital to work it. The Seaton—there is little doing in regard to this mine; adverse claims being the cause.

CALAVERAS.

GRAVEL MINES.—*Chronicle*, June 29: Times continue exceedingly lively in the gravel mining line in this vicinity. At the Rough Diamond, in Chile gulch, everything is progressing eucouragingly. A full complement of men is employed in the mine, and the mill is kept constantly employed. The yield is in every way satisfactory. Brown & Co., the Tunnel ridge tunnelers, are developing one of the best gravel claims in this section of the county. Operations are unceasingly pushed with first-rate results. The Duryea claim is being worked with more vigor than ever. As many men as can work to advantage are employed, the hatteries never being allowed to "hang up." There is probably no other claim in the middle and southern mines that has yielded so much gold, first and last, as the Duryea, and it has not "suspended payment" yet by any means. Work is being energetically pushed in Vieth's hydraulic. Preparations for a clean-up are now being made preparatory to shifting the hydraulics to another portion of the claim. The harvest of amalgam is expected to be immense. Moser & Co. are pressing things as indefatigably as usual. Piping has been temporarily suspended in the Emerson hydraulic, Happy valley, to permit the running of a tunnel necessary to the proper working of the claim. W. W. Cook, proprietor of the Maison d'Sante hydraulic, is piping in very rich gravel and has got an abundance of it. Work is progressing favorably in a great many other claims in this section, to which we have not space to refer to-day.

SINKING COMPLETED.—The sinking in the Gwin mine for the 1550 level will be completed to-day. The level will be run and stopes opened immediately, alheit there is plenty of rock in the 1400 stopes to keep the mills going. There is every indication that the new level will be an unusually rich oue.

UP COUNTRY JOTS.—Champion rock is now being crushed in Carltou's mill, West Point. Something like 80 tons have heeu hauled to the mill and the work of mining is going on vigorously. The ledge is wide, ore good and the prospects of the mine better than ever. Macheaux, who owns a mine in the suhurhs of West Point, has commenced taking out rock. Prospects flattering. The Billy Williams mine, owned hy Fields & Co., is being steadily worked with good results. The property is a valuable one. At Mosquito, "Butcher John" is working his mine, one of the hest in the upper country, with a good deal of vim. John's mine will make his fortune yet. Rock from the San Joaquin, at Mosquito, owned hy Holmes, crushed in Garland's mill, paid $30 per ton.

EL DORADO.

GOOD PROSPECT.—*Mountain Democrat*, June 29: The Smith Brothers bave opened a promising mine two miles east of Greenwood. At different points the ledge varies from 14 to 50 feet in thickness and has heen traced and prospected for a long distance. During the past winter ana spring, the Smith Brothers have worked a considerahle amount of the quartz in hand mortars, and have run a large amount of the decomposed loose rock through sluices, realizing fine returns. Recently they have made a hargain with H. G. Maltby, formerly engineer of the St. Lawrence mine, hy which they convcy to Malthy one-fourth interest in the mine, in consideration of his erecting a good 10-stamp mill and hoisting works thereon. In pursuance of this hargain Malthy has purchased the mill formerly used at the Cederburg, and will have it up and in working order on the new ground in ahout 12 or 15 days.

THE MILLER MINE.—Moses Miller is doing some work on his own account on this mine, located south of Weber creek, near the defunct town of Weherville, and is obtaining very flat tering results. The ledge is about two feet wide and he has now on the dump some 30 tons of rock, which will average $40 per ton. There is a 10-stamp mill on the ground through which he proposes runuing his rock.

HUMBOLDT.

GOLD FIND.—Ferndale *Enterprise*, June 21: The gold mines discovered on Eel river still cause excited gold seekers to rush in that direction. The har along and in the river for three miles is staked out, and every one is confident that he will strike a honanza on his claim. The gold found lies on top of the bedrock and consists of the very finest particles. The washing shows from 40 to 200 colors to the pan. The largest piece yet found was valued at 10 cents. The work of tunneling has been commenced hy Mr. Bryant, and the prospect is good as far as he has gone. We weut up and looked around upon the diggings, but heing a poor "digger," though very gold hungry, as all editors are, and as all out doors was staked off, we concluded to try to he satisfied with the tripod and to drive the quill a little longer, hoping that some of the gold will float down this way and flood our sanctum.

INYO.

REX MONTIS.—*Imdependent*, June 22: The new ore strike in the winze from the lower level of the Rex Montis cannot be availed of hy reason of foul air and inconvenieuce of economical extraction. Superintendent Hudgins is urging upon the directors the necessity of opening a deeper tunnel level.

NEVADA.

PLANET.—*Transcript*, June 30: The gravel channel in this mine has heen cut with plenty of water. This had heen looked for several weeks, the tunnel had been run in a distance of over 1,100 feet, and an incline had heen raised ahout 160 feet to tap the channel. The Planet has an extensive body of ground, aud there can he no douht of a pay channel running through it, as the "Swamp Angel," adjoining it has pay ground up to its houndary line.

BYRNE CONSOLIDATED MINE.—Work upon the new shaft on the Mohegan ledge, of the Byrne Con. M. Co., on Gold Flat, which was commenced a few days ago, is now down 25 feet. The hoisting machinery will be put up over the shaft sbortly after the 4th of July.

THE SMITH MINE.—Under the new organization, the Smith miue at the Half Mile house is to be opened systematically. Yesterday a new shaft was started, the work upon which will he prosecuted vigorously until a depth of 300 feet is attained, when grouud enough for two years' work will be opened. This mine is now producing good paying rock from the ground already opened.

YUBA RIVER.—*Foothill Tidings*, June 29: This pioneer river mining enterprise is again in motion and in a fair way to show the hidden wealth of the bed of the Yuha. A contract was taken some time since hy Pollard, Nichols and Norton of this place, to put the distracted pumps in order and pump out the mine. This joh, which many supposed impossihle, was accomplished in due time—though hy hard work—and another contract has heen let to the same parties to put in place another pump and and take out various obstructions which the "had luck" last fall left in the way of operating the mine. The present management is going slow, hut hopes to make a sure test of tbe mine this time.

PLACER.

YANKEE JIMS.—*Herald*, June 29: A new company have taken hold of the old Swindle Hill diggings, which always prospected rich hut which cannot be made to pay hy the washing process owing to the cement character of the gravel. The new compauy propose to work the gravel hy mill process, and for this purpose have already commenced to put up a mill, which, with no unforeseen hackset, will he ready for operation in ahout 60 days.

THE SWIFT.—This mine now comes prominently to the front as one of the prospectively rich mines of the Forest Hill Divide. For a couple of years past tunnels have heen running towards the Hidden Treasure mine, with the purpose of striking the gravel in the ancient channel, which the miners are confident of finding.

ON the Excelsior mine, near Ophir, they have struck the ledge—or rather the junction of two ledges which intersect each other—ahout 70 feet down perpendicularly from the surface, and the mine promises very well. Two shifts of men are husily employed night and day.

ABOUT DUTCH FLAT.—On Monday, at the Polar Star mine, a blast of 550 kegs of powder was touched off. It is estimated that it completely broke up 26,000 square yards of gravel. The hydraulic mine at Elmore hill has closed down. The Baker uine has closed down for the season. The last clean-up at this mine was satisfactory to the Superintendent. The water helonging to the company is falling off rapidly, and Mr. Stone telegraphed to the agent to tap the lakes to the extent of 300 inches, in order to keep the Central running. The latter mine will not close until the water is exhausted.

PLUMAS.

JAMISON CITY.—*National*, June 29: Doherty has had his mill, on the Bunker Hill lode, running for more than a week, and is taken out amalgam in satisfactory quantities. He has given to his prospecting a deal of energy and enterprise. Martin Ensley, who is an indefatigable prospector, has lately been trying his hand on Poplar creek, a short distance above the valley, and on Saturday last took out a seven-ounce nugget, together with a fair prospect of fine gold. The nugget contained some quartz, hut after pounding, sold for a hundred and twenty odd dollars.

A NEW BONANZA.—Last Saturday, one of the richest deposits of quartz every found in Plumas, was struck in the upper level of the Bell mine, near Elizabethtown. A cross-drift was hegun last week, and, before reaching the foot-wall, a "chimney" was found, which is far ahead of anything in that line that has heen seen for many a day. The rock is so rich that it is impossihle to find a piece from the vein that does not show free gold, and the vein is two feet wide now and showing hetter every day.

OTHER MINES.—Messrs. Savercool & Co., the proprietors of the Twin Brothers quartz mine, near Ohio valley, are intending to huild a mill on Ohio creek, ahout a mile from the mine. The mill will he run with a burdy-gurdy, 150 feet pressure, and a road will he huilt to the mine, on which to transport the quartz. The Green Mountain mine is doing hctter. A new engine for pumping and hoisting is heing set up and will he ready for use in about 10 days.

SANTA CRUZ.

SILVER PROSPECT.—*Mercury*, June 28: Mr. Meisenheimer, of Lexington, an old miner and prospecter, has discovered and located a gold and silver hearing ledge in the Santa Cruz hills. He assures us the ledge can be traced across the canyons for a distance of three miles; and although showing only a low grade of ore in the croppings, he thinks there is no douht that pay rock can he had at no great depth. Several assays have heen had showiug all the way from $4 to $9 to the ton. From samples of rock shown us from this ledge we should say the mine was well worth prospecting. It is named the Alma gold and silver ledge.

SHASTA.

COPPER CITY.—Reading *Independent*, June 27: The new mill of the Extra mining company, so far as they have yet progressed, is of solid masonry, stone and hrick. The machinery is nearly all in its place, and it is expected that the company will be ready to start up in ahout six weeks. The mill, when completed, will be a first-class one and cost $100,000. The company have commenced digging a ditch, about two miles long, to take water out of Shaw creek, for running their machinery. This, however, will hardly be completed before late in the fall. The company intend at present only to put in 10 stamps, hut provisions have heen made to put in any number of stamps as they may need them hereafter. It is needless to speak of their mine any further than that the ore grows richer and richer as they advance into the hill. This is also true of the Winthrop, Northern Light and Bully Hill mines. The ledges in these four mines average 25 feet in width. Prospecting has heen going on extensively since the warm weather set in, and quite a number of ledges, the croppings of which prospect well, have lately been discovered. Wm. H. Dunn, foreman of the Northern Light mine, Copper City, came down Tucsday last. He brought a specimen of rock taken out the day hefore, which the assayer estimated would go $600 to the ton. Mr. Dunn says there is plenty more in sight just like it.

HAZEL CREEK.—Clark, Bailey & Co., of Soda creek, have commenced to clean up their claim that they have worked on all the winter. The first day they got nine ounces; one piece weighed six onnces. They feel very much encouraged at the result and are satisfied they will do well. Doc. Curl, on Hazel creek, has struck some very rich prospects. Lawson & Hayes have done well in their claim. Lafferty & Co. found a four-ounce piece in their claim last week, and it is paying them about $8 a day to the hand. John Miller has commenced to clean-up and prospects are flattering. Hotalling & Co. have had a great deal of had luck hy losing their dam, but are now doing very well. Our friend Pitt, of Portuguese Flat, says the miners have done very well. There are a great many Chinamen working on the river. Bill Smith, of Dog creek, is doing well at his place, and says most of the claims have paid well.

SISKIYOU.

SCOTT VALLEY.—Yreka *Journal*, June 22: The Oro Fino miue takes the lead here. The mines in the valley were discovered 20 years ago, and a majority of the original locators got broke in trying to develop them. Five years ago other parties hegan to relocate and take out quartz, and the old mill was repaired and a crushing made. The next important transaction was a dividend of a few dollars to each shareholder. Next was the crushing of a few hundred tons, the quartz paying $35 to the ton, and a dividend of a few hundred dollars. There are about 30 claims heing worked, all paying well, and some paying large dividends. The poorest quartz in this district pays $19 to the ton. The French Creek lead is from two to six feet thick, and a true fissure vein. It can be traced for miles, and prospects well the entire length. This camp is rather dull at present. The mines on French creek are owned and worked hy farmers residing in Scott valley, who are husy on their farms at present. If they keep putting in work on the mines for the next year or two, as they have so far, they will make the old French Creek lead pan out gold bullion that will astonish the world. The people of Scott valley have come to the conclusion that they are the proper persons to own and work the mines, so as to pay dividends at home, instead of supporting a class of men who never saw a mine.

THE Lucky Baldwin company started up again last Wednesday, with an extra pump, and the two pumps seem to keep out the water without any extra exertion. Owing to placing the pump too low, the packing was forced out, hut it was soon arranged all right again, and the pumps will he kept going night and day to keep the shaft clear of water. They are now down nearly 20 feet, and expect to strike bedrock inside of 30 feet, when the pay gravel can he prospected.

TUOLUMNE.

JAMESTOWN.—*Independent*, June 29: Harris has nearly finished his 10-stamp mill. It will he in working order in two or three weeks. Quartz mountain is quiet again. They have stopped the mill on the Heslep mine, and discharged all the miners hut four. It is said they will run the mill in the daytime only in a few days. It is reported that the Shawmut mine is going to start up soon.

ABOUT TUTTLETOWN.—There are good mines in this vicinity. There is the Waters mine, for instance, of immense size and carrying much rich ore. Then there's Dharhoure's mine, another big thing. The vein is four to six feet wide, and will average pay enough to make an enterprising man rich, if he has the coin to erect a large mill. To he sure, the rock is of low grade, hut where you can quarry stuff to grind, you need not he very particular as to its richness if you have the means of reducing all you can get out. The Gillis and Carrington, good for as many stamps as there's pickets in a fence. A right good buy for a company with capital to open it. The Galena mine, owned by Burr & Co., is worthy the attention of men of means. The last rock crushed from this claim, which is on the mother lode, yielded upward of $40 per ton. Plenty more of the same sort left, apparently, hut it takes trade dollars to make underground explorations. The Gross mine has many points to engage the attention of an intelligent miner. It is full of metal, and that metal is rich. Not a tenth of the gold can he saved by the ordinary wet-battery process, and yet hy this it will pay $8 per ton, and it has run up to $80.

Nevada.

EUREKA DISTRICT.

MINING NOTES.—*Sentinel*, July 1: Assays from Bullwhacker ore go $85 in silver, and 52% lead. The product of the Tyho Con. for June will crowd $100,000 very closely. From the contractor in the Eureka tunnel, we learn that the face of the tunnel is still in shale, with indications of a change. The change he believes will be an entry into a ledge, and perhaps ore. The new and extensive hoisting works of the Phenix mining company are in course of erection, under the superintendence of Jim Montgomery, who is pushing their completion as fast as possible. Col. T. J. Taylor is shippihg ore from the El Dorado mine to Salt Lake city. The ore is said to be as rich in precious metals as any ever found in the district. The El Dorado is situated on the line of the Eureka tunnel, which will cut it at a depth of about 800 feet from the surface. Rumors have heen current for some days of a strike of rich ore in the Connolly mine. We yesterday learhed, from good authority, that in making a connection in the deep workings, good ore has heen struck, the extent of which is yet unknown. The Geddes & Bertrand, in Secret canyon, is shipping $200 ore to the Phenix (K. K.) furnace. There is said to be a 20-ft breast of this ore in the mine.

THE ALBION MINE.—General Connor and Messrs. Clark and Haskell, yesterday visited the Albion mine. They report work progressing finely, having attained a depth of 240 feet; at the hottom of the shaft the men have struck iron in the shale, indicating close proximity to the contact.

STRIKE IN THE HOOSAC MINE.—We were yesterday shown hy Billy Wermuth, Superintendent, some fine specimens of ore taken from the main shaft. The ore of this mine is a carbonate, and evidently will assay well in the hundreds. Judging from the appearance of the ore which is found in the deepest workings of the mine, we may soon expect the Hoosac to again wheel into the producing mines of the district.

WESTERN NYE.—Grading for the new mill at Grantsville was commenced last week. Everything is lively. A rich strike was made last week hy M. San Pedro in one of his mines located ahout 1,000 feet south of the Alexander. The ore from this new discovery assays as high as $400 per ton. Richard O'Malley has hought an interest in Dutton Fowler's water works, and the citizens of Downeyville will ho supplied with heautifully clear mountain water hy the firm of Fowler & O'Malley. The water is brought a distance of five miles in pipes from the mountain.

HUMBOLDT DISTRICT.

FAIRMOUNT MINE.—*Silver State*, June 29: Col. Buel has employed 18 men to work on the Fairmount mine, recently purchased hy him. Instead of employing Chinese to do outside work, as is frequently done hy mine owners, he gets white men who do not understand mining to do such work at reduced wages. There are plenty of able-hodied men traveling through the

conntry in search of work who can handle shovels and run wheelbarrows, though utterly ignorant of mining, that are willing to work at less wages than are paid practical miners, and it is much better to employ them than Chinamen.

ANTIMONY ORE.—Two car loads of antimouy ore from Graves & Healey's mines, near the Humboldt Salt marsh, were shipped to-day to San Francisco.

REVEILLE DISTRICT.

THE GILA MINE.—*Sentinel*, June 29: During the past week the drift from raise was driven 11 feet, making the total leugth 134 feet. On the 11th inst. struck very fine ore, and have been running on it from that time. The vein is about two feet wide, very regular, and ucarly all soft chloride ore, some of which is very soft and will probably average $200 per ton. This drift is now 150 feet south of the stopes from which ore is being extracted, and is rnuning intn grouud that has never been prospected in the least. From present appearances there is every reason to believe they have a large hody ahead. In the stopes there is no change. The mill is running regularly, with a large amount of ore ahead.

REESE RIVER DISTRICT,

MANHATTAN MINE.—*Reveille*, June 29: During the week ending yesterday mnrning, the mill reduced 137 tons, 1,480 pounds of ore, of the value of $27,961.80. In the Curtis shaft, the ore from the 517 stope shows some improvement on the east side. The winze from this level is passing through some good ore. The 517 west drift has been started again. The 675 stope continues to produce a good quality of nre and shows a large ledge the whole width of the stope. The 675 east drift is in good ore. In the Frost shaft all the ore required is being taken from the 670 stope. The ore chimney shows no sign nf giving out as they work west, and has now attained a width of 300 feet. The 670 west winze and 770 drift have heen connected, which affords good ventilation in the lower level.

TEM PAHUTE DISTRICT.

There are quite a number of miners at work here, some of whom are taking out ore. The great drawback to the camp is the want of a mill, the miners being now compelled to ship their ore to Reveille, a distance of 75 miles, which eutails a large expense. An Eastern party, who have lately visited this district, think well of the mines, some of which it is expected will be sold on their report. Should this so happen, it will, no doubt, lead to a mill being erected near the mines and a more rapid development of the latter.

Arizona.

GLOBE ITEMS.—*Enterprise*, June 25: L. J. Webster on Mouday shipped two bars of silver bullion to San Francisco, weighing 3,150 ounces, and on Friday previous, 3,088 ounces. Two bars still on hand. The Tombstone district, south of this about 125 miles, is represented "way up" in silver ore. A specimen shown here, said to have been brought from that camp, is pimply with native silver.

MINING NOTES.—The Peck mining company's troubles are all settled. L. Bashford has purchased some feet on the Tiger mine for $1,500. The McCrackin mill turned out nearly $83,000 in silver hars, during the month of May, ranging in fineness from 915 to 960. A. G. Hubbard has been chief amalgamator at the mill since February 23d. He may well feel proud of his work. June 2d and June 3d, he melted out 20 bars, worth over $24,000. Wells, Fargo & Co. shipped last mouth $60,000 in silver and $10,000 in gold from Prescott to San Francisco. Bowers and Richards are putting the Senator mill in good shape, and propose reducing ores from the Senator mine soon. The owners of the Emmett mine, situate in the Black Hills district, are contemplating the erection of a 5-stamp mill, and negotiations for the purchase of one in San Francisco are now under consideration.

TUCSON.—This town is alive witb prospectors, miners, capitalists, etc. The specimens they bring in from San Xavier mining camp and Tombstone district are remarkably rich. The latter place is said to have millions lying on the ground in sight. Dozens of prospectors and and miners may be seen each day packing their burros and wagons starting out to work or hunt up claims.

IN THE NORTHWEST.—The Hackberry mill is running and doing well. They have shipped about $50,000 in bullion during the last 30 days. The new hoisting works are now in operation and work on the 430 level is being vigorously pushed, as well as sinking on the main incline. The stopes in the upper levels are showing large bodies of high-grade ore. The ore mills on an average about $150 per ton.

Colorado.

LEADVILLE.—Denver *Tribune*, June 26: Reports are reaching Leadville daily of strikes heing made both north and south, and east and west, enlarging the limits of the carbonate region. This side of the range several locations have heen made on extensive deposits that so far have heen of too low grade to create a rush, though a few resolute prospectors are carefully searching to find richer grades. The camp is in its infancy and it will require another year or two ou its best developed properties to test its lasting qualities, bnt the results so far are simply wonderful. The Gallagher mines, the Iron and Long & Deery, have recently been described in the columns of the *Tribune*, and their past yield and present outlook chronicled. A few facts and figures of another nine less developed and consequently nf smaller aggregate product will exhibit a recnrd that for dull times and in other lines of business, many a man would rejoico to duplicate by a similar investment of capital.

SAN JUAN.—Notwithstanding the long winter and heavy fall of snows, San Juan is putting on snmmer airs in earnest, and our miners are husy at work again nn their valuable properties. A large number of the best mines in San Juan, Ouray and Hinsdale counties have been worked during the past winter, and the result is that thousands of tons nf rich ores are found upon the dump and crowding the ore-houses, where only hnndreds were found last year. No portion of tbe contiuent offers finer opportunities for the investment of capital than this section of Colorado. The deeper our shafts are sunk, and the more capital the miner expeuds the hetter our mines appear, and the richer the ores produced. Silverton is alive, and her energetic miners are busy with pick and drill. Ouray is not behind in tho race, and several smelters are going up, and her mines, amoug the best in the world, are being rapidly developed aud vigorously worked. The San Miguel is attracting a large share of atteution, and its rich gold and silver leads and placers are said to he as rich as any in the State. The mills in the Summit district will probably soon resume work, and if so, we may expect to learn of a large gold product from that rich district. At tbis point husiness is reviving and the smelters are starting up, and we look for a season of progress and prosperity.

Idaho.

MINES ABOUT SILVER CITY.—*Avalanche*, June 22: Despite the Indian disturbances the mines hereabout are heing actively worked and looking well. At the Black Jack, the ledge continues to have the characteristics of an immense bouanza, furnishing indications of a promising future for Florida mountain. During the past three weeks, bullion to the value of $10,000 has been shipped to San Fraucisco, the result of crushings at the Ellmore mill. The mill is now undergoing some repairs and crushing will commence in a few days, teams heing engaged in hauling quartz from the mines. There is great excitement over recent discoveries on the Empire side of War Eagle mountain. On the east side of the Poorman, a ledge has been opened which is yielding ore that will average over $10,000 to the ton. It is full of free gold. On the west side of the Poorman, Mr. Douglas and others are working a claim that is marvelously rich.

GOLD HILL.—Operations here have been delayed by the non-arrival of a pump and two large hoilers intended to he used in connection with the working of the mine. These have been on the way for some time and would have arrived before now hut for the delay caused hy the threatening attitude of the Bannocks. The mine is looking well and has been making a good yield for the past six months. The shaft is down 238 feet and will be sunk still further when the new machinery is put in motion. The recent work on the 100 level shows a rich and productive vein, which pays well aud improves as the descent is made. Altogether the prospects of the Gold hill are unusually encouraging.

Montana.

JEFFERSON, BOULDER AND RADERSBURG.—*New Northwest*, June 22: The Montana Co.'s works at Jefferson are being improved by the addition of a 40-foot reverberatory furnace for desulphurizing ores, and a 10-stamp battery with complete amalgamating works. These additions will he completed hy the first of July, when the works, including concentrator, Bruckner cylinders, reverherators and battery will be started up. The Alta miue, recently purchased hy the company, contains 14 feet of ore at the lowest level, considerable of which is milling ore, and most of which runs from 40 to 150 ounces per ton. The Alta is being worked with a force of twelve men, under Lyman Rowley as foreman, and the main shaft is now down 160 feet. Cole Saunders, the present Superintendent, reports the works capahle of handling the most rebellious ores of the country, and in a short time a graded price-list for the purchase of ores will be issued hy the company, when miners will be supplied with a good home market for all varieties of ore. Work is being prosecuted on a number of other mines in the district, all of which are showing up well. The Gregory, of which I. B. Netter is Superintendent, has a main shaft 300 feet deep, and the ore coming out is said to be rich. Some work is heing done on two exteusions of the Gregory, in one of which Col. W. F. and G. Saunders are interested. Seligman, Lavenberg & Co. are putting up reduction works in Boulder district, to be run on the leaching process. They are going up on Spencer creek, four miles above Capt. Cook's station. There are any number of good lodes in the vicinity of the works, and this move of Lavenherg & Co. has had a reviving effect upon the mining interests of the district. Some 30 or 40 men are working in the Little Boulder placers, not far from Boulder station. The new Keating mill, near Radersburg will be completed in a short time, and the Blacker mill is heing repaired and improved. With hoth these mills running, Radersburg will recover some of its former business activity.

New Mexico.

SHIPMENTS OF COPPER.—*Grant County Herald*, June 15: During the past week Messrs. I. N. Cohen & Co. have received 103,000 pounds nf pig copper from Clifton, Arizona, and during the same time have shipped about 76,000 pounds to the end of the railroad. They have about 27,000 pounds nn hand.

GEORGETOWN.—Mining operations here continue active, shafts are being sunk, tunnels driven and much ore taken out. The mills and furnaces are kept fully employed, and the bullion yield will be larger this season than ever before.

ON THE MIMBRES.—The weather has heen dry so long that we fear that the mills on the Mimbres will not be ahle to run on full time very long, as the river is very low. A good deal of the water is used for irrigating purposes, which will leave the mills without sufficient to run. If it does not rain soon this will he a great drawback to the camp as they have a great deal of nre ahead.

Oregon.

GRANITE CREEK.—*Staats Zeitung*, June 21: The Monumental mine will soon produce results. Large quautities of high grade ore are now being daily extracted hy the work in progress. The tunnel is in 705 feet, and drifts are heing run on the different ledges cut by it. Ledge No. 13. cut at the depth of 300 feet, is rich in antimonial silver ore. An upraise is now under way on this ledge to connect with the shaft, which is sunk a distance of 110 feet, which when completed, will drain and ventilate the mine, and the amount of ore then in sight and prospective will be the basis for the extent and character of the machinery required for its reduction. The Phil Sheridan mine, situate in the same mineral belt, is, under the work now in progress, developing ore that shows from $75 to $550 per ton in silver and $300 in gold. From the prospects of Granite Creek mines it is certain that the miniug industry of Oregon, will soon be extensively prosecuted. No prospects ever ohtained offer better inducements than are now presented. Rightly pursued, mining for the precious metals on this coast ought to be the safest and hest paying industry in which our people could engage. Our mineral territory is rich in this class of deposits and of almost illimitable extent.

News in Brief.

GEN. PLEASANTON is still lecturing ou blue glass.

BALED hay is selling in Petaluma at $6 to $10 per ton.

THERE will be an eclipse of tbe sun visible in this city on July 29th.

GEN. GRANT will return to the United States next spring hy way of India.

THERE are heavy arrivals of wool at Salem, Oregon. Buyers pay 18 cents.

THE river is but 14 feet 6 inches above low-water mark in front of Sacramento.

CHRISTIAN K. ROSS has bad 497 boys exhibited to him as his long-lost son, Charlie.

THE hop vineyards at Puyallup, Washington Territory, are looking exceptionally well.

LAST Saturday, Kate Lorence walked 50 miles in nine hours and 40 minutes at Woodland.

THERE were 305 Chinese passengers on the *Belgic*, which arrived from Hongkong on the 23d ult.

FIRES have occurred in different parts of the State, destroying a good deal of standing and stacked grain.

WARREN LELAND has, according to report, retired from the management of the Palace hotel, in this city.

THE Internal Revenue collections in this city last week amounted to $23,201; total since the first of the year, $965,300.

THE hottest day of the season thus far at Oroville, Butte county, was June 26th, when the thermometer reached 110 degrees.

DURING the month of June, County Clerk Reynolds issued 204 marriage licenses, thereby enriching the County Treasury $408.

THE thermometer at various places in the interior bas been as high as 110° in the shade. Several fatal cases of sunstroke are reported.

THE weather in New York city continues very warm, the thermometer reaching the nineties. Several fatal cases of sunstroke are reported.

PAUL M. MICHELSEN, captain of the sloop *Jill*, plying between Napa and San Francisco, committed suicide by taking strychnine at his residence in Napa.

THE wood shipments at Huffaker's, Nevada, average about 18 carloads shipped to the Comstock per day. Nearly 100 Chinamen are employed as wood-loaders.

C. F. GERMAN, shift boss at the Caledonia mine, fell 1,450 feet in the shaft last Monday and was instantly killed. He was a native of Waukesha, Wisconsin.

THOMAS NOBLE, a son of A. P. Noble, a bright and intelligent boy of 11 years old, died near Berkeley last week, from getting a barley heard in his throat.

EMPEROR FRANCIS JOSEPH closed the Hungarian Diet, Saturday. He took an exceedingly favorable view of relations with foreign powers and the probahility of peace.

SOME Sandwich-island wheat is heing raised this season in Santa Barhara county. It is reported as standing 11 feet high, the stalk heing very light in comparison with its hight.

HEAVY failures are reported in the South Staffordshire iron trade. H. B. Whitehouse & Son, of Bilston, large colliery proprietors and owners of several blast furnaces, have suspended. Liahilities heavy.

SIX hundred visitors arrived at Santa Cruz on Saturday last.

THE Free Labor Exchange furnished 48 persons with employment last week, 34 of them being men.

POLYGAMOUS marriages continue to be frequent in Utah, 110 having been solemnized in one day lately.

THE barrel factory at Tacoma has received an order for 1,000 salmon barrels from New Westminster, B. C.

A PORTION of a tunnel near Scheveliff, Germany, fell lately, burying 27 persons. Seven bodies were recovered.

W. W. STONE, the pioneer merchant of Biggs, Butte county, died, last week, from injuries inflicted hy a runaway team.

THE New York *Sun* reports the veteran editor, James Watson Webb, lying dangerously ill there. He is over 76 years old.

DAVID HELD, a well-known San Francisco merchant, of the firm nf Held Bros. & Co., is dead, from a stroke of paralysis.

JUDGE VENABLES, of Downey City, Los Angeles county, bas 150 acres planted in canary seed, which is in a flourishing condition.

THE total rainfall at Reading, Shasta county, for the seasou has been 60 inches, as against 25.78 inches in the previous year.

RAIN is much needed in nearly all parts of western Oregon. Without it late sow grain in many places will yield little or nothing.

J. W. CARA, aged about 60, a lecturer on astronomy and geology, was found dead a few days since in a stahle at Reno, Nevada.

THERE occurred in this city 98 deaths last week, against 66 for the preceding week, and 102 for the corresponding week of last year.

NOTWITHSTANDING the favorable progress already made, some weeks must elapse before the German Emperor can be removed to the country.

THE spring run of salmon in the Columbia river and also in the Sacramento was a light one, and the canneries have suspended operations till fall.

MICHAEL TOBIN, a United States soldier, has been found guilty of the murder of Peter Alhers, at West Point. The jury recommended executive clemency.

SWARMS of crickets have invaded Paradise Valley, Tuscarora, and other places in northern Nevada. They are a nuisance, hut otherwise have as yet done no harm.

TWO HUNDRED Mormons lately arrived at New York ou their way to Salt Lake. It is estimated that 35,000 have reached that port for the same destination since 1855.

MRS. GEORGE VOORHEES, who was thrown from a carriage in the vicinity of Farmington, San Joaquin county, on Thursday of last week, died at Stockton, on Saturday evening.

DR. DIO LEWIS, the great hygienic teacher, is camping ont with his family and sleeping on the ground in the foothills of the Sierra, now in Nevada county, his health nearly restored.

W. H. VON SCHMIDT, mate of the schooner *Ariel*, which arrived here last week from the South Sea islands, was washed overboard and drowned on the trip. He was a son of Colonel Von Schmidt, the engineer.

A PETITION signed by 581 persons of both sexes is before the Constitutional Convention at Walla Walla asking that the word "male" be left out of the portions of the Constitution which refer to the elective franchise.

BEARS are reported very numerous in Priest valley, Monterey county, coming down from the Gahilan mountains. They have killed over 25 head of cattle, to say nothing of sheep without number, in that locality this season.

ANTELOPE are quite numerous in Siskiyon county, especially on Antelope creek. A gentleman saw a hand of 17 one day, and met others on the next day. Sometimes they run in large bands like droves of sheep, but at this season of the year scatter out with their fawns.

HENRY A. PARR, who arrived from St. John, N. B., has heen arrested in Boston on a charge of murder on board the steamer *Chesapeake*, from New York, for Portland, December 5th, 1863. Parr was one of 17 passeugers who took possession of the *Chesapeake* in the name of the Confederacy, shooting the second engineer and throwing the body overboard.

GOVERNOR HARTRANFT, of Pennsylvania, has appointed Christian K. Ross, father of the kidnapped boy, Master Warden of the port of Philadelphia, at a salary of $2,500 per annum. Mr. Ross had not sought the position, and was taken by surprise when his commission reached him. He needed the place, having spent all his means and much more besides—$80,000 in all, searching for his lost hoy.

Signal Service Meteorological Report.

Week Ending July 2, 1878.

HIGHEST AND LOWEST BAROMETER.

June 25	June 26	June 27	June 28	June 29	June 30	July 1
29.94	29.81	29.91	30.01	29.91	29.81	29.85
29.83	29.77	29.82	29.95	29.81	29.74	29.74

MINIMUM AND MAXIMUM THERMOMETER.

71	68	61	72	70	73	64
54.	57	53	52	55.5	55	56

MEAN DAILY HUMIDITY.

63	68	60	59	71	60	72

PREVAILING WIND.

SW	SW	W	SW	SW	SW	W

WIND—MILES TRAVELED.

224	200	333	457	154	199	258

STATE OF WEATHER.

Clear	Clear.	Clear.	Clear	Clear.	Clear.	Clear

RAINFALL IN TWENTY-FOUR HOURS.

Total rain during the season, from July 1, 1877, 35.18 in.

Location and Boundaries of Mining Claims.

Upon this subject the New York *Engineering and Mining Journal* has some judicious and well-timed remarks, recommending, in view of the ruinous litigation that has grown out of our former uncertain methods of fixing the exterior limits of mining locations, that we hereafter dispense with our present modes of description, saying nothing about the dips, spurs, angles, courses, strikes, etc., of a lode, and reduce all claims to a square surface location and not to be owned or worked beyond. In further dicussing this subject the *Journal* very justly remarks: "It seems as if it were impossible for any profitable gold or silver mine to escape the blight of a lawsuit, and certainly no greater blessing could be brought to mining interests generally than the enactment of a law that would make it impossible to misinterpret the limits of mining claims. The questions, 'What is a vein?' 'What are the limits of mining claims?' are the bottom of the lawsuits which have ruined so many good mines. The first of these questions has been so enlarged by the Eureka-Richmond decision that an equally perplexing question is now likely to arise in the form of 'What is not a vein?' And, no doubt, efforts will be made to show that any mineral-bearing belt may be thus classed. What the limits of a lode are, will probably become more and more obscure as our knowledge of the ramifications of the ore becomes more and more perfect, until, in a system of fissures such as those in the vicinity of Central Colorado, where the ore is disseminated in the altered country rock, it will be impossible to determine which location should hold a number of intersecting veins.

"We believe it is absolutely impossible to so define the meaning of the term 'lode' or 'vein' as to prevent these endless litigations, and even the rights which are acquired by a patent are very uncertain by reason of our ignorance at times of what constitutes the outcrop or 'apex' of a vein. With the experience of countless lawsuits before us, it seems almost incredible that laws which make such a state of things possible should not have been changed long ago, and especially when the remedy is so simple and so apparent as it is.

"Had our laws been based on the old Spanish mining code, with such modifications only as were necessary from the fact that under Spanish law all minerals belong to the crown, no conflict in titles could possibly have occurred. There seems in fact no way of preventing conflicts of this kind, except by making the boundaries of a claim the limits in every direction to which a mineral deposit may be followed. It will necessarily follow from this that the area taken up must be larger than at present. We would suggest 1,500x900 feet as a sufficient area. The corners should be marked with permanent stone monuments, and the patentee should be entitled to all the minerals found within the lines, to any depth, but could not follow them beyond the same limits. He should be obliged to do a certain amount of bona fide work on his claim every year or every six months, in default of which his rights would cease, and any one else could re-enter the claim. The anomaly of local laws and customs in every district should be abolished, and this one simple and comprehensive law govern in all cases. Of course, it would be impossible to change established locations, but claims located subsequent to the passage of the law, and especially all new mining districts, should be governed by it. It would be impossible to have any conflicts of title, and this most fruitful source of misfortune in mining enterprises would cease. It would then be of no consequence what meaning should be applied to the term, vein or lode, nor would the difficult problem of which lode holds, at intersections and unions of veins, the united vein, any longer trouble anxious mine owners. The problem would be as simple as determining the ownership of a town lot, and the change, though it might be objected to by the lawyers, would be a blessing to miners and mine owners."

NEW DISTRICTS IN MONO COUNTY.—The location of Lake district is on the headwaters of Owen's river, about six miles from the headwaters of the San Joaquin river, and about 24 miles south of Mount Diablo meridian, surrounded by scores of gushing mountain streams, numerous cascades and beautiful lakes (from which latter the district derived its name), thousands of acres of the finest timber ever seen, and green meadows accommodating the horses of 200 prospectors. This is enough, to say nothing about the little insignificant Mammoth mine, which is only 120 feet wide and don't crop out but about 300 feet above everything else in the vicinity. Laurel Hill district is situated about seven miles south of Lake, and bids fair for a mining camp, there having been quite a number of good base metal ledges discovered and located, some of which prospect excellently. Mountain View district is situated about 14 miles south of this place, where but few locations have been recorded as yet. Messrs. Stuhen, Wager and Wilson have discovered a ledge there which they think worth prospecting, and surely they have the capital to prospect or mill and mine with if they can find the indications.—*Correspondence Bodie Standard.*

OFFICIAL returns of the Caribou ore, British Columbia, show it to assay at the average rate of $33 gold per ton.

The Pumelo—A Lusus Naturæ

Written for RURAL PRESS by T. HART HYATT.

The pumela, or *Citrus decumana* of the botanists, is known to but limited extent in California. I have seen specimens raised in this State, and they are generally passed off as huge samples of the orange or lemon. They are called Shaddock in the West Indies from the fact that a Capt. Shaddock, of some merchant ship, brought the first specimens from China or the East Indies. The fruit is generally from double to treble the size of the orange or lemon. I have raised them in China, and had matured fruit on small trees three feet high. But it remains for California to furnish an example of precocity, a most remarkable *lusus naturæ*, such a freak of nature as puts our ideas of the knowledge of the habits and eccentricities of plant creation quite to the non-plus.

The little tree, of which I send you a photograph, was raised by my daughter, Mrs. George North, of Marysville, in this State, from seed planted in February, and was but two months from the time it showed its head above ground until it put forth its first blossom.

The tree is about three inches high, and the blossom, the size and appearance of an ordinary orange blossom. [Our artist has enlarged the plant, so that it is about one and one-half times the natural size.—EDS. PRESS.]

Mrs. North has about 100 trees from seeds planted in a bed at the same time, but none of the others have shown the precocity here exhibited. They are to be transplanted to my daughter's summer home at "Mount Glenwood," Yolo county, about two miles west of the town of Winters, where they have already quite a plantation of orange trees and other semi-tropical plants.

PUMELO IN BLOOM AT TWO MONTHS OLD.

The fruit of the pumelo is coarser than the orange or lemon, but is very juicy and of pleasant flavor. The outside rinds are very thick and coarse and the inner skin very bitter, and has to be taken off carefully when eaten, or it will destroy the pleasant flavor of the fruit. They are used in China, especially by foreigners, to make an excellent kind of tonic bitters. It also makes an excellent conserve. The trees grow to the size of the common orange or lemon, and from present indications are likely to come to bearing maturity in California at a much earlier age than either of the other fruits; and may be cultivated with success, I think, in California. From this precocious little seedling may spring an earlier fruiting variety of the orange family than has ever hitherto been known.

The Marysville *Appeal* of May 30th says: "About the first day of February last, Mrs. George North planted a quantity of pumelo seeds in boxes at her residence, and among the number germinating and coming up was one which is the subject of this item. A few days ago this young seedling, which is about four inches in hight, and the stem or body about the size of wheat straw, showed signs of a fruit bud, and it was watched with much curiosity as to the result. Yesterday morning, however, a full-sized blossom was manifest, with all the fragrance peculiar to the orange. Mr. North removed the seedling to a small earthen pot, and yesterday had a photograph taken of it. It is a remarkable freak and seems to us a burlesque upon the 11 and 12-year-old trees, 14 and 15 feet in hight, without a sign of a blossom."

Vacaville, Cal., June 4th.

The Perennial Streams of Kansas.

The most remarkable fact to an Eastern observer is the permanence of the streams on the great Kansas prairies. Although they do not rise in the mountains, and are not directly fed by the great mountain snow fields, yet it is evident that they are so fed. But a small part of the waters of these broad mountain regions, with 50 feet depth of melting snows, is able to escape in the form of mountain torrents. The pent-up reservoirs pass into the bowels of the earth, and by force of hydrostatic pressure find vent as gushing streams all through the outlying hills and plains for hundreds of miles. These springs are plentiful in Kansas. They are numerous about the sources of our rivers. They are the origin and life of these rivers. They obtain their supplies from the vast snow fields of the broadest chain of mountains in the world, and are not affected by the severest drouths. There is in the driest time more than one hundred horse-power of surplus water passing over the dam at the Star mills, on the Smoky Hill river, at Junction City.

During rainy seasons, which should seemingly cause great floods at the rivers, the water escapes into the subsoil, to a great distance from the channel, and by thus underflowing the valleys their overflow is prevented. Then, as dry weather sets in, this dry subsoil, saturated with water, feeds the rivers and preserves a regular stage of water. These facts have been verified by the rise and fall of wells in the vicinity of the streams, during rains and drouths, and by the permanent rise and fall of wells after the construction of mill-dams. This permeable subsoil, then, may be reckoned as a great hydrostatic balance-wheel, regulating very materially the effects that drouths and rains produce on our Kansas rivers. They are, therefore, more capable and permanent than they could possibly be if fed directly by the mountain torrents, or had no means of storing away the floods of heaven, as they are so copiously but irregularly poured out. No State or country can surpass Central Kansas in the permanence and regularity of its rivers for motive power purposes.—*Junction City (Kansas), Tribune.*

BRINGING IN WATER.—Good progress is being made in constructing the irrigating ditch from the Little Truckee river to Sierra valley. The ditch will carry from 10,000 to 15,000 inches of water. It is expected the water will be into the valley in 90 days. The ditch will bring into cultivation a large area of land that has hitherto lain waste and idle.

Hydraulic Well-Boring.

H. E. Hallet, writes for the *Pacific Rural Press* an account of artesian well-boring on the ranch of W. L. Overhiser, of Stockton, Cal., from which we quote as follows:

The apparatus used for boring these wells was the ingenious "steam well-boring machine," invented by Messrs. Haas & Manning, engineers, residents of Stockton. The machine works something after the fashion of the Diamond drill, and we believe it was from that that the idea was first caught. It has performed admirably wherever tried under favorable circumstances, and is destined to revolutionize the manner of well-boring, reduce the cost to the minimum and place deep wells and plenty of water within the reach of nearly all. It works at a rapid rate in good soil. A well bored in Stockton last summer was sunk 210 feet in four hours and 15 minutes. The gearing for lifting pipe and turning the auger in boring is attached to a derrick 30 feet in hight, whose base is a triangle with sides 15 feet in length. The power used was a 10-horse Wood's engine, running under 40 pounds of steam. In boring deep wells and through hard material, two steam jacks and two anchors are used to steady the derrick. A windlass on the derrick, connected with the engine and controlled by levers, is used to raise and lower the pipe and auger by means of a rope. The anger is turned by means of a system of cogs connected with the engine and pipe by a tall upright shaft and a short horizontal one. The augers are of various diameters according to the bore desired; the one we saw was a hollow cylinder about five feet in length and nine inches in diameter, open at the top and fastened to an iron pipe two and one-half inches in diameter and several feet in length; this is fastened by means of thread and screw to another pipe 14 feet in length and buoyed by a wooden rod, and this in turn is screwed onto a similar pipe, a new pipe being added at every succeeding depth of 14 feet. The rods are six inches in diameter. An iron cap fitting onto the top of the pipe has attached to it a rubber hose of the same diameter as the pipe, the engine pumping water through this hose which supplies the pipe, the water descending to the bottom of the well, softening the material and dissolving it as fast as cut by the auger; the downward pressure of the descending stream of water forces it up again between the wooden rods and the sides of the bore, carrying with it the earth cut out by the auger, flowing from the mouth of the well a thick, muddy stream. The upward flow of the water is strong enough to carry up fine gravel and pebbles, and for coarse gravel or stones, the size of one's fist, a steam siphon is used, forcing up the stones by the exhaust of a vacuum.

When it is desired to shut off the water, a cock is turned in the vacuum chamber and air is pumped instead. The apparatus is completely under the control of the engineer, assisted by two men.

The machine was working down at a moderate rate of speed when we saw it, at the rate of 80 feet per day. We timed two lengths (of 14 feet each), and the time occupied in boring that depth was respectively 28 and 32 minutes; this was near the surface, the material growing much harder as the auger descended. One well had already been bored before our arrival, the depth reaching 133 feet, striking a good stream of water.

Mr. Haas' terms are 50 cents per foot in good soil for any depth, decreasing the cost as compared with hand boring fully 75% and in deep wells much more.

When it is desired to case the wells, the casing is sunk at the same time the well is bored, without raising the pipe or auger. Mr. Overhiser's wells are cased for only the first 14 feet, the material being so hard the rest of the way as not to need it. The cost of casing varies from 60 cents per foot for six inch, to $1.10 per foot for nine inch casing.

THE SUTRO TUNNEL MORTGAGE.—An extension of the mortgage given to McCalmont Bros. & Co., of London, by the Sutro tunnel company, has been filed for record. The document recites that, whereas all the property of the Sutro tunnel company has hitherto been mortgaged to the McCalmont Bros. & Co. to secure the repayment of $124,321.10 advanced to the tunnel company, and all other moneys which may be advanced to it; and whereas other moneys, aggregating altogether $433,965.10, have been advanced to the said company by McCalmont Bros. & Co., the tunnel company agrees that it will, on January 1st, 1891, pay to the said McCalmont Bros. & Co., or their assigns, the said sum of $433,965.10. It also agrees in the meantime, and from January 1st, 1879, to pay interest on the said sum of $433,965.10, at the rate of 12% per annum in semi-annual payments. If the tunnel company shall well and truly pay said interest regularly on the 1st of January and July in each year, McCalmont Bros. & Co. agree not to require payment of the principal before January 1st, 1891; but the property of the tunnel company shall not be released from the obligations of this mortgage until full payment of principal and interest.

THE following is given as the number of Indians in Washington Territory: At Colville, 3,457; at Lummi, 940; at Neeah Bay, 808; at Nisqually and Puyallup, 1,054; at Quineault, 311; at Skokomish, 800; at Talulip, 2,900; at Yakima, 3,650; total, 13,920.

Searching for an Ocean Cable.

Capt. Thomas Stead, commanding the steamship *Professor Morse*, sailed recently from Brooklyn, to search for the Cuba submarine cable. He speaks of his purposes as follows: "The cable is broken," he says, "32 miles from Key West, in the Gulf Stream, where the water is from 450 to 500 fathoms deep—say half a mile. We are going to pick it up, mend it and lay it again. There are two cables between Havana and Key West, one of which stopped working a month or six weeks ago, and we have to find out why it did. It may have been cleanly divided or broken by chafing upon a rocky bottom or from some other violence, and there may have been a minute perforation no bigger than a pin hole through the gutta percha covering reaching the copper wires, and so permitting the water to come in contact with them and destroy the insulation just as perfectly as if the cable had been chopped in two by an axe. The galvanometer simply tells us that the cable has been wounded so as to impair or destroy its usefulness at a certain point, and we must discover what the injury is and how it is to be remedied. How do we clutch it at that depth? Easily enough. We have strong grapnels, four and five pronged, which we send down at the end of this powerful rope—which is made of wire and manila combined—and when, dragging on the bottom, they catch the cable, hoisting it on board is a simple matter. The hoisting rope passes over that drum, between those guides on the bow, over those two drums and is coiled around this enormous drum, which is worked by a donkey engine. If our grapnels catch too near the end, where there is an actual break, the cable will slip off, of course, and then we must go further along the line and grapple for it again. The tension tells us when we have it, and, when we get it on board, we attach the galvanometer, and know at once, how far from us, either way, the break is.

"When we splice the broken ends or attach a length of new cable, we cut one end wedge-shaped and fit the other to receive it, so as to bring in the closest actual contact the ends of the fine copper wires which we then solder firmly together. Then, over that, we put a wrapping of prepared gutta percha, which makes an absolutely impervious covering, taking great care that in doing so no pin holes or bubbles are left to make further trouble. Over that comes the protecting iron wire and its jute servings, the shield that protects the gutta percha. If a new cable has to be laid it is paid out over the stern. Down below are four huge circular tanks, capable of containing together about 300 miles of deep-sea cable. Our cable, you know, varies in size. The 'deep-sea' weighs about 2½ tons, the 'intermediate' about 4½ tons, and the 'shore ends' about 18 tons to the mile. The object in making the shore ends so much the heaviest is to protect the cable as far as possible against injury from ships' anchors and rocks—whichever we use is coiled in those tanks in such a manner as to guard against the possibility of its kinking, and when being paid out is carried up through guides to traveler drums, on aft to a great drum, which it passes twice to give us the power to regulate the tension upon it, by means of brakes, and thence over small drums and through guides again into the sea. It is a work that must be done very carefully, with every precaution against straining, twisting, or looping the cable, and is necessarily slow.

"The principal job of cable laying performed by this vessel since I have been in command was the putting down of 110 miles between Key West and Punta Rassa. That was in comparatively shoal water, probably not more than 10 fathoms on an average. But before she belonged to the present company—the International Ocean Telegraph Company, owning the lines between this country and Havana and the West Indies—I believe she laid some shorter cables. We have done a great deal of repairing, however. Only recently we repaired this same cable, a little way off the Cuba shore, in a depth of 140 fathoms. Mr. Theophilus Smith was then the electrician in charge of the job. This time I take along as electrician Mr. George Keith, manager of the Cienfuegos cable. He has just been out in the same capacity on board the *Investigator*, on an expedition for the repair of the Cienfuegos cable, which was successfully grappled, hauled up and repaired from a depth of 1,500 fathoms. We will take along about 40 men and engage 20 more at Key West."

The *Professor Morse* is an iron 1,000-ton steamship, built at Glasgow especially for this service, at a cost of about $150,000, and was allowed American registry by special Act of Congress. She has four 30-inch cylinder engines, two screws working independently, which enable her to turn around in her own length, and her interior seems a mass of machinery ingeniously adapted to the uses for which she was designed.

More Chrome Iron Ore.—Monday last Mr. Ferguson, of Moro, showed us a sample of chrome iron ore which he claims to be the best yet discovered in the county. He also claims that there is silver in the rock, and thinks from surface indications that a large silver-bearing ledge is somewhere in the neighborhood and only waiting for the lucky finder to tap it.—*South Coast.*

Forty thousand pounds of antimonial ores from the mines of Humboldt county, Nevada, have been brought in to Winnemucca.

Useful Information.

Encouraging Scientific Investigation.

Mr. Uriah A. Boyden, of Boston, Mass., has deposited with the Franklin Institute the sum of $1,000 to be awarded as a premium to "any resident of North America who shall determine by experiment whether all rays of light, and other physical rays, are or are not transmitted with the same velocity." The following conditions have been established for the award of this premium:

1. Any resident of North America, or of the West India islands, may be a competitor for the premium; the southern boundary of Mexico being considered as the southern limit of North America.

2. Each competitor must transmit to the Secretary of the Franklin Institute a memoir, describing in detail the apparatus, the mode of experimenting, and the results; and all memoirs received by him before the 1st of January, 1878, will, as soon as possible after this date, be transmitted to the committee of judges.

3. The board of managers of the Franklin Institute shall, before the 1st of January, 1879, select three citizens of the United States, of competent scientific ability, to whom the memoir shall be referred; and the said judges shall examine the memoirs and report to the Franklin Institute whether, in their opinion, and, if so, which of their memoirs is worthy of the premium. And, on their report, the Franklin Institute shall decide whether the premium shall be awarded as recommended by the judges.

4. Every memoir shall be anonymous, but shall contain some motto or sign by which it can be recognized and designated, and shall be accompanied by a sealed envelope, endorsed on the outside with some motto or sign, and containing the name and address of the author of the memoir. It shall be the duty of the Secretary of the Franklin Institute to keep these envelopes securely and unopened until the judges shall have finished their examination; when, should the judges be of opinion that any one of the memoirs is worthy of the premium, the corresponding envelope shall be opened, and the name of the author communicated to the Institute.

5. Should the judges think proper, they may require the experiments described in any of the memoirs to be repeated in their presence.

6. The memoirs presented for the premium shall become the property of the Franklin Institute, and shall be published as it may direct.

Steel and Iron Car Axles.—At a recent convention of railway men in New York, a report was made by a committee appointed to consider different materials for car axles. The first point considered was the relative duration of iron and steel axles. On this and the other points involved information has been asked from members of the association and others, and the reports of the master mechanics and master car builders have been carefully looked over for points of interest in this connection. A large number of roads are experimenting to a greater or less extent with steel axles, and the performance is being watched. From all experiments there is no doubt that the initial strength of a steel axle is greater than that of an iron one. The disputed point is that of duration of service and ultimate cost of work done. The Pennsylvania railroad is the heaviest consumer of steel axles, and though they show a much longer wear to the one-sixteenth inch on special lots of axles, they have no returns as yet on the general result. The Fort Wayne road claims to have trouble with steel axles breaking. The C., B. & Q. has had some steel axles which have broken, but they were made from the earlier and harder grades of steel. The general summing up seems to be as follows: The steel axles cost twice as much as good iron ones, and it is not yet decided whether they will run twice as long, so as to counterbalance cost, or whether there is the further merit of extra safety to warrant their use.

Export of American Implements.—One of the best markets for American implements for husbandry is South Africa. There we compete with Great Britain as well as in her other colonial possessions in Australia and New South Wales. These British possessions and Germany are the largest markets for American hoes, shovels, forks, etc. The trade centers we have not yet reached direct are Austria, Denmark, the East Indies, China, Italy, Spain, Turkey and Greece. In South America our best markets are the Argentine Republic, Chile, Colombia, Uruguay and Peru. Cuba and Porto Rico use quite a number of our implements, but the Dutch and French West Indies San Domingo and Hayti know nothing of the American plow.

Whitewash.—Good lime slaked with sour milk, and diluted with water till it is about the consistence of ordinary whitewash, is recommended by the *Landwirth* as an excellent coating for woodwork. Fences, rafters, partitions, etc., are effectually protected against the weather for at least 10 years by this application. The casein of the milk in combination with the lime forms a permanent film, which dries so quickly in warm weather that heavy rains falling directly after it has been laid on will scarcely affect the work.

Suggestion on Wood Specimens.—In a library in Warsenstein, near Cassel, in Germany, in the agricultural department, is a novel collection of books. At first glance they appear like rough blocks of wood, but upon closer examination it will be found that each one is a complete history of the particular tree which it represent. From the back of the book the bark has been removed from a space large enough to admit the scientific and common name of the tree. One side is formed from the split wood of the tree, showing its grain and natural fracture. The other shows the wood where worked smooth and varnished. One end shows the grain of the wood as left by the saw, and the other the finely polished wood. On opening the hook one finds the fruit, seeds, leaves and other products of the tree; the moss which usually grows upon its trunk and the insects which feed upon various parts of the tree. To this is added a plainly printed description of the habits, usual location and manner of growth of the tree, all forming a complete history of each kind of timber represented, and in form readily understood by all.

Pigment of the Hair.—Mr. H. C. Sorby, the eminent microscopist, whose name is intimately associated with spectrum analysis, has determined that the coloring matter met with in human hair is due to four quite different and well-characterized pigments. Of these, two, however, serve to modify the tint of the hair to only a very limited extent. The general color is mainly due to a black and a brown-red pigment, both of which can be easily obtained in a separate form and used like water-colors. All the various tints of black, brown, dark and lighter red, and most of the pale tints are easily proved to be due to a variation in the total and relative amount of these two substances. This Mr. Sorby has shown by a series of comparative analyses. These facts have some bearing on ethnology, and afford a probable explanation of certain changes in the color of hair occasionally met with, but not yet fully understood.

Relation of Brain Weight to Mental Ability.—Mr. C. Clapham says, in the last volume of the West Riding Lunatic Asylum reports: "My observations agree with those of Wagner, that weight of brain does not indicate any close relation to intellectual power, and also that aboriginal races are not to be distinguished for smallness of brains. In fact, the ancient Britons, and I may add the ancient Gauls also, were remarkable for good sized, nay even large brains." This statement is borne out by the testimony of the most competent craniologists of the day.

Human Temperature in the Tropics.—We learn from the *Medical Times and Gazette* that Surgeon Major Johnston has made an extensive series of observations in India, on the subject of the normal temperature of the body in the tropics, and has found that, contrary to the general opinion, it is rather lower than the average temperature in the north. In one series of observations he found the mean axillary temperature to be 97.63°, and in another, 97.74°.

Good Health.

Brain Work and Brain Abuse.

When we hear that a man has killed himself by excessive brain work we feel that we should like to have the witnesses in court in order that we might rigidly cross-examine them. What sort of work was it? Was it brain work pure, or was it mixed up with anxiety, worry, and excitement? What were the man's habits? Did he indulge overmuch in what are called stimulants? Did he deprive himself of a just allotment of sleep? If all these questions could be asked and answered we suspect it would be found that the man who is supposed to have died of excessive mental energy died rather of want of fresh air and exercise, of too much fire-water in some form or another, of horrible financial embarrassment, of late hours, and of excitement other than those pure work breeds in the human brain. A distinction is sometimes drawn between imaginative work and intellectual work proper; and the former is said to be the more wearing and the more dangerous. But we suspect there is a fallacy lurking here. Imaginative work, being more exhilarating and producing a greater sense of joy, is no doubt more exciting, but then it necessarily lasts for a shorter time. "Violent delights have violent ends" is as true of imagination as of love. The imagination periodically stops of itself and cannot be made to go on save by those stimulants which, as we have said, help to kill. A man of imagination never shortened his days by allowing his imagination to exercise itself spontaneously; but it is quite conceivable that more than one has done so by artificially calling on it. The imagination should not be so treated. It is too holy a gift and too delicate an instrument to be thus casually instigated to exertion not self-generated. No doubt, at bottom, it is a question of use and abuse, as it is of other forms and capacities of energy. Life is almost certainly not shortened, perhaps a trifle lengthened, and is unquestionably much improved in value, by intellectual vigor; but we fear the people who never think, though their fronto-parietal sutures may ossify early, will continue, as heretofore, to cumber the earth for a greater number of years than they deserve.

Dietetic Experiments.

A carefully noted experience is that recorded in *Nature*, by Dr. T. L. Nichols, an American physician resident in England, who related particulars of a "dietetic experiment" upon himself which he made with a view to solving a difficulty as to the quantity of food per diem which would best sustain health. He began on November 5th, his food being chiefly bread, fruit, milk and vegetables. During the experiment he had taken no flesh meat, wine, beer, spirits, tea, coffee or tobacco. The first week he lived on bread, milk, fruit, and vegetables, the total weight being 3 lbs, 9½ oz., costing 3s. 1d. (about 75 cts.), *i. e.*, a daily average of 8 3-14 oz., costing 5 2-7d.; this was slightly below his standard of 6d. a day. He felt better and clearer and brighter than usual. The second week he studied quality rather than cheapness, his food being "Food of Health," milk and fruit. Total weight, 4 lbs. 4½ oz.; cost, 3s. 8d. (85 cts.); average per diem, 9 5-7 oz., costing 6 2-7d., and nothing could have been better, physiologically, than the effect of that food upon him. His digestion was simply perfect, and the action of the whole system as good as it could be. He then discontinued milk as unnecessary. For the third week the total amounted to 3 lbs, 2 oz., equal to 1s. 9d. (43 cts.), giving an average of 7 1-7 oz. of food, costing only 3d. per day. Milk was not so cheap for food as Gloster, Dutch, and American cheese, because they had to pay for the water it contained. Doctors recommended 2 or 3 lbs. of food daily to repair the waste of the system; but he asserted that the weight of brain atoms and nerve force could not be measured. The food eaten had to be disposed of at great cost of life and strength, and he believed the wisest plan was to eat the smallest quantity that would properly support the body. The fourth week, his food being similar, weighed 3 lbs. 6 oz., costing 1s. 2½d. (30 cts.), giving an average of 8 oz., equal to 2d. per day. He considered 8 oz. the minimum and 12 oz. the maximum quantity of food that should be taken per day. The total weight of his food during the four weeks was 14 lbs 6 oz., costing 9s. 3½d., (about $2.30); average per week, 3 lbs. 9½ oz.; per day, 8 oz., costing per week, 2s. 5d, and per day 4 1-7d. He then added soups, puddings, eggs, etc., and the fifth week his food weighed 3 lbs. 12½ oz., costing 3s. 4d., being at the rate of 8 4-7 oz., at 5 5-7d. (or 12 cts.) per day. For the sixth week the figures were 63 oz., at 2s. 1d, or 9 oz. at 3 4-7d. per day. He had taken the diet without stimulants, and had experienced a constant increase of health and strength and power to work, and his weight had remained at about 12 st. 2 lbs. (170), except that at the end of the fourth week there had been a slight decrease, which had since been recovered.

Fruits in Diseases.

A writer in the *Herald of Health* makes a strong statement regarding the use of ripe fruits in diseases. We cannot say it is not true and yet we should apply the "fruit cure" with some precautions. He says: "There is scarcely a disease to which the human family is heir, but the sufferings therefrom would be greatly relieved by the use of the very fruits which are now so strictly forbidden. Further, many of these diseases would be conducted to a safe termination under the free use of fruits, because of the acids they contain. When our troops were fighting the Seminoles in Florida, many sick with diarrhea and dysentery cured those diseases by stealing from the hospitals into the fields and eating fruits, blackberries especially. Since our very pleasant and profitable excursion of last month, I have sent several children, suffering with cholera infantum and with dysentery, to the peach orchard, with most gratifying results—and where they could not be carried to the orchards to pick and eat the fruit fresh from the trees, I have had the little sufferers fed with sound fruit with equally good results. In typhoid fever, in the treatment of which such extraordinary care is enjoined as regards diet, fruits are not only highly grateful to the patient, but even work very favorable results. A physician who had been sick some weeks with typhoid fever, says his diarrhea was cured by peaches. He says: "I first ate the first half of a large peach, and feeling no ill effects, I ate the other half, then one or two more, and the next day as many as I desired." He adds: "My bowels got better at once, and my recovery was rapid." Since our last meeting, a typhoid fever patient, who had been about three weeks sick, and though imploring, was allowed no diet but beef tea or milk punch, came under my care for a few days. I immediately ordered the free use of peaches and grapes, and the diarrhea at once ceased, and at the end of five days, when I relinquished the care of her, she was convalescent. My impression is, the disease runs a shorter and more favorable course under the free use of fruits than under the usual method of treatment, and I think the use of stimulants rarely required when fruits are freely used. In the treatment of scarlet fever and diphtheria, our summer fruits and many of the vegetables are most useful, and to the best may be added some, or, in fact, any foreign fruits. There is scarcely a disease accompanied with fever, but grapes and bananas may be freely given to the patient. In the treatment of dysentery, I would greatly prefer ripe, sound fruits, peaches especially, to any medicine that can be suggested."

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W. B. EWER.....SENIOR EDITOR.

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GOOD HEALTH.—Brain Work and Brain Abuse; Dietetic Experiments; Fruits in Diseases, 7.
MISCELLANEOUS.—Manufacture of Iron Sponge; The Dayton Gravel Mine, 2. Location and Boundaries of Mining Claims; New District in Mono County; The Pumelo—A Lusus Naturæ; The Perennial Streams of Kansas; Hydraulic Well-Boring; The Sutro Tunnel Mortgage, 6. Searching for an Ocean Cable, 7

NEW ADVERTISEMENTS.

New York Screw Plates, Dunbam, Carrigan & Co., S. F.

The Week.

Though broken into hy our leading holiday, business during the past week has been fairly active. Among our merchants trade has heen quite as good as usual at this season of the year, the early movement of the wheat crop having imparted to this department of business an amount of vigor not felt in most other callings. That our farmers intend to realize early on their crops is shown by the fact that nearly 100,000 centals of wheat have already been sold, to arrive, the past experience of growers tending to establish the impolicy of holding their cereal for higher prices. With these free sales money will soon he more plentiful in the interior, serving to enliven things there, while a portion of it returning to the city in liquidation of hills due, will have a like effect here also. Only in the matter of real estate is there much cause for complaint, it being difficult to effect sales just now at prices satisfactory to vendors. Still the opportunities for getting hargains here are not numerous, holders, unless forced to do so, heing unwilling to sell at a sacrifice, the ease with which money can he raised on this species of property rendering this class comparatively small.

The heat during the past week has, in many parts of the interior, heen extreme, the thermometer at various places having touched 110° in the shade. As a consequence several cases of sun-stroke have occurred, some of which have proved fatal, a result not usually attending this phenomenon in California. Vast swarms of crickets, and in one or two instances also grasshoppers, have made their appearance in some parts of northern Nevada. As yet these iusects have done no great harm, though it is feared they may do so before disappearing. The week has hrought with it no decisive results from the Indian war in Idaho, though it is expected that something determinate will soon he reached in that quarter.

The 37 deaths reported at the Coroner's office last month are classified as follows: Natural causes, 12; suicide, 10; accidents, 7; murder, 3; stillborn, 2; unknown, 2; starvation, 1.

Surface Boundaries of Quartz Claims.

The only United States law regulating the manner in which mining claims upon the puhlic domain shall he located, and a Government title thereto ohtained, is that passed hy Congress in July, 1866, with its suhsequent amendments, which provides that when the claimant to a mineral vein has made the requisite improvements upon his claim, he may file in the local land office a diagram of the same, so extended laterally or otherwise, as to conform to the local laws, customs and rules of miners, and enter such tract and receive a patent therefor, granting the right to follow the vein or lode with its dips, angles and variations to any depth, although it may enter the land adjoining, which adjoining land shall he sold, suhject to this condition. In construing this act the Commissioner of the General Land Office has decided that where the apex of the lode or vein was within the limits of a claim, the vein may be followed to any depth laterally, though it enter the land adjoining.

Now a case has come up in Colorado calling for adjudication, in which a section of a vein is claimed where through a deflection of its course the apex or croppings ran outside the surface houndaries of the claimant. It seems that in a case of this kind, such section would, under the local customs and regulations of the district and the laws of Colorado, have helonged to the claimant, or at least the latter offered these customs, regulations and laws as evidence on that point. The Supreme Court of that State, however, charged the jury to disregard the same on the ground that any rights so acquired were merged in the United States patent suhsequently ohtained hy the claimant, who the court ruled could not, under the circumstances, hold possession heyond his side lines, as against a party who had subsequently located the adjoining ground and patented it.

In delivering its opinion, the court remarked that the law of Congress in declaring that the claimant of a vein or lode might follow the same *to any depth*, even though its dip carry it into adjoiuing land, had limited the direction in which he might pursue the same heyond his side lines, this heing dowuwards and not in a longitudinal direction. The law presumes that the locator of a claim, before preparing his diagram preliminary to making application for a patent, will have made such developments on the lode as will enahle bim to trace the same and determine its course. As the act does not prescribe that the plat shall be of any particular form, he can so shape thc diagram as to include all parts of the lode within its houndaries, however irregular or tortuous its course. If, for any reason, he neglects to do this, he cannot come to the courts for relief, nor can he seek it under State or Territorial legislation or local rules and customs, since these are of no effect where they come in conflict with the law of Congress. While the phraseology of the act of 1866 is a little obscure, the latter must he construed in accordance with its evident intent, which was to require of the locator due diligence in tracing the course and meanderings of his lode, and to fix the extent to which he might pursue and claim it with as much certitude and exactness as possible. The act contemplates that a lode exists and has been discovered within the houndaries of the tract for which a patent is sought. An unfounded assumption of this fact heiug in contravention of of the law, would, if made to appear, suffice to defeat an application for a patent and probably vitiate one if issued. It is not the purpose of the act to grant surface ground without a discovered lode, this being the principal thing and tbe ground a mere incident.

As the act of 1866 does not require the tract applied for to be of any prescribed shape, so also does it not fix the time within which application for a patent shall he made. The locator may hold his claim and extract the ores therefrom under local, State or Territorial laws and regulations as long as he may deem it expedient to do so, taking all the time necessary to uncover or otherwise trace his lode throughout its entire length. He is just as secure iu its possession under this sort of tenure as any other. After receiving a patent, however, he holds under the United States laws, with the requirements of which he must then comply and to which all these other laws must he suhordinated.

The ahove decision accords, no douht, with the law governing in the case as it evidently does with equity and common sense, and will he sustained should the question be carried to a higher court. It declares against the right of a locator to "swing" or shift his claim to cover a section of a vein lying wholly without its surface houndaries, confining him to that portion that outcrops on the original location.

In view of the conflicting interests that must ever arise out of the plan of allowing locators to follow their lodes heyond the planes drawn vertically through the surface lines hounding their claims, it hecame a serious question whether it would not be politic to adopt the practice that prevailed under the old Spanish rule and which now ohtains in most European mining countries, of confining locators absolutely within their surface lines, as has heen recommended hy Commissioner Raymond and other thoughtful and experienced mining experts. Under the restriction suggested it might hecome expedient to enlarge the area of this class of claims, which might, perhaps, be extended to 1,000 feet in width, confined to 1,500 feet in length, as at present, giving the miner everything found within these limits, hut suffering him to take nothing heyond. An arrangement of this kind would shut out all these complicated questions which are now constantly arising as to the character of geological formatious, lodes, ore bodies, etc., and which have lead to so much costly, vexatious and ruinous litigation.

Iron Smelting in California.

Of all tbe mining and metallurgical industries none seems to he more closely identified with modern civilization than those connected with coal and iron. Iron forms the backhone of every implement in use from the sewing needle to the walking-heam of an ocean steamer; from the jack-knife of the Yankee school hoy to the telegraph wire and the rail that bind together Europe, Asia, and America. Coal is the stored-up energy, the swarthy giant that makes the white man master of the planet. Without these two materials where would he the proud mastery of nature which is the boast of the century?

It has always seemed to us a source of considerahle solicitude for those interested in the permaueut development of a thriving and happy community on this side of tbe Rocky mountains, that the lack of good and ahundant coal fields seemed to make forever impossihle the growth of an iron industry in our midst. Were such not the case we could feel certain that when our gold aud silver mines had heen long exhausted, we should still have a source of permanent prosperity among us. And one, too, that would hring to us not the class of reckless and unprincipled adventurers that are liahle to he attracted hy gold and silver, hut hy men of a different class, who would he permanent additions to our population and whose presence would do much to remove the unsettled feeling that pervades the whole community, whose support depends upon a single industry, especially when of such an uncertain nature as the mining of gold and silver.

Now, we have learned from various sources that there is irou ore in plenty in not only one hut many localities upon this coast, and iron ore of the best quality. How true these statements are we have not, at present, meaus of saying. But we have been assured by many persons that tbese ores have been found free from sulphur and phosphorous in many places. The absence of a good bituminous or anthracite coal has prohahly preveuted the prospecting of these properties. But of late much has heen done in the way of improvement in the smelting of iron which we deem may enahle us to reduce our ores, if we are indeed possessed of them, even without the best of coals.

We publish for this reason on another page a paper on "The Manufacture of Irou Sponge," read hy J. Ireland, M. E., hefore the Iron and Steel Institute in London. As to many of our readers the suhject may be au entirely uew one, we give a brief *resume* of the matter.

As is well known to every one, hy the modern methods of smelting iron, the product of the hlast furnace is not pure malleahle iron, hut a highly carhureted suhstance, known as pig or cast iron, which differs from pure iron in many of its properties, and out of which wrought iron can he obtained only hy removing the carhon and certain other impurities hy some one of several long and costly operations. The idea had often suggested itself to many to interrupt the process hy shortening the furnace so as to ohtain the iron just as it had been reduced to the metallic state, and hefore it had heen changed into the fusible carhuret. In this way the iron would he ohtained in a purer state, hecause not only would it not yet contain carhon, hut other impurities would not yet have entered into it, as the temperature would not he high enough to reduce them. Thus a large amouut of fuel would be saved, and a purer iron produced. This has long been the ohject of many ingenious and costly experiments. For a long time there seemed to he no prospect of success. The iron when so reduced consisted of thread and sponge-like matter, mixed with the gangue of the ore in the most hopeless confusion. The iron being free from carhon was almost infusihle, and so was the ganguc. No means such as fusion would he ahle to separate them. Besides heing so finely divided, the ore coming out of the furnace red hot was as inflammahle as coal, and of course on heing exposed to the air immediately hecame oxidized and useless.

Things were in this condition when thc Siemans Process of "Mixed Steel Preparation" came into vogue and suggested a possihle use for this "iron sponge."

This process consisted in melting down on the hearth of a Siemans-Martin furnace cast-iron, and adding to it wrought-iron scrap. By this means a mixture was produced with less carhon than the cast-iron and more tban the wrought. In other words, a steel could he produced containing any desired amount of carhon. The supply of wrought-iron scrap running short, the price of it rose and the margin of profit hecame so small that the use of iron sponge was suggested and found to he of great value. This in turn has given new impetus to the study of this suhject, and it is prohahle that there is much to he looked for in this directiou in the future.

For hoth the Siemans-Martin furnace and the Blair process good coal is not required, for the gas from any of the ordinary gas producers is capahle of producing the heat required, the most ordinary fuels, as peat, lignite, etc., furnishing the gas.

It will he noticed that Mr. Irelaud, in speaking of his experience with the iron ore of Warora, says: "The condition being that the ore must he reduced by Warora coal. The ore is magnetic, very rich and pure, containing over 70% of metallic iron. The coal, on the other hand, is very poor, heing a hlack lignite, containing ahout 15% of ash and 10% water, hesides a great numher of sulphur pyrites, and it will not coke."

It seems to us that this is worse than many of our California coals. The Mt. Diahlo coal, for example, is even hetter than that. It does not contain more than 10% water and only 5% to 7% of ash, while, of course, it contains, as does the Warora, much iron pyrites.

Mr. I. goes on to say: "Some 20 tons of the Indian ore have been operated upon and iron sponge of uniform and excellent quality produced, part of which has heen made into first-class tool steel and some of it melted in a eupola into pig metal.

"The Indian government are so far satisfied with the experiment that the question of erecting works on this principle for the manufacture of iron and steel in India, is now under consideration hy the council."

We call attention to the last part of the above paper with régard to the subsequent manipulation of the iron sponge. Mr. I., speaking from experience, says it can now he worked up either into wrought iron, steel, or melted down in a cupola to pig iron.

"The first outlay in plant and the wear and tear are reduced to a minimum. To produce 100 tons of the metal per week, the cost of the plant will be about £2,500 — two reducing furnaces, two cupolas, fan or hlower, small engine and boiler, hoist and ore hreaker, heing all that is required."

It seems to us that to say the least here is an opportunity for some of our capitalists who do not know where to find legitimate fields for investing. Let some one who has $20,000 or $30,000, or some half dozen who can command that capital, look up this suhject and if the facts are as we have represented we feel certain that there will have heen gained a source of income not only to themselves hut of permanent henefit to all. We would remark in closing that steel would probably he the most profitahle article of manufacture.

Notices of Recent Patents.

Among the Patents recently ohtained through Dewey & Co.'s Scientific Press American and Foreign Patent Agency, the following are worthy of mention:

Truss.—Deveron & Lachman, S. F. The improvement consists in forming the pad which presses against the rupture with a flat face and with the sides raised and curved, so as to inclose and hold iu place a dished metallic plate, which forms the hack. On the back of this plate is pivoted a peculiar fastening, so arranged that the waist or hody-helt to support the truss may he attached to it at several different places either way from the center, and, as the fastening is itself pivoted, the pad may accommodate itself to any angle or position that suits the wearer. The dished plate forming the back of the truss has boles in its crown, so that when the rupture presses on the flat surface of the pad and presses it inwards, the air hetween the inuer surface of the pad and plate may be expelled through these holes. As soon as pressure is withdrawn, the elasticity of the pad brings it hack to place, thus pressing the rupture hack. The air then enters the cavity of the truss through the holes in the plate and the pad acts as a cushion on the rupture. At one end of the side of the pad is an opening, through which projects the stud over which the buttock-helt is fastened, and as this huttock-helt holds that end of the truss in position and the waist-helt holds it up, the truss is held securely in place, while at the same time it will accommodate itself to any pressure that may be brought upon it.

Hay Press. — Jacoh Price, San Leandro. The ohject of this invention is to provide a machine for haling hay, in which the hay or straw can he fed continuously into one end of the machine, compressed into one single continuous hale as it passes through the machine, and cut off into proper sized bales at the opposite end of the machine, thus forming a continuously operating hay press. The machine is operated horizontally in order to avoid lifting the hay or straw to any considerahle hight, and the facilitating of feeding it into the end of the machine, although it may he operated in a vertical position if preferred.

Wardrobe or Clothes Guard.—S. F. This invention relates to a novel construction for a clothes guard, which may he hoth fixed and portahle, and it consists in the formation of a prismatic frame having a finished front and door, so that the device may he fitted into the corner of a room and form a complete wardrohe, of which the walls of the room form the sides. A receptahle is formed in the corner part, and is provided with a peculiarly-constructed door, which may be adjusted to fit any form or depth of base hoard which may surround the room.

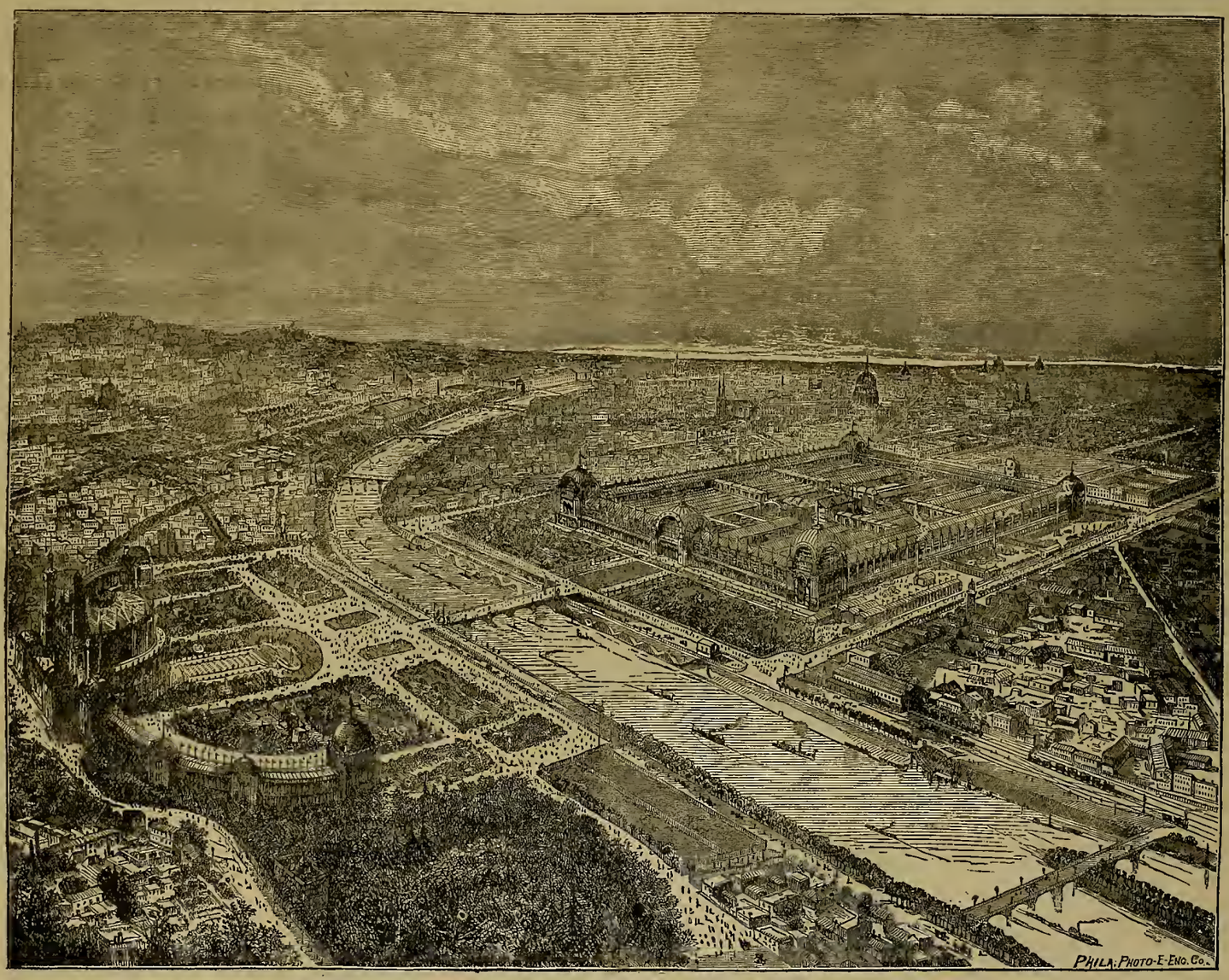
The Paris Exposition.

Our illustration on this page gives a bird's-eye view of the grounds and buildings of the great International exposition which is now in progress at the great city of the French. The reader will note at a glance the magnificent style in which the French people have provided for displaying their industrial strength and achievements. Indeed it calls forth wonder from every student of human progress as he notes the recuperative power which secures such an industrial triumph from a people which has so lately risen from the dust of conquest and invasion. The deeds of the French people are the world's pride and marvel.

It will be seen that the exposition grounds are well within the compass of the rapidly growing city. It will be seen, too, that the plan embraces both level and elevated sites, with the river Seine running between them. The exposition buildings consist principally of colonnade extending along the wings of the palace there is a fine view of the park as well as of the exhibition building, and of the city itself. On the outside the Palace of the Trocadero is adorned by a cascade of water falling from a hight of 26 or 30 feet into an ornamental lake, round which extend the elegantly laid-out grounds, in which figure many striking sculptures by well-known artists. Concerts and other entertainments will be held in the Trocadero.

The open space between the Seine and the Trocadero palace is about 500 yards in length, lying along a steep hillside, sloping toward the river. The hillside is steep—so steep, in fact, that a horse draws a cab containing two persons up the sloping streets adjoining with much labor. The tract has been converted into a charming and varied landscape, ornamented with a number of curious buildings, and containing delightful gardens, fountains and cascades. Among the curious buildings, some are of Japanese and Chinese construction, and some are model cottages of Sweden, Norway, Switzerland, Egypt and Turkey. One structure is the divided by two galleries extending between them and their whole length. At the four corners of the rectangle rise higher pavilions, surrounded by domes, which reach to a hight of 132 feet, and are constructed in a semi-Oriental style that is decidedly pleasing. In front of it are beds of rhododendrons, grass plots, statues, fountains and conservatories. The terrace is 280 meters in length by 20 in width. At intervals are placed gigantic sculptures, symbolizing the principal participators in the exhibition.

France has reserved for herself a large part of the space provided for exhibits in the Champ de Mars building. She occupies one-half of the vast edifice—all the galleries on the left of the central portal, besides a large part of the middle gallery are set apart for fine arts. On the right side, the visitor on entering will come upon the English exhibit. Next to France, England occupies the largest space—one-eighth of the palace—allotted to any nation. Next to England in the main building comes the United States. The space allotted to the United States is about one-fifth of that occupied by Great Britain. Although our exhibitors were



BIRD'S-EYE VIEW OF THE BUILDINGS AND GROUNDS OF THE PARIS EXPOSITION OF 1878.

two vast edifices, both newly erected; the one located on the hights of Trocadero and the other in Champ de Mars. The building on the hill of the Trocadero is to be a permanent palace and is in many respects a remarkable edifice. It is placed on the crest of the hill, and looks to the northward over the new suburb springing up on the west side of Paris, and in the southerly direction down on the river and the Champ de Mars. On the left side of the engraving is seen the building on the Trocadero. In the center, rising above a grand portal about 100 feet wide, is a pavilion, or grand dome, with a tower on each side reaching up about 250 feet. Flanking the rotunda are galleries reaching out in horse-shoe shape toward the river, the frontage being 1,600 feet. The rotunda is an immense structure, containing the largest concert hall in the world, with a capacity of seating 6,000 or 8,000 persons. The towers form the highest points in Paris. They are furnished with lifts worked by hydraulic power for the elevation of visitors by the hundred or two at a time. From the top of the towers the view takes in the Valley of the Seine for miles on each side, and every prominent building in the city is easily distinguishable. The grounds around are beautifully laid out, and from the Algerian pavilion, of the purest Arabian architecture.

Below these interesting structures on the hillside runs the Seine river, separating the Trocadero from the Champ de Mars. This river, instead of being an interruption to the plan of exhibition, has been made one of its most picturesque attractions. The whole length of it between the Trocadero side and the Champ de Mars has been appropriated by Commissioner General Krantz, and used exclusively for the purposes of the exhibition. The Pont de Jena, which connects the two banks of the river, has been widened and inclosed for a crossing place, and it looks as if it had been newly built for the occasion.

Crossing the bridge we come to the Champ de Mars, the main grounds of the exposition, shown in the large enclosure in the center of the engraving. The Champ de Mars building is an immense temporary structure, quadrangular in form. It is the main exposition building, and is more than 2,000 feet in length by 1,000 in width. The east and west fronts having long machine galleries measuring 2,310 by 120 feet. The principal front is located parallel to the Seine, 700 feet from the quay. The general plan of the building includes three pavilions, among the last in the field and have been hampered by the meager appropriations of Congress, our department is among those which were the first ready. The quality of the exhibit is reported as quite creditable, and in some particulars as beyond competition. Our contributions are arranged in eight groups, which may be briefly indicated as follows: Works of Art, Educational Apparatus, Furniture and Accessories, Textile Fabrics, Mining Industries and Products, Mechanical Industries and Apparatus, Food Products and Agricultural Implements.

A CORRECTION.—In an article entitled "New Almaden and Guadalupe," in the issue of May 25th, 1878, we made the statement that the walls of the old condensers of the Guadalupe absorbed 6,000 flasks of quicksilver before any was obtained from them. Mr. B. B. Thayer informs us that the correct figures are 600, and not 6,000.

A BIG deposit of ice has been found in the Olympic mountains, Washington Territory, and the *Dispatch* says it can be brought to Seattle at a cost of $5 per ton. Ice now costs $80 per ton there.

ACTION TO SET ASIDE LAND PATENTS.—A dispatch from Washington dated June 29th contains the following item of news on public land matters: "Secretary Schurz to-day officially requested Attorney-General Devens to institute proceedings against the Central Pacific Railroad Company to set aside the patents issued to that Company for about 20,000 acres of land situated within the claimed limits of the Manuel Dias grant, in Marysville land district. This grant was rejected by the Supreme Court in March, 1873. The lands were patented to the railroad Company under dates of March, 1872, March, 1875, and December, 1875. Secretary Schurz holds, that under the principles announced by the Supreme Court in the case of Newhall vs. Sanger, these lands, being within the limits of a private grant, were excepted from the operation of the railroad grant, and patents were issued for them erroneously, without authority of law. He also invites the Attorney-General's attention to the decision of Secretary Chandler in the California case of J. W. Harbison and others, in which it was held that the patents for lands then in question were erroneously issued, and the Commissioner of the General Land Office was instructed, July 12th, 1876, to call upon the Central Pacific Railroad Company to return them. Schurz informs the Attorney-General that this request has not been complied with."

METEOROLOGICAL SUMMARY FOR JUNE.—The report of the U. S. Signal Service officer, of San Francisco, for the month of June is summarized as follows: The mean hight of barometer for the month was 29.91; mean temperature, 58.2; mean humidity, 73.02; prevailing winds, southwest; highest barometer, 30.148; lowest, 29.745; highest temperature, 73°; lowest, 52°; monthly range, 22; greatest velocity of wind, 34 miles per hour; total number of miles traveled by wind, 8,711; total rainfall, .01 inches. Rainfall in June during former years: 1872, .04 inches; 1873, .02 inches; 1874, .14 inches; 1875, 1.02 inches; 1876, .04 inches; 1877, .04 inches.

THE Southern express from Philadelphia was thrown from the track near Claymont, Del., on the first inst., and the engineer and fireman were killed.

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No models are required in European countries, but the drawings and specifications should be prepared with thoroughness, by able persons who are familiar with the requirements and changes of foreign patent laws—agents who are reliable and permanently established.

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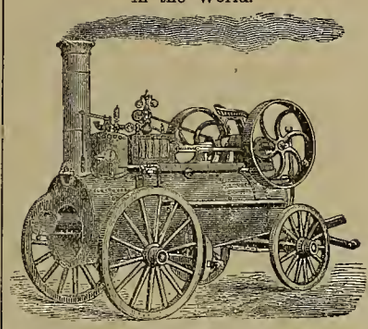

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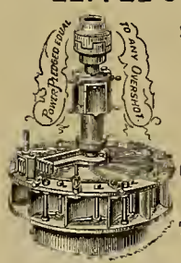

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Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending June 15		Week Ending June 20		Week Ending June 27		Week Ending June 29	
Alpha	12¾	11½	13½	11c	12½	10½	10⅞	10½
Alta	8¾	6⅝	8¼	7c	8¼	7⅛	8	7¼
Andes	60c	45c	50c	35¾	40c	35c	40c	35c
Alps	10c	5c	10c	1.10	45c	45c	90c	50c
Argenta	45c	30c	40c	35c	40c	....	40c	....
Baltimore Con	....	....	....	....	....	....	....	....
Belcher	3	2.55	4.05	3⅛	5¼	4.20	4.55	4½
Belmont	55c	50c	60c	50c	50c	25c	40c	30c
Best & Belcher	15	13½	14½	13½	15	13⅝	14½	13¾
Bullion	6¼	4.45	5¾	5¼	5¾	4.80	4½	4.70
Bechtel	2.40	1½	2½	1.70	2½	1⅔	1⅔	1½
Bodie	3.45	1⅔	2.25	2.10	4½	4.10	5	4.40
Benton	2.55	2	3½	3.15	2.30	2.10	2.20	2.05
Caledonia	1.95	1.70	2.15	1⅞	2¼	2.15	2.20	2.15
California	21	20¾	19⅞	18	18⅝	15	15¼	15¼
Challenge	1	....	....	....	....	....	75c	....
Chollar-Potosi	23½	27	26	25	26½	25	28½	27
Confidence	4	....	4	....	4½	4	....	....
Con Imperial	1	85c	95c	85c	95c	80c	80c	74c
Con Virginia	14⅝	14½	14	13⅜	13⅜	13	12½	12¾
Crown Point	5¼	4.10	5¼	4.95	7¼	5¼	6¼	5⅔
Dayton	25c	....	....	....	....	....	....	....
DeFrees	35c	25c	35c	25c	50c	25c	30c	20c
Day	50c	40c	45c	40c	50c	40c	....	....
Eureka Con	60	58	60	59	57	56½	57½	....
Exchequer	4.05	3	3.40	3.15	3¾	2.90	3	2.90
Endowment	85c	80c	85c	80c	80c	75c	80c	....
Gen Thomas	....	....	....	....	....	....	....	....
Grand Prize	5¼	4	4	3¾	4.65	3.90	3.90	3.80
Gila	80c	70c	75c	65c	85c	60c	65c	60c
Golden Chariot	35c	....	....	....	....	....	35c	....
Gould & Curry	7	6¾	7	6¾	6¾	6¼	6¾	6¼
Hale & Norcross	7⅛	7	7¼	7	7⅜	7	7¼	7¼
Hussey	30c	20c	30c	25c	25c	10c	20c	15c
Julia	8¼	7¼	8¼	5¾	7½	6	7½	6¾
Justice	4	3.80	3¾	3.45	4	3⅜	3.85	3¾
Jackson	3½	3¼	3	....	....	....	....	....
Joe Seates	....	....	....	....	....	....	....	....
K K Con	....	....	....	....	....	....	....	....
Kentuck	3	2¾	2.80	2¾	3¼	2.85	3.20	3
Kossuth	....	....	....	....	....	....	....	....
Lady Wash	....	....	3	2¾	....	....	....	....
Leopard	45c	40c	45c	40c	55c	40c	50c	40c
Leviathan	15c	10c	15c	....	20c	15c	50c	30c
Leeds	1¼	1	1¼	....	1.15	1	1	....
Modoc	1.80	1¼	1.65	1¼	1¼	1.20	1.15	1.05
Manhattan	6¾	6¼	6¾	6¾	7	6¾	6¾	6¾
Meadow Valley	....	....	....	....	....	....	....	....
Mexican	12¾	10¾	13¼	12	14½	12¾	14½	13
North Con Virginia	....	....	....	....	....	....	....	....
New York	45c	35c	40c	....	70c	55c	70c	65c
Northern Belle	8¼	7¼	8¾	8¾	11¾	10¼	11¾	11
New Coso	1.40	90c	85c	80c	75c	40c	35c	....
Navajo	15c	10c	20c	15c	50c	30c	40c	....
Occidental	70c	65c	....	....	50c	....	....	....
Ophir	53	43¾	49	46¾	49¾	43¾	50	46¾
Overman	13½	12¾	13⅞	12¾	13½	12	12¾	12
Pauther	....	....	....	....	....	....	....	....
Raymond & Ely	4	3.60	4	3¾	4	3.85	....	....
Rock Island	....	....	....	....	....	....	....	....
Savage	11¾	10¾	11¾	10¾	11⅜	11	11⅜	11
Seg Belcher	21	18	20	....	20	....	....	....
Sierra Nevada	4	3¾	4.30	4	5¼	4.20	5¼	4.40
Silver Hill	1.55	1¼	1.40	1¼	1.30	1.20	1.20	1.10
Snecor	20c	15c	15c	....	15c	10c	15	10c
Solid Silver	2¾	2¼	2¾	....	2.80	2¾	2¾	....
Star	1.40	50c	....	....	1¾	1.35	1¾	1.40
Trojan	45c	50c	35c	30c	40c	25c	25c	....
Union Con	5¼	4.90	5¾	4.95	6	5	6¼	5¾
Utah	9¼	8	8¾	8¾	8¾	8¼	9	8¾
Wells-Fargo	40c	35c	40c	25c	35c	10c	15c	....
Woodville	40c	30c	30c	....	30c	....	30c	....
Yellow Jacket	9	8¼	8¾	8	8¾	7⅝	8	7¾

Sales at S. F. Stock Exchange.

Friday A. M., June 28.

110 Alta 8
150 Aluha ..... 10¾@10¼
100 Andes ..... 40@35c
1605 Bullion ..... 4¾@4.60
135 Best & Belcher ..... 14@14¼
850 Belcher ..... 4½@4.35
100 Benton 2.20
1535 California ..... 15¼@15¾
510 Con Virginia ..... 12¾@12¾
860 Crown Point ..... 5¾@5¾
60 Con Imperial 80
1000 Crown Point Ravine 20c
75 Challenge 75c
235 Caledonia ..... 2.20@2.15
110 Chollar 27½
170 Exchequer ..... 2.90@3
310 Gould & Curry 6¾
370 Hale & Nor ..... 7¼@7¾
600 Justice ..... 3.80@3.85
3720 Julia 8¾
350 Kentuck ..... 3@3.05
720 Leviathan ..... 8@30c
935 Mexican ..... 13¾@13¾
200 Mides 2¼
235 New York ..... 70@65c
430 Ophir ..... 46¾@47
150 Overman 12
370 Savage ..... 11¾@11¾
220 Sierra Nevada ..... 4.45@4.40
220 Silv r Hill 1.20
75 Solid Silver 2¾
80 Succor 10c
550 Utah ..... 8¾@8¾
325 Union Con ..... 5¾@5¾
175 Ward ..... 1.45@1.35
600 Wells-Fargo 15c
500 Woodville 30c
330 Yellow Jacket ..... 7¾@7¾

AFTERNOON SESSION.

150 Alpa 50c
45 Alpha 10¾
825 Bodie ..... 4.40@4½
550 Bullion ..... 4.65@4.70
60 Best & Belcher 14¾
470 Belcher ..... 4.55@4.50
1070 Bechtel 1¼
500 Belmont ..... 40@30c
300 Caledouia 2.20
330 Con Virginia 12¾
620 Crown Point 6
430 Con Imperial 80c
490 California 15¼
50 Chollar 27
1650 DeFr-es ..... 25@30c
80 Eureka Con 57½
490 Endowment 80c
1100 Falcon 10c
350 Golden Terra ..... 1.30@1¾
50 Golden Charlot 35c
300 Grand Prize 3.90
910 Gila ..... 65@60c
300 Hussey ..... 20@15c
100 Hillside 2.55
30 Hamburg 2¾
50 Hale & Nor 7¾
1535 Independent ..... 1¾@1.45
25 Justice 3.85
1570 Julia ..... 6¾@6¾
350 Leeds 1
1875 Leopard ..... 45@40c
1070 Modoc ..... 1.15@1.05
20 Manhattan 6¾
80 Mexican 13¾
10 Northern Belle ..... 11¾@11¾
105 Best & Belcher ..... 14½@14¾
890 Belcher ..... 4.55@4½
730 Bechtel 1¼
300 Boyle 40c
980 Bodie 5
1150 Belmont ..... 35c@30c
1130 Con Virginia 12¾
855 California 15¼
285 Chollar ..... 23@28¾
1300 Crown Point ..... 6¾@6¾
2800 Con Imperial 74c
145 Caledonia 2.20
700 C P Ravine 25c
2150 DeFrees ..... 25@20c
200 Endowment 80c
520 Exchequer ..... 3@2.95
150 Eureka Con 57½
1800 Falcon 10c
275 Gould & Curry ..... 6¾@6¾
30 Grand Prize ..... 3.90@3.80
50 Gila 60c
300 Hussey 20c
510 Hale & Nor ..... 7¾@7¾
100 Hamburg 2¾
150 Hillside ..... 2¼@2.50
2385 Independent ..... 1¾@1.45
650 Justice ..... 3.70@3¾
3355 Julia ..... 7¾@7¾
50 Kentuck 3.20
500 Leviathan 35c
490 Leopard ..... 50@45c
50 Leeds 1
985 Mexican ..... 14@14¼
60 Manhattan ..... 6¾@6¾
300 Modoc 1.15
750 New York 70c
20 Northern Belle 11
1080 Ophir ..... 50@49
370 Overman ..... 12¾@12¾
6315 Sierra Nevada ..... 5@5¼
1225 Succor ..... 1.10@1.15
540 Savage ..... 11¾@11
210 Silver Hill ..... 1.20@1.10
800 Silver Prize 20c
130 Star 1¾
350 Trojan 25c
100 Tiptop ..... 1.40@1.35
320 Utah ..... 9@8¾
3055 Union Con ..... 6@6¾
100 Wells-Fargo 15c
2400 Ward ..... 1.45@1.35
500 Woodville 30c
140 Yellow Jacket ..... 8@7¾
150 Young America 10c
50 New Coso 35c
1715 Navajo 40c
360 Ophir ..... 48¾@49
450 Phenix 2¼
100 Star ..... 1.40@1¾
450 Sierra Nevada ..... 4¾@4.45
520 Savage ..... 11¾@11¾
310 Tiptop 1.35
350 Union Con ..... 5¾@5¾
200 Ward ..... 1.45@1.40
150 Young America 10c
50 Yellow Jacket 7¾

Saturday A. M., June 29.

235 Andes 35c
80 Aluha ..... 10¾@10¾
860 Alta ..... 8@7¾
100 Argenta 40c
450 Alps 90c
585 Bullion ..... 4¾@4.70
200 Benton 2.05
50 Gould & Curry ..... 6¾@6¾
70 Hale & Nor ..... 7¾@7¾
100 Justice ..... 3.90@3.70
200 Julia ..... 6¾@7
300 Leviathan 30c
60 Mexican ..... 14¼@14¾
90 Ophir ..... 49¾@50
30 Overman ..... 12¾@12
130 Sierra Nevada ..... 5¼@5¾
30 Savage ..... 11¾@11
300 Trojan 27½c
60 Union Con ..... 6¾@6¾
250 Ward ..... 1.45@1¾
100 Woodville 30c
40 Yellow Jacket 8

Tuesday A. M., July 2.

100 Alta ..... 7¼@7¾
20 Alpha 10¾
85 Best & Belcher 14¾
60 Bullion ..... 4.75@4¾
70 Belcher ..... 4.55@4.50
200 Belmont 30c
100 Con Virginia ..... 12¾@12¾
40 California 15¾
20 Chollar 28¾
40 Crown Point 6¾
35 Caledonia ..... 2.30@2.35
100 Crevice 22c
400 Con Imperial ..... 79@81c
80 Exchequer ..... 3@3.05
50 Gould & Curry 6¾
120 Hale & Nor ..... 7¾@7¾
110 Justice ..... 3¾@3.80
70 Julia ..... 6¾@6.70
50 Kentuck ..... 3¼@3¾
300 Leviathan 34c
40 Mexican ..... 14@2000
500 Mint 13c
500 North Carson 5c
20 Overman 11¾
50 Ophir ..... 51@51¼
830 Pictou 30
70 Sierra Nevada ..... 5¾@5.60
20 Savage 11¾
10 Silver Hill 1.20
650 Trojan ..... 25@27c
138 Union Con ..... 6¼@6¾
40 Yellow Jacket 8

AFTERNOON SESSION.

50 Alta ..... 7¾@8
20 Alpha ..... 10@10¾
20 Best & Belcher 14¾
40 Belcher 4¾
70 Bullion ..... 4¾@4¾
50 Con Virginia ..... 12¾@12¾
10 Chollar 28¾
50 Con Virginia ..... 13@13½
140 Crown Point ..... 5.90@6¼
550 Con Imperial ..... 76@79c
170 Caledonia ..... 1.30@1.35
90 Exchequer ..... 3@3.05
50 Gould & Curry ..... 6¾@6¾
110 Hale & Nor ..... 7¾@7¾
50 Julia 6¾
60 Justice ..... 3.70@3.60
40 Kentuck 3.20
160 Mexican ..... 14¾@14¾
2000 North Carson ..... 5@5c
60 Ophir ..... 49¾@50
20 Overman 11¾
90 Savage ..... 11¾@11¾
140 Sierra Nevada ..... 5¾@5.90
650 Trojan 25c
40 Union Con ..... 6¾@6¾
50 Woodville 30c
20 Yellow Jacket 8

Mining Share Market.

The adjournment, last Saturday, of the two principal Boards over to the 8th inst., left but a fragment of the week for stock transactions, aud, during this, no great amouut of husiness was done. The "Little Board," with the exception of the "Fourth," continued operations in a puhlic way, and on Monday an attempt was made to dispose of shares at auction. This last proved wholly a failure, the entire business done during the week having heen very limited, nor did prices vary mnch from rates prevailing for some days before. After vacation it is expected dealers will take hold with renewed energy, and that, under the developments now considered imminent in the Comstock, a more lively market will early obtain. Going to press this week one day in advance of our usual time, we are without our customary Washoe summary. We are advised, however, that the deep explorations in progress along the Comstock have heen pushed with wontcd diligence, all the leading mines, from Overman to Utah, continuing the scenes of unceasing and energetic work. Along the Gold canyon arm of the mother lode, operations have also been kept persistently goiug, while the "header" of the great Sutro tunnel has been advanced another 50 feet nearer its objective point, having already passed beyond the east wall of the Comstock belt. With the incoming week, it is hoped that further revelations will be made touching the mysteries of Julia and Ophir, each of which the optionists feel certain have heen made the receptacles of a great metallic wealth.

California Board—Latest Sales.

Monday A. M., July 1.

250 Alexander 5¾
30 Alpha ..... 10¾@10¾
50 Alta ..... 7¾@7¾
100 Andes 35c
80 Best & Belcher ..... 14¼@14¾
80 Belcher ..... 4¾@4¾
60 Bullion ..... 4.70@4.85
50 California ..... 15¾@15¾
70 Con Virginia ..... 12¾@12¾
200 Con Imperial ..... 78¢@80c
100 Crown Point ..... 6¼@6¾
50 Caledonia 2¼
70 Endowment 80c
70 Exchequer ..... 3@3.05

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS—STOCKS ON THE LISTS OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business
Alps S M Co	Nevada	13	1 00	May 21	June 25	Ang 6	O D Squire	331 Montgomery st
Belcher S M Co	Washoe	14	1 00	May 14	June 18	July 8	Jno Crockett	419 California st
Caledonia S M Co	Washoe	28	50	May 20	June 24	July 15	R Wegener	414 California st
Crown Point G & S M Co	Washoe	34	1 00	June 5	July 10	July 31	James Newlands	419 California st
Emigrant S M Co	California	2	50	May 28	July 1	July 22	B W Mudge	309 Montgomery st
Hale & Norcross S M Co	Washoe	58	50	May 14	June 18	July 10	Joel F Lightner	309 Montgomery st
Hussey Cou G & S M Co	Nevada	5	15	June 21	July 24	Aug 14	R H Brown	327 Pine st
Justice M Co	Washoe	25	1 00	June 4	July 13	Aug 3	R E Kelly	419 California st
Leviathan M Co	Washoe	7	15	May 28	July 2	July 23	F E Luty	507 Montgomery st
Leopard M Co	Nevada	7	30	June 10	July 15	Aug 5	R H Brown	327 Pine st
Mexican G & S M Co	Washoe	5	50	May 15	June 21	July 10	C L McCoy	419 California st
Mimiletta Belle S M Co	California	2	50	April 3	May 27	July 16	J T McGeoghegan	318 Pine st
New York M Co	Washoe	15	20	May 20	June 25	July 10	D L Thomas	419 California st
Navajo M Co	Nevada	4	25	May 21	June 24	July 15	R H Brown	327 Pine st
Ophir S M Co	Washoe	32	1 00	June 12	July 18	Aug 6	C L McCoy	419 California st
Sierra Nevada S M Co	Washoe	54	50	May 14	June 19	July 8	W W Stetson	309 Montgomery st
Silver Prize G & S M Co	Nevada	2	16	May 28	July 5	July 22	Chas K Clark	111½ Leidesdorff st
Succor M & M Co	Washoe	18	1 00	May 29	July 8	July 25	W H Watson	302 Montgomery st
Savage M Co	Washoe	34	1 00	June 7	July 10	July 30	E B Holmes	309 Montgomery st
Trojau M Co	Washoe	8	25	June 4	July 8	July 29	David Wilder	328 Montgomery st
Utah S M Co	Washoe	20	1 00	June 12	July 15	Aug 2	G C Pratt	309 Montgomery st
Young America M Co	Nevada	10	20	June 27	Aug 1	Aug 21	R H Brown	327 Pine st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Black Hawk G M Co	California	2	25	June 4	July 8	July 29	B S Kellogg	240 Montgomery st
Combination M Co	Nevada	2	10	May 18	June 20	July 16	J G Rily	234 Montgomery st
Comanche M & M Co	California	2	50	May 28	July 9	July 30	W W Traylor	309 Montgomery st
Deer Creek M Co	California	11	50	May 23	June 25	July 12	Geo P Thurston	315 California st
El Dorado Slate Co	California	1	30	May 13	June 20	July 10	J R Jones	524 Sacramento st
El Tesoro S M Co	Lower California	5	5	May 29	July 13	Aug 3	W H Chickering	330 Pine st
Eagle S M & M Co	Nevada	7	15	June 24	July 9	Aug 19	R H Brown	327 Pine st
Father De Smet G M Co	Dakota	1	1 00	June 17	July 22	Aug 19	J A Quinan	404 Montgomery st
Gover M & M Co	California	36	50	May 24	July 10	Aug 1.	W O Wilson	402 Front st
Gold Mountain M Co	California	6	1 00	June 22	July 24	Aug 15	Charles Dore	410 Pine st
Henrietta G M Co	California	3	10	June 7	July 12	Aug 1	F Klosterman	309 California st
Kimberly Coal Co	Alaska	1	1 00	May 29	July 1	July 22	W H Hooke	Pier 4 Stewart st
Monitor Belmont M Co	Nevada	1	50	Apr 23	May 27	July 8	B B Minor	309 Montgomery st
Moore's Flat B G M Co	California	7	25	June 14	July 19	Aug 12	J M Buffington	309 California st
Morgan M Co	California	4	50	June 1	July 8	July 29	John J Raphael	533 Kearny st
Oroville G M Co	California	1	10	June 14	July 18	Aug 13	Ph D Auh	417 California st
Pittsburg G M Co	California	2	6	May 20	June 27	July 18	F Wegener	414 California st
Rhamda M Co	Nevada	1	8	June 21	July 27	Aug 19	J W Few	310 Pine st
Real Del Monte M Co	California	2	30	May 22	June 26	July 15	A Baird	304 California st
Rock Creek M Co	Nevada	2	10	April 25	June 24	July 9	Alfred K Durbrow	309 Montgomery st
Signal S M Co	Arizona	2	50	May 16	June 17	July 9	C S Curtis	419 California st
Summit M Co	California	3	5	May 3	June 18	July 15	J W Clark	318 Pine st
S F Sulphur M Co	Nevada	3	3	June 14	July 18	Aug 12	P M McLaren	310 Pine st
Wm Penn M Co	Nevada	3	2	May 14	June 17	July 17	T B Wingard	328 Montgomery st
Watt B G M Co	California	2	10	June 10	July 16	Aug 6	R Wegener	414 California st

MEETINGS TO BE HELD.

Name of Company.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Best & Belcher M Co	Washoe	Wm Willis	309 Montgomery st	Annual	July 8
Chollar-Potosi M Co	Washoe	W E Dean	419 California st	Annual	July 8
Golden Rule M Co		John B Russell	432 Montgomery st	Annual	July 9
Modoc Con M Co	California	E F Dickens	327 Pine st	Annual	July 9
Overman S M Co	Washoe	Geo D Edwards	414 California st	Annual	July 11
Silver Prize G & S M Co	Nevada	C K Clark	111½ Liedesdorff st	Annual	July 8
Utah S M Co	Washoe	C C Pratt	309 Montgomery st	Annual	July 9
Union Con S M Co	Washoe	J M Buffington	309 California st	Annual	July 15

LATEST DIVIDENDS—WITHIN THREE MONTHS

Name of Company.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
California M Co	Washoe	C P Gordou	Nevada Block	2 00	June 17
Con Virginia M Co	Washoe	A W Havens	Nevada Block	1 00	June 15
Eureka G M Co	California	R Wegener	414 California st	25	April 25
Excelsior W & M Co	California	Geo P Thurston	315 California st	50	June 10
Eureka Con M Co	Nevada	W W Traylor	309 Montgomery st	3 00	June 15
Empire M Co	California	David A Jennings	401 California st	25	June 15
Graud Prize M Co	Nev	R H Brown	426 California st	1 00	Mar 12
Georgia S M Co	Washoe	R Wegener	414 California st	3	April 16
Independence M Co	Nevada	R H Brown		25	June 20
McMillan S M Co	Arizona	A C McMeans	Safe Deposit Bldg	50	June 20
Silver King M Co	Arizona	Wm H Bootho	320 California st	50	May 30
Standard G M Co	Cal	W Willis	309 Montgomery st	1 00	June 10

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's office at San Francisco:

Mammoth Bar G. M. Co.—June 29: Capital stock, $10,0000,000. Directors—William P. Dewey, George L. Peahody, A. H. Haggadon, R. Shoemaker and James M. Seawall.

Folsom G. M. Co.—Juue 29: Capital stock, $6,000,000. Directors—Cabel H. Maddox, Benjamin Flint, C. P. Jenkham, Albert Heath and C. E. Buckingham,

Price and Davis M. Co.—July 1: Capital stock, $10,000,000. Directors—George W. Hopkins, J. H. H. Williams, Clinton Gurnee, E. F. Stone and N. G. Andrews.

What Makes a Good Expert.—The tests of scientific expertuess, says Dr. Beard in the *Popular Science Monthly*, are: Distrust of the senses; the recognition of the relation of inductiou to deduction; avoidauce of all sources of error, in observation, experiment, or reasoning; the appreciation of the relative importance and non-importance of real or supposed facts; the ability to distinguish reality and its semhlance, especially between the subjective and the objective; and, wbat indeed follows from the other three tests, the maintenance of mental equilibrium during experimental researches. The reputation of an expert is acquired primarily through other experts, and secoudarily through the judgment of mankind. Expertness has its various degrees; there are experts, and experts, and experts: the highest experts are the originators, the explorers, the pioneers, the founders, the creators of science; the lowest experts are the followers, the gleaners, the treasurers, the curators of what others have discovered, and who simply repeat and retain the experiments of genius. The highest experts—the Newtons and Galileos, the Harveys and Jenners of science—must stand at first alone, with no other expert at hand, hy which to estimate their relative hights and strength; it is their necessity and their glory to educate experts, hy whom their own merits are to he tested; they must create the standard by which they are to he judged; their critics will he their own offspring.

The Sioux Indians, of Montana, are getting hold: A few days since two of them meeting W. C. Gillette, an old settler, compelled him to give up his saddle and a valuable gold watch, under a threat of taking his life.

The Eureka Consolidated mining company has levied assessmeuts amounting to $100,000, and dishursed in dividends to its shareholders a sum total of $2,350,000.

Patents and Inventions.

List of U. S. Patents Issued to Pacific Coast Inventors.

[From Official Reports for the Mining and Scientific Press, Dewey & Co., Publishers and U. S. and Foreign Patent Agents.]

By Special Dispatch from Washington, D. C.

Week Ending June 18th.

Trace and Pad Buckles.—George E. Bales, Seattle, Washington Ter.

Book Holders.—James D. Brown, Suisin City, Cal.

Trusses.—Duncan Deveron and Herman Lackmann, S. F.

Wardrobes.—Michael Doyle, S. F.

Vineyard Plows.—Milton Ross, San Jose, Cal.

Seed Sowers.—William A. Horrall and Joseph J. Verckler, Chico, Cal.

Ammonia or Ether Machines.—Eugene Moreau and Jas. W. Haggerty, S. F.

Trademarks.

Carbonate of Soda.—Charles R. Burrage, S. F.

Cream of Tartar.—Charles R. Burrage, S. F.

Medicinal Compound.—Charles R. Burrage, S. F.

Coal Oil.—John E. Miles, S. F.

Prospecting for Coal.

As prospecting for coal is continually in progress on this coast, the following method in vogue in Pennsylvania, as described in the *Coal Trade Journal*, may he of value: The ordinary tools of the borer consist of a set of iron rods from one to one and one-half inches in diameter, half a dozen drills or chisels, a pump or sludger, a windlass and ropes, a pair of handles, and a set of wrenches. The rods are usually from 8 to 16 feet in length and are screwed together hy pin and socket joints. A well is sunk down to solid material, if solid ground can he reached within 10 or 15 feet of the surface, and a wooden conductor is lowered and placed in a perfectly perpendicular position—the upper end reaching to the surface. If firm material cannot he reached without sinking to the depth of 20 feet or more, the hore hole is generally started without sinking any preliminary shaft. A large "hit" (sometimes an augur is used), cuts a hole in the clay, and when the material will no longer stand, a gas pipe is lowered. The clay hit is now reduced in size to work inside of this pipe, and as the hole progresses, the pipe is driven down hy the aid of a battering ram. In stony ground it is often a trying and tedious undertaking to fit the pipe down to the solid rock. The drill hole is generally made from two and one-half to three inches in diameter. In favorable material about two feet are cut before the tools are withdrawn to clean the hole, and if necessary, renew the chisel. The tools are suspended on the end of a spring pole, aud the drillers strike into the ground hy bearing on the handles, making a rotary motion at each blow, in order to maintain a round hole. About 13 hlows are given to a circuit. As the hole deepens the progress of sinking becomes slower, owing to the greater time required in raising and loweriug the tools. The debris of the hole is raised hy a pump, and is carefully examined, as it is poured on the ground. The thickness of the different kinds of material passed through is entered in a note hook or journal. When approaching coal, unusual care and vigilance are exercised, hy the horers, the tools heing raised every six or eight inches. An experienced horer can generally tell the moment he strikes coal, by the altered sound of the chisel, and hy the increased speed of cutting. When coal is tapped, the tools are withdrawn, and the hole thoroughly cleaned. The rods, on heing let down, are carefully marked, and after six inches or a foot has been cut into the coal, are again withdrawn, and the pump sent down for the horings, which, on heing raised, undergo the most minutc examination, to determine the character of the coal.

Gold in Osceola.—A solid gold nugget, worth something over $50, says the Ward *Reflex*, was shown us, on Saturday, hy J. W. Rounds, taken from Dry gulch, in the neighborhood of Osceola. We are told this is the first nugget of any consequence that has been taken from Dry gulch. It presents the appearance of having been melted and afterwards submitted to the action of water for an indefinite period. Osceola will certainly, sooner or later, he the center of an excitement that will compare favorahly with many that have attracted the attention of this coast. This district lies in eastern Nevada, near the Utah line.

The Winnemucca *Silver State* says: The owners of the Tiger mine, in Sacramento canyon, are putting up a five-stamp mill on the property. The ledge is developed to a depth of 150 feet from the surface and is well defined and quite rich in gold as far as prospected.

Woodward's Gardens were never more attractive than at present. Besides three lions already mentioned, six monster living alligators, several iguanas and a hoa-constrictor have just been added. New stars are constantly engaged for the Pavilion exercises. Rates of admission as usual.

Examine the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $50,533,429.04. Lewis C. Grover, President; L. Spencer Cohle, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

Model Maker and Machinist.—I. A. Heald, No 514 Commercial St., San Francisco, (fourth floor).

GENERAL MERCHANDISE.

[WHOLESALE.]

TUESDAY M., July 2, 1878.

BAGS—Jobbing.
Eng Standard Wheat..11 @11½
Nerille & Co's
Hand Sewed, 22x36. 11 @11½
21x39..... —@—
23x40..... 13 @13½
Machine Sewd, 22x36. —@11
Flour Sacks, halves.... 8½@10½
Quarters..... 5½@ 6
Eighths..... 4 @ 4½
Hessian, 60 inch.....15 @ —
45 inch..... 9½@10
40 inch..... 9 @ —
Wool Sacks,
Hand Sewed, 3½ lb..47½@50
4 lb do..... 52½@ —
Machine Sewed..... 47½@ —
Standard Gunnies.....14 @15
Bean Bags..... 7 @ 8

CANDLES.
Crystal Wax.....17 @—
Eagle.....12 @—
Patent Sperm..... 30@34

CANNED GOODS.
Assorted Pie Fruits,
2½ lb cans.....2 75 @3 00
Table do.....3 75 @4 25
Jams and Jellies..4 25 @ —
Pickles, hf gal.....3 50 @ —
Sardines, qr box..1 65 @1 90
Hf Boxes.....3 00 @ —
Preserved Beef,
2 lb. doz.....4 00 @ —
do Beef, 4 lb.doz.6 50 @ —
Preserved Mutton,
2 lb. doz.....4 00 @ —
Beef Tongue.....6 50 @ —
Preserved Ham,
2 lb. doz.....6 50 @ —
Deviled Ham, 1 lb.
doz.....5 50 @ —
do Ham, ½ lb doz.3 00 @ —

COAL—Jobbing.
Australian, ton..7 00 @ 7 25
Coos Bay..... 6 50 @ 7 00
Bellingham Bay. 6 50 @— —
Seattle..... 6 50 @ 6 50
Cumberland.....14 00 @— —
Mt Diablo.....4 75 @ 6 00
Lehigh.....22 00 @— —
Liverpool..... 7 00 @ 8 00
West Hartley... 7 50 @ 9 00
Scotch..... 6 50 @ 8 00
Scranton.....13 00 @16 00
Vancouver Id... 7 50 @— —
Charcoal, sack.. 75 @— —
Coke, bbl..... 60 @— —

COFFEE.
Sandwich Id, lb. 21½@— —
Costa Rica..... 18 @ 18½
Guatemala..... 17 @ 18½
Java..... 22½@ 23
Manila..... 17½@— —
Ground, in cs... 25 @— —

FISH.
Sac'to Dry Cod.. 5 @ 5½
do in cases.. 6½@ 7
Eastern Cod..... 7½@— 7½
Salmon, bbls.... 9 00 @10 00
Hf bbls..... 5 00 @ 5 50
1 lb cans..... 1 25 @1 30
Pkld Cod, bbls..22 00 @— —
Hf bbls.....11 00 @— —
Mackerel, No. 1.
Hf Bbls..... 9 50 @10 50
In Kits..... 1 85 @ 2 10
Ex Mess..... 3 25 @— —
Pkld Herring, bx 3 00 @ 3 50
Boston Smkd Hg 70 @— —

LIME, Etc.
Lime, Sta Cruz,
bbl..... 2 00 @ 2 25
Cement, Rosendale..... 2 75 @ 3 50
Portland..... 4 75 @ 5 50
Plaster, Golden
Gate Mills.... 3 00 @ 3 25
Land Plaster, tn 10 00 @12 50

NAILS.
Ass'ted sizes, keg 3 25 @ 4 00

OILS.
Pacific Glue Co's
Neatsfoot, No 1..1 00 @ 90
Castor, No 1..... 1 10 @ —
do, No. 2..... 1 05 @ —
Baker's A A.....1 25 @1 30
Olive, Flagniol....5 25 @5 75
Possel..... 4 75 @5 25
Palm, lb..... 9 @ —
Linseed, Raw, bbl. 72 @ —
Boiled..... 75 @ —
Cocoanut..... 55 @ —
China nut, cs..... 82½@ —
Sperm..... 1 40 @ —
Coast Whales..... 40 @ —
Polar, refined.... 45 @ —
Lard..... 90 @1 00
Oleophine..... 26 @ 27
Devoe's Brill't..... 26 @ 28
Photolithe..... 23 @ —
Nonpareil..... 35 @ 36½
Eureka..... 40 @ 42½
Barrel kerosene... 20 @ —
Downer Ker..... 40 @ 42½
Elaine..... 42½@ —

PAINTS.
Pure White Lead. 9½@ 10
Whiting..... 1½@ —
Putty..... 4 @ 5
Chalk..... 1½@ —
Paris White..... 2½@ —
Ochre..... 3½@ —
Venetian Red..... 3½@ —
Averill Mixed
Paint, gal.
White & tints...2 00 @2 40
Green, Blue &
Ch Yellow.....3 00 @3 50
Light Red.....3 00 @3 50
Metallic Roof...1 30 @1 50

RICE.
China Mixed, lb... 6½@ —
Hawaiian..... 7 @ —

SALT.
Cal. Bay, ton....15 00 @22 50
Common.....10 00 @12 00
Carmen Id.....13 00 @22 50
Liverpool fine...20 00 @22 50

SOAP.
Castile, lb..... 10 @ 10½
Common brands.. 4½@ 6
Fancy brands..... 7 @ 8

SPICES.
Cloves, lb..... 45 @ 50
Cassia..... 22½@ 25
Nutmegs..... 85 @ 90
Pepper Grain..... 15 @ 17
Pimento..... 15 @ 16
Mustard, Cal.,
½ lb glass.....1 50 @ —

SUGAR, ETC.
Cal. Cube, lb..... 11½@ —
Powdered..... 11½@ —
Fine crushed..... 11½@ —
Granulated..... 11 @ —
Golden C..... 9½@ —
Cal. Syrup, kgs... 70 @ —
Hawaiian Molasses 26 @ 30

TEA.
Young Hyson, Moyune, etc.... 35 @ 50
Country pckd Gunpowder & Imperial..... 50 @ 50
Hyson..... 30 @ 35
Fooo-Chow O..... 53 @ 60
Japan, 1st quality 40 @ 60
2d quality..... 25 @ 35

METALS.

[WHOLESALE.

TUESDAY M., July 2, 1878.

IRON.—
American Pig, ton..... .....28 00 @30 00
Scotch Pig, ton..... 28 00 @30 00
White Pig, ton..... 23 00 @— —
Oregon Pig, ton..... — @— —
Refined Bar..... 2½@ 3
Horse Shoes, keg..... 5 00 @— —
Nail Rod..... —@ 7
Norway, Oval..... —@ 7
COPPER.—
Sheathing, lb..... 34 @ 35
Sheathing, Yellow..... 21 @ —
Sheathing, Old Yellow..... 12 @ —
Composition Nails..... 24 @— —
Composition Bolts..... 24 @— —
STEEL.—
English Cast, lb..... 13 @ 14
Anderson & Woods, ordinary sizes..... 15 @— —
Drill..... 15 @— —
Fiat Bar..... 14 @ 19
Plow Steel..... 8½@ 12½
TIN PLATES.—
10x14 I O Charcoal..... 7 50 @ 8 50
Banca Tin..... 23 @— 24
Australian..... 17 @ 17½
ZINC.—
By the Cask..... 9 @— —
Zinc, Sheet 7x3 ft, 7 to 10, lb..... 9 @— 10
7x3 ft, 11 to 14..... 10 @— —
8x4 ft, 8 to 10..... 11 @— —
8x4 ft, 11 to 10..... 11 @— —
NAILS.—
Assorted sizes..... 3 15 @3 25
QUICKSILVER.—
By the lb..... 43 @ 45

LUMBER.

TUESDAY M., July 2, 1878.

CARGO PRICES OF REDWOOD.

Rough, M	13 00	Fencing	18 00
Refuse	9 00	Flooring and Step	28 00
Clear	23 00	Narrow	30 00
Clear Refuse	13 00	2d quality	25 00
Rustic	23 50	Laths	3 50
Refuse	18 00	Furring, lineal ft	¾
Surfaced	20 00		
Refuse	14 00		
Flooring	20 00		
Refuse	12 00		
Beaded Flooring	23 00		
Refuse	13 00		
Half-inch Siding	16 00		
Refuse	14 00		
Half-inch Surfaced	20 00		
Refuse	14 00		
Half-inch Battens	16 00		
Pickets, Rough	11 00		
Rough, Pointed	12 50		
Fancy, Pointed	18 00		
Shingles	1 75		

PUGET SOUND PINE.
RETAIL PRICE.

Rough, M	18 00
Fencing	18 00
Flooring and Step	28 00
Narrow	30 00
2d quality	25 00
Laths	3 50
Furring, lineal ft	¾

REDWOOD.
RETAIL PRICE.

Rough, M	18 00
Refuse	14 00
Pickets, Rough	15 00
Polluted	16 00
Fancy	22 50
Siding	20 50
Surfaced & Long Beaded	30 00
Flooring	30 00
Refuse	22 50
Half-inch Surfaced	30 00
Rustic, No. 1	30 00
Battens, lineal ft	
Shingles, M	2 00

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & Co.]

SAN FRANCISCO, July 2, 3 P. M

LEGAL TENDERS in S. F., 11 A.M., 99¾@99¾. SILVER, 22@22½
GOLD in New York, 100¾.
GOLD BARS, 890@910. SILVER BARS, 8@15 ₱ cent. discount.
EXCHANGE on New York, ½%; on London bankers, 49@49½. Commercial, 50; Paris, five francs ₱ dollar; Mexican dollars, 94@95.
LONDON Consols 95½; Bonds, 108¾.
QUICKSILVER in S. F., by the flask, ₱ lb, 42½c.

To Mining Secretaries.

An amendment to Section 336 of the California Code, taking effect July 1st, 1874, provides that in addition to the regular publication, daily or weekly, of the assessment and sale notices as heretofore,

PERSONAL NOTICE

Must be served as provided in the following quotation from the law:

"The notice must be personally served upon each stockholder, or in lieu of personal service, must be sen through the mail, addressed to each stockholder at his place of residence, if known, and if not known, at the place where he principal office of the Corporation is situated."

The above refers to the ASSESSMENT NOTICE only. Advertisers in the MINING AND SCIENTIFIC PRESS will be furnished with copies of assessment notices printed on slips suitable for serving personal notice under this law at short notice.

DEWEY & CO., Publishers.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official noticee of their companies in this paper, as the cheapest appropriate medium for the same.

Gover Mining & Milling Company.—Location of principal place of business, San Francisco, California. Location of works, Amador County, near Drytown, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the twenty-fourth day of May, 1878, an assessment (No. 36,) of fifty cents per share was levied upon the capital stock of the corporation, payable immediately in gold coin or legal currency of the United States, to the Secretary, at the office of the Company, Room 8, No. 402 Front Street, San Francisco, Cal.

Any stock upon which said assessment shall remain unpaid, on Wednesday, July tenth, 1878, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the first day of August, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

W. O. WILSON, Sec'y.
Office, Room 8, No. 402 Front Street, San Francisco, Cal

Seaton Mining Company.—Location of principal place of husiness, San Francisco, Cal. Location of works, Drytown Mining District, Amador County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the twenty-sixth day of June, 1878, an assessment, (No. 14,) of seventy-five (875) dollars per share was levied upon the capital stock of the corporation, paysble immediately in U. S gold coin, to the Secretary, at the office of the Company, Room No. 58, Nevada Block, northwest corner Pine and Montgomery Streets, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the thirtieth day of July, 1878, will be delinquent and advertised for sale at public auction, and unless paymeut is made before, will be sold on Wednesday, the twenty-first day of August, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

JOEL F. LIGHTNER, Sec'y.
Office, Room No. 58, Nevada Block, northwest corner of Pine and Montgomery Streets, San Francisco, Cal.

Summit Mining Company.—Location of Principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 3,) levied on the third (3) day of May, A. D., 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Boring, J C	32	1200	$60 00
Byers, W T	38	700	35 00
Brown, M B	45	200	10 00
Edwards, J E	30	700	35 00
Gautier, Gustave	156	200	10 00
Gladwell, G S	132	400	20 00
Hallsted, A D	162	100	5 00
Ingorson, H H	53	500	25 00
Ingerson, H H	54	500	25 00
Knievel, M	33	1200	60 00
Knievel, Geo	176	100	5 00
Knievel, Geo	177	100	5 00
Knievel, Geo	178	100	5 00
Knievel, Geo	179	100	5 00
Knievel, Geo	180	100	5 00
Knievel, Geo	181	50	2 50
Knievel, Geo	182	50	2 50
Knievel, Geo	183	50	2 50
Knievel, Geo	184	50	2 50
Knievel, Geo	185	50	2 50
Knievel, Geo	186	50	2 50
Knievel, Geo	187	50	2 50
Knievel, Geo	188	50	2 50
Knievel, Geo	189	50	2 50
Knievel, Geo	190	50	2 50
Knievel, Geo	191	200	10 00
Knievel, Geo	192	200	10 00
Kellogg, H W	46	1000	50 00
Knoll, M	134	100	5 00
Martin, A, trustee	96	100	5 00
Martin, A, trustee	97	100	5 00
Martin, A, trustee	105	100	5 00
Martin, Robt	29	200	10 00
Quigley, Chas	136	200	10 00
Quigley, Chas	158	200	10 00
Quigley, Chas	159	200	10 00
Peck, E A	9	1000	50 00
Purkitt, J H	44	200	10 00
Purkitt, J H	51	500	25 00
Purkitt, J H, trustee	55	500	25 00
Porter, Frank	166	50	2 50
Porter, Frank	167	50	2 50
Porter, Frank	168	50	2 50
Porter, Frank	169	50	2 50
Scotland, T	13	6250	312 50
Sneider, John M	174	200	10 00
Thompkins, M M	27	1200	60 00
Tardiff, Wm	50	500	25 00
Turner, J W	63	200	10 00
Turner, J W	64	200	10 60
Turner, J W	65	200	10 00
Tyson, Fred'k	67	500	25 00
Tyson, Fred'k	68	500	25 00
Thompson, Richard	24	1200	60 00
Whiting, F B	28	200	10 00

And in accordance with law, and an order of the Board of Directors, made on the third (3) day of May, A. D., 1878, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, on Monday, the fifteenth (15) day of July, A. D., 1878, at the hour of two o'clock P. M., of said day, to pay said deliuquent assessment thereon, together with costs of advertising and expenses of the sale.

J. W. CLARK, Sec'y.
Office, Room 6, No. 318 Pine Street, San Francisco.

Office of Union Consolidated Silver Mining Company, San Francisco, June 15th, 1878.—The annual meeting of the stockholders of the Union Consolidated Silver Mining Co., for the election of Trustees for the ensuing year, and for the transaction of such other business as may properly come before it, will be held at their office, 309 California Street, Rooms 3 and 4, second floor, over Aetna Insurance office, San Francisco, California, on Monday, July 15th, 1878, at two o'clock P. M. Transfer books will be closed Friday, July 5th, 1878, at three o'clock P. M. J. M. BUFFINGTON, Sec'y.

Pacific Plumbago Mining and Manufacturing Company. Principal place of business, 228 and 230 Main Street, San Francisco. Location of works, 228 and 230 Main Street, San Francisco, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the seventh day of June, 1878, an assessment o ten (10) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary of said Company, at Room 18, No. 636 Clay Street, San Francisco

Any stock upon which this assessment shall remain unpaid on the eighth day of July, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the twenty-fifth day of July 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

FRANK F. GILBERT, Sec'y.
Office, No. 636 Clay Street, Room 18, San Francisco, Cal

Wide Awake Prospecting & Mining Company.—Location of principal place of business, San Francisco, Cal. Locatiou of works, Picket-Post, Pinol County, Arizona.

Notice is hereby given that at a meeting of the Board of Directors, held on the thirteenth day of June, 1878, an assessment (No. 4,) of two (2) cents per share was levied upon the capital stock of the corporation, payable immediately in U. S. gold coin, to the Secretary, at the office of the company, Room 6, No. 232 Sutter Street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the thirteenth day of July, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the thirteenth day of August, 1878, to pay the delinquent assessment, together with costs of advertising and the expenses of sale. By order of the Directors, C. QUEEN, Sec'y.

Office, Room 6, No. 232 Sutter Street, San Francisco Cal

Amusements.

CALIFORNIA THEATER.

BARTON & LAWLOR.....Managers
BARTON HILL.....Acting Manager.

GEO. RIGNOLD.

Bush Street, above Kearny. Open every evening. Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance.

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THOMAS MAGUIRE.....Manager.

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Corner Market and Powell Streets. Open every evening and Saturday matinee. Box office open daily

BUSH STREET THEATER

CHAS. E. LOCKE,.....Lessee and Manager
FRANK LAWLOR.....Acting Manager

HARRIGAN & HART.

Open every evening and Saturday Matinee.

PACIFIC MAIL STEAMSHIP CO.

The Company's Steamers will sail as follows, at 12 M.:
CITY OF PEKING.....July 10.
For YOKOHAMA and HONGKONG.

GRANADA.....July 5th.
For Panama and New York, calling at Mazatlan, San Blas, Manzanilo and Acapulco, connecting at Acapulco with Company's Steamer for all ports south of Acapulco.

Tickets to and from Europe by any line for sale at the lowest rates.

CITY OF NEW YORK....July 8th, at 12 o'clock, noon, or on arrival of the English Mails, for HONOLULU, AUCKLAND and SYDNEY.
$10 additional is charged for passage in Upper Saloon.

DAKOTA.....July 10.
For Victoria, Port Townsend, Seattle, Tacoma, and Olympia, connecting at Tacoma with Northern Pacific Railroad for Portland, Oregon.

Tickets must be purchased before 11 A. M. on day of sailing, at Wharf office.

For freight or passage apply at the office corner First and Brannan streets.

WILLIAMS, BLANCHARD & CO., Agts.

The Poorman's Quartz Mill.

THE MEXICAN ARASTRA—Americanized.

A Mill everybody can buy. It pulverizes and amalgamates, settles and concentrates; is cheap and practical, and will work gold or silver ores to a high percentage. Just suits the times. Manufactured by

ALMARIN B. PAUL,
Room 20, Safe Deposit Building, S. F.

AMERICAN

WATCHES!!

BUY THE BEST.

The New York Watches,

Made in Springfield, Mass.

Full Plate Movements Have the Following Advantages:

The winding parts of the Watch are superior to any in use in a full plate movement, for the following reasons:

They are attached to the barrel bridge on the top plate, so that in case of repairs any piece of winding part can be taken without removing the movement from the case or taking off the dial.

There is also an improvement in the manner of letting down the main spring, which is done by means of a pin attached to the click.

The winding parts are so arranged that there is hardly a possibility of either the ratchet, click, or click-spring breaking. There is a turning made in which to place the click, so that when the strain comes on it, the back rests against the solid plate, thus making it impossible for it to break.

In case the main spring breaks, the barrel can be taken out without disturbing any other part of the Watch.

The train of the Watch is run into the solid pillar plate and not into bridges screwed to the plate, as is usual; this avoids all danger of any alterations in the depthing taking place.

The hair spring stud is attached to the balance cock in such a manner that it can always be adjusted to its original position.

The escapement is the most improved form of a lever escapement now in use.

The manufacturers claim an advantage in our potence, as it is not liable to change its position and disarrange the escapement, as is often the case in full plate Watches; also on the bearing for the lower center wheel pivot, the plate being so constructed as to allow a long bearing.

The movement can be taken down and put up with less trouble than any other movement made in the United States, showing it to be the most perfect in simplicity and durability.

Sold at the lowest rates possible for perfect time-keepers, by

GEO. FINCK,

Importer and Manufacturer of

Watches, Jewelry and Silverware,

At the very Lowest Prices.

N. W. Corner of Kearny and Geary Streets. Opposite Market St., San Francisco.

[Where he has been established over nine years.]

Watches and Jewelry repaired in the best and most substantial manner.

ESTABLISHED IN 1856. G. F. DEETKEN, Manager.

PIONEER REDUCTION WORKS,

Channel Street, Foot of 4th, San Francisco.

☞Gold Silver and Copper Ores purchased at highest rates, also reduced on commission. Working tests made.

From A Patentee.

SAN FRANCISCO, July 1st, 1878.

MESSRS. DEWEY & CO., PATENT SOLICITORS.—*Gentlemen:*—On the first of June I made application for Letters Patent for an improvement on a fire-resisting and non-conducting compound through your Patent Agency, and was agreeably surprised to receive official notice that the patent had been allowed on the 15th day of June, in the unprecedented short time of fifteen days from the time it left here.

This is the seventh patent which I have procured through your Agency, entire satisfaction being given in each case, and I shall take great pleasure in recommending your firm for reliability and promptness to all inventors with whom I may come in contact.

I have now two more cases ready, and shall make the application through your Agency.

Yours Truly, GEO. R. EVANS.

GIANT POWDER

MANUFACTURED UNDER A. NOBELS' ORIGINAL AND ONLY VALID NITRO-GLYCERINE PATENTS,

Nos. ONE, TWO and THREE.

Stronger, Better and Safer than any other High Explosive.

Judson Powder

IS NOW USED IN ALL LARGE HYDRAULIC CLAIMS.

It breaks more ground, pulverizes it better, saves time and money, and is superseding the ordinary powder wherever it is tried. ☞Triple Force Caps and all Grades of Fuse.

BANDMANN, NEILSEN & CO., San Francisco.

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HOS. PENDERGAST. HENRY S. SMITH.

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MANUFACTURERS OF

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PHELPS MANUFACTURING COMPANY,

Manufacturers of all kinds of

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ALL STYLES OF FANCY HEAD BOLTS.

HOT AND COLD PRESSED HEXAGONAL AND SQUARE NUTS, WASHERS, BOLT ENDS, TURNBUCKLES, ETC., ETC.

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PRACTICAL BOILER MAKERS,

Marine, Stationary and Portable Boilers, Smoke Stacks, Hydraulic Pipe, Oil or Water Tanks, Ore and Water Buckets, Gasometers, Girders, Bridges and Iron Ship Building.

ALL KINDS OF SHEET IRON WORK.

Repairing promptly attended to at the lowest possible terms.

GOLDEN STATE & MINERS' IRON WORKS.

Manufacture Iron Castings and Machinery of all Kinds at Greatly Reduced Rates.

STEVENSON'S PATENT

Mold-Board AMALGAMATORS,

Golden State Pressure Blowers.

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MANUFACTURERS OF

STEAM ENGINES, BOILERS AND ALL

Kinds of Machinery for Mining Purposes.

Flouring Mills', Saw Mills' and Quartz Mills' Machinery constructed, fitted up and repaired.

Front Street, Between N and O Streets,

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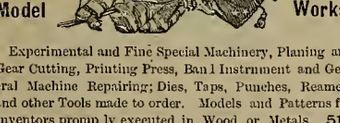
American Machine

AND



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Experimental and Fine Special Machinery, Planing and Gear Cutting, Printing Press, Band Instrument and General Machine Repairing; Dies, Taps, Punches, Reamers and other Tools made to order. Models and Patterns for Inventors promp ly executed in Wood or Metals. 514 Commercial Street, between Sansome and Leidesdorff, Third Floor), San Francisco, Cal.

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☞General Mechanical Engineers and Machinists. Steam Engines, Flour, Quartz and Mining Machinery. Sole manufacturers of Brodie's Patent Rock Crushers and Steel-Faced Tappits. Steam, Hydraulic and Sidewalk Elevators. Repairing promptly attended to.

STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

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VERTICAL ENGINES,	BABY HOISTS,	STAMPS,
HORIZONTAL ENGINES,	VENTILATING FANS,	PANS,
AUTOMATIC CUT-OFF ENGINES,	ROCK BREAKERS,	SETTLERS,
COMPOUND CONDENSING ENGINES,	SELF-FEEDERS,	RETORTS,
SHAFTING,	PULLEYS,	ETC., ETC.

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Car and Locomotive Axles and Frames, and Hammered Iron of Every Description

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(ESTABLISHED IN 1855.)

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Marine Engines and Boilers,

Propeller Engines either High Pressure or Compound Stern or Side Wheel Engines.

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Hoisting Engines and Works, Cages, Ore Buckets, Ore Cars, Pumping Engines and Pumps, Water Buckets, Pump Columns, Air Compressors, Air Receivers, Air Pipes.

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Batteries for Dry or Wet Crushing, Amalgamating Pans, Settlers, Furnaces, Retorts, Concentrators, Ore Feeders, Rock Breakers, Furnaces for Reducing Ore Water Jackets, Etc.

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Crushing Rolls, Clarifiers, Vacuum Pans, Air Pumps, Concentrators, Bag Filters, Charcoal Filters, Blow-up Tanks, Coolers and Receiving Tanks.

Miscellaneous Machinery.

Flour Mill Machinery, Saw Mill Engines and Boilers, Dredging Machinery, Oil Well Retorts, Powder Mill Machinery, Water Wheels.

Engines and Boilers of all kinds, either for use on Steamboats and made in accordance with the Act of Congress regulating the same, or for use on land. Water Pipe, Pump or Air Column, Fish Tanks for Salmon Canneries of every description.

Boiler repairs promptly attended and at very moderate rates.

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All kinds of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Bells and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch. ☞PRICES MODERATE.☜

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A Mechanical Engineer, having an extensive experience in Marine Engineering (especially compound) and Iron Ship Building, also in Steam Engines and Machinery in general, is open for engagement. First-class references.

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Near First and Market Streets.

Ores worked by any process.

Ores sampled.

ASSAYING in all its branches.

Analysis of Ores, Minerals, Waters, etc.

WORKING TESTS MADE.

Plans furnished for the most suitable process for working Ores.

Special attention paid to Examinations of Mines; plans and reports furnished.

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Mining Engineers and Metallurgists

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CHEMICAL APPARATUS AND CHEMICALS, DRUGGISTS' GLASSWARE AND SUNDRIES, Etc.

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We would call the special attention of Assayers, Chemists, Mining Companies, Milling Companies, Prospectors, etc., to our stock of Clay Crucibles, Muffles, Dry Cups, etc., manufactured by the Patent Plumbago Crucible Co., of London, England, for which we have been made *Sole Agents for the Pacific Coast.* Circulars with prices will be sent upon application.

Also, to our large and well adapted stock of

Assayers' Materials & Chemical Apparatus,

Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.

☞Our Gold and Silver Tables, showing the value per ounce Troy at different degrees of fineness, and valuable tables for computation of assays in grains and grammes, will be sent free upon application.

JOHN TAYLOR & CO.

E. K. STEVENOT & CO.'S

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Assay Office and Chemical Laboratory,

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NORTH BEACH.) SAN FRANCISCO

Refiners of Borax, Alum, Nitrate of Soda, Saltpeter, Potash, Etc.

Sampling, Assaying or Analyzing of Minerals, small lots of ores bought or worked by any process.

Old Copper Plates bought or worked up. Deposits of Bullion run into bars.

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G. F. DEETKEN,

METALLURGIST & MINING ENGINEER,

U. S. Deputy Mineral Surveyor,

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Mines Surveyed, Examined and Reported on. Assays and Analyses carefully made. Furnaces constructed. Erection of Chlorination Works for Gold and Silver a specialty.

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MINING ENGINEER and METALLURGIST.

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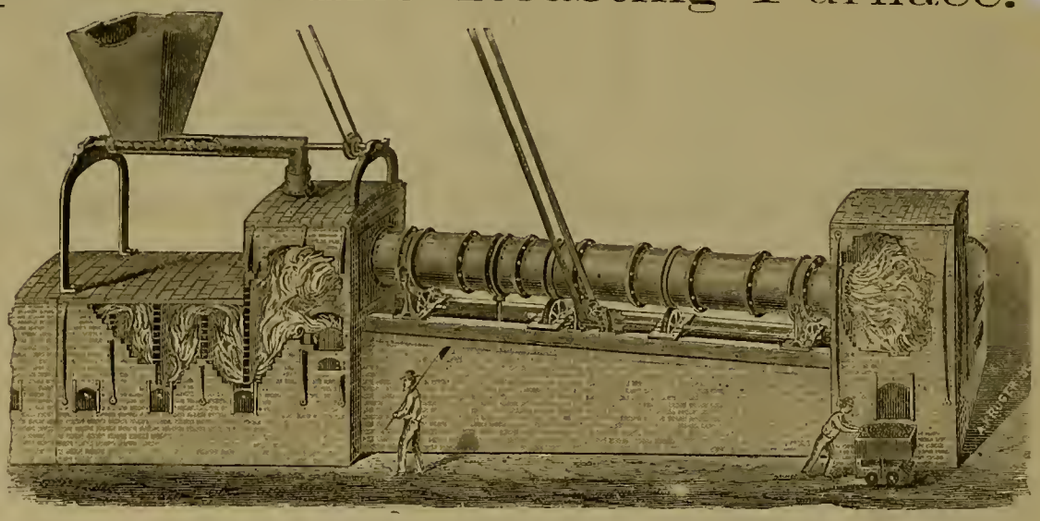
BODIE and ESMERALDA.

Being an account of the Past and Present affairs of these interesting Mining Districts, with detailed descriptions of leading mines, including Maps and Illustrations, by Jos. Wasson.

Single copies, post-paid from this office, $1.

Howell's Improved White Roasting Furnace.



This cut represents the most improved construction of this unrivaled Furnace, the superiority of which over all others as regards cost and capacity, as well as the economical and thorough oxidization and chloridization of ore, is now generally conceded.

In this Furnace, as covered by the Howell and White patents, are combined the three acknowledged requisites for the thorough and economical roasting and chloridization of ores.

First.—Continuous progression through and discharge of the ores from the furnace—while in the meantime they are, by being constantly showered through the heated air and gases within it, exposed in the greatest possible degrees to their reducing action.

Second.—Subjecting the ores to this showering process any length of time that may be necessary, according to the character of the ore, for its thorough reduction. In passing through the furnace it ordinarily falls about 1,000 feet, all the time in direct contact with the flame.

Third.—Increasing the heat on the ores as they are progressed through the furnace.

In this respect this furnace excels all others, as none of them combine all these essential requisites. It will chloridize the most refractory ores up to from 80% to 98% of their assay value, depending upon their nature and grade

The first cost as well as the cost of operating it is less than that of any other furnace of equal capacity.

It requires no especial skill in management that cannot be readily acquired by any one capable of conducting an ordinary silver mill.

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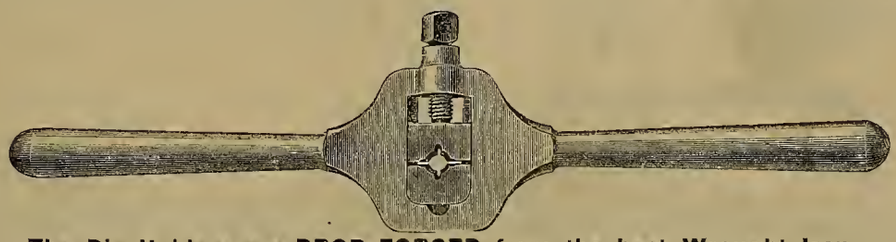

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, JULY 13, 1878.

VOLUME XXXVII Number 2.

Steam Pumps.

Perhaps no field in the realm of practical mechanism has offered greater inducements to inventors' ingenuity than that of the mechanical manipulation, or otherwise, the pumping of water and other fluids. And why? One would laugh at a woodman endeavering to propel his saw log to the mill hy striking it on the end with some heavy device, consoling himself meanwhile with the thought that after each stroke it was so much nearer home.

Let us snbstitute water for the saw log and a piston operated hy some motive power for the striking device, and we arrive at the fundamental principle involved in a pump. Yet where is the analogy between the pump and the foregoing supposition concerning the saw log? If wo take a cylindrical tube, close one end, fill it with water, fit a piston in the other end, and then strike the piston with some heavy device such as a sledge hammer, the piston will not be forced into the cylinder an appreciable distance, thus showing the incomprehensihle nature of the water.

Here the analogy is forcibly seen, and it is this striking peculiarity that has rendered the perfection of steam machiuery necessarily retarded and surmounted with great difficulties.

It is ohvious therefore, that the raising or forcing of a continuous column of water at a uniform pressnre presents a problem the solution of which is by no means easy. Assuming that this can only he accomplished hy means of a piston traveling in a cylinder, the conditions governing its operations are such as to exclude from use many of the improved pumping appliances of to-day. It is evident that a constant flow and pressure cannot he attained where the crank movement is used in connection with the piston, for here we have a varying piston speed the irregularities of which cannot he compensated for by the expansihility of the air in the air chamber, neither can the air pressure fully overcome the pulsations that such motion would impart to the water. And as such construction necessitates the use of the fly wheel, a momentum would he attained which is not a little dangerous, considering the incompressible nature of the water.

A continnous pressure is approximated hy making the pump piston douhle acting, hut here the piston speed enters into the consideration, which speed can be uniform only in engines which do not use steam expansively. A quick reversing of stroke is essential toward the maintenance of a constant water pressure.

The valve mechanism is an important feature, as the prompt action of the valve is necessary, which cannot he obtained hy the use of the eccentric upon a revolving shaft.

That a pumping engine may successfully cope with all obstacles, it must fulfill the following conditions:

1. The reciprocating motion of the steam piston must he employed directly to pump water.

2. It must have a uniform piston speed (the duplex system is not here considered, for while it produces nearly absolute uniformity in water pressure, its additional expense must exclude it from use in ordinary mine pumps).

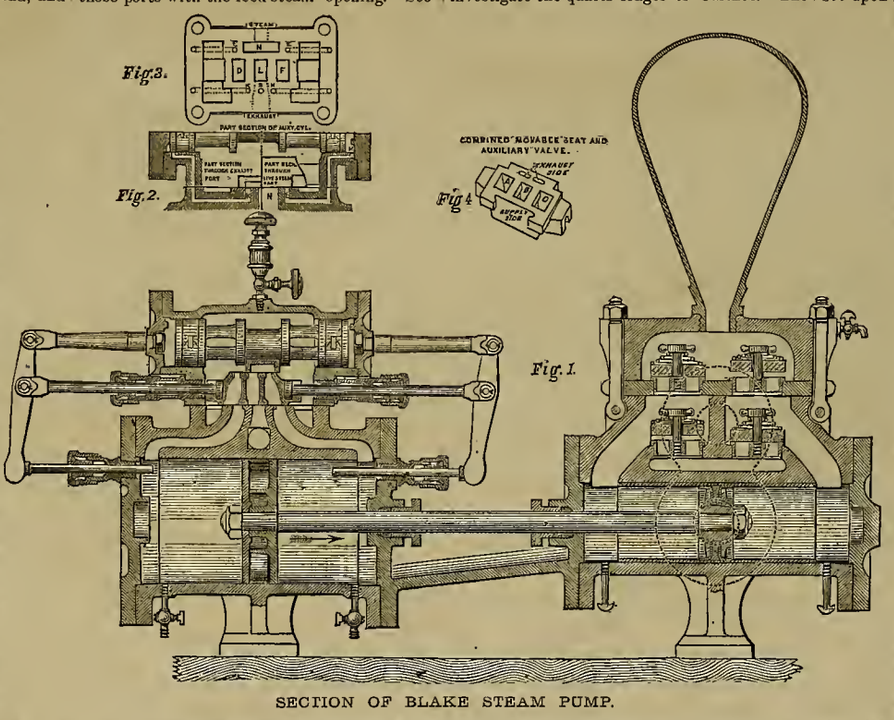
3. There must be no momentum, such as is obtained hy use of the fly wheel.

4. It must secure prompt valve action without the use of eccentric or cams.

5. It must combine cheapncss, durahility, compactness and accessihility for repairs with ability to compete in an economical sense with the hest pumping engiues.

The Blake pumping engine, of which we herewith present a section, may he considered the outgrowth of a close and careful study of the foregoing conditions. While here no labor has heen spared in making the steam end as near perfection as possihle, the improvement of the water end has not been neglected—an oversight too frequent in devices for pumping fluids. In the section the operating mechanism is clearly shown.

The mechanism of the steam end is simple and efficient. The steam valve, or rather valves, consists of a movahle seat and auxiliary valve actuated hy steam connections connected with links, which in turn are worked by means of tappet-rods passing into the cylinder through stuffing boxes in the cylinder heads, and are driven by direct contact with the alternate sides of the piston. The valve proper is of the ordinary *D* type and rides upon the auxiliary valve. It is operated by an auxiliary douhle piston moving in a cylindrical steam chest, which piston is operated by the alternate action of steam upon its opposite heads. Fig. 3 is a plan of the ports and valve seats in which *D* and *F* are the main inductiou or feed ports, and *L* the exhaust port. *E E* are the feed ports to the auxiliary piston. *N*, the port that connects those ports with the feed steam opening. Sec-



SECTION OF BLAKE STEAM PUMP.

tions of these ports are shown in Fig. 2, which gives a section of the secondary cylinder of steam chest. *K K* are the exhaust ports for the auxiliary piston, and *S* the opening to the main exhaust.

Fig. 4 is a perspective of the combined movahle seat and auxiliary valve in which the main ports, *A B C*, are shown, together with the steam and exhaust passages of the auxiliary steam chest. The three ports of the auxiliary valve are equal in area, and coincide in every position with the three ports of the main engine, thus virtually extending the engine ports. The mechanical connection between the movahle seat and the main piston is such that contact of the piston with the cylinder heads is impossihle, as the mechanism referred to gives positive lead, sufficient to allow the steam to cushion before the piston completes its stroke, therehy preventing "hammering," and likewise tending to overcome the pulsations that would otherwise he produced in the water, while it, at the same time, gives a quick reversal of stroke. Should the main piston at any time attain a velocity greater than that of the main valve piston, the auxiliary valve mechanism above referred to prevents the main piston from "running away," for here the auxiliary valve becomes what may be termed the main valve, and acts independently of the steam chest valve and piston,

The perfection of the pump proper has not heen neglected, as a glance at the cut will show. As there shown, it will he seen that both the feed and outlet valves are placed upon the upper side of the cylinder, thus offering great facility for inspection and repair, for, by simply removing the nuts from the clamp bolts, which are hinged at the bottom, the top cover of the water-chamher may be removed and access had to hoth sets of valves. The water valves are simple and durahle in construction and efficient in operation, though their construction is varied, as regards material and design, to suit the purpose intended. Freedom from complication of parts is one of the striking peculiarities of this pump.—*Polytechnic Review.*

The Quartz Ledges of Cariboo.

Eighteen months ago the Elliott ministry, then controlling a majority of the Parliament in British Columhia, employed Mr. Harper to investigate the quartz ledges of Carihoo. The step was a very popular one. Cariboo bas heen extraordinarily rich in its placer mines. Many very euergetic, intelligent and good people from Canada and the world at large, found themselves in possession of properties in those hyperhorean mountains, while the outgoing stages were pretty well filled the season through, the incoming stages were frequently empty. There was danger of Carihoo in particular, and the British Colnmhian interior generally, with Victoria as its point of supply, being left high and dry, if no other mines should he discovered that would justify the attention of the miuers and of capitalists.

Elliott's actiou was wise, and as commendahle as it was popular. The politicians and the newspapers of Victoria have, unfortunately, very little respect for their constituencies, and it is impossible to tell at present, whether the Carihoo quartz action was not purely a "political dodge," intended to confound the wily Walkem.

Mr. Harper found numerous ores of astonishing richness where the good people of Carihoo had been able to find previously only modest results. They have had a government assayer at Barkerville for 15 years, and the fact that these ores were remarkahly rich had escaped his crucihles. It was a well-known fact, however, that very little thoroughness had heen directed to quartz. There was a common lack of faith in the regularity, and in the practically necessary concentration of the ore deposits, to justify mining and milling; at the same time that there were not lacking scores of more or less enthusiastic believers in quartz. "Where did all this gold come from?" was the question they wanted to have answered. Harper's reports settled the matter, and the Victoria merchants were deligthed to see the Victoria papers fulfilling their proper function in fostering another gold excitement.

Little Walkam now turns the table on Elliott; and there are people in Victoria so inconsiderate as to say that the late Premier and his "popular mining engineer" overdid the Cariboo quartz.

Among other experts from this city who have gone to investigate Cariboo, are J. S. Phillips and E. N. Riotte, men whose capabilities and character are widely known. Neither of them belong to that class of "popular mining engineers" who are sought by miuing capitalists when they have occasion to make use of a report to their liking. We congratulate Cariboo upon having drawn to itself, through Mr. Elliott's efforts—whether politically honest or otherwise—the attention that country merits in view of its placer yield.

"The recent scare," says an observer in the Victoria *Colonist*, of June 26th, "in relation to mining matters, which, like a thunderclap, hurst over our devoted heads, has destroyed the feeling of confidence in the success of our present plans and hopes. It may be that we cannot bring ourselves to helieve the truth when brought home to us with such sudden and alarming force. It may he that we are so firmly wedded to what are our firm convictions, hased as they were, on undisputed authority of the richness and permanency of the Bonanza lode, were too hasty in placing such implicit faith. such unbounded confidence, and absolute trust in men whose character and capabilities we knew little or nothing of; whose reports and statements were swallowed with avidity. It is nevertheless patent (continues the observer) that there has been a deep-rooted scheme, dishonorahle in its secrecy and unlawful in its willful misrepresentations, to destroy the faith of the Victorians and of the Victoria stock hoard in Cariboo quartz. And the principal actor in this plot would seem to be Mr. Riotte."

From which it appears, on reading a little further, that Mr. Riotte has had the malignancy to pronounce a certain ledge he has examined worthless. The "Observer" politely concludes by "suggesting to Mr. Riotte, now that his carcer of usefulncss is ended in British Columbia," and that he "retire from the (pleasant) arena and hetake himself to fresh woods and pastures new." Our eye falls—in a corner of the same paper—on a three-line item to the effect that Mr. Harper "has severed his connection with private mining companies at Carihoo."

It is to he presumed that Mr. Riotte will learn the lesson, after this, to make his reports on miues a little more popular.

BULLION SHIPMENTS.—Since our last issue shipments of hullion from the promiuent mines have been as follows: Christy, June 30th, $4,175; Tyho Con., June 28th, $8,023 34; Northern Belle, June 29th, $5,764.40; California, July 2d, $160,921.45; Standard, July 2d, $20,328.66; Northern Belle, July 1st, $5,849.70; Modoc, June 30th, $3,777.06; Con. Virginia, July 2d, $148,653.74; Gila, June 30th, $4,647; McCracken, July 5th, $14,023 33; Modoc, July 4th, $3,850.57; Northern Belle, July 3d, $5,967.58; De Frees, July 8th, $10,000; Alexander, July 6th, $10,800.39; Hillside, July 3d, $8,268; Tyho Con., June 30th, $8,419.37; Northern Belle, July 6th, $7,087.67; Tybo Con., July 3d, $8,616.88; Christy, July 8th, $5,340; Independence, July 8th, $10,000; Standard, July 7th, $43,377.67.

THERE are over 80,000 children in San Francisco under the age of 18.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—Eds

The San Juan Mines.

EDITORS PRESS;—As a constant reader of your valuable paper, I notice the absence of general mining news from Colorado, and especially from the San Juan country. We are young in years, but the richness of our mines has attracted the capitalists of the East, and as we are on the Pacific slope of the Rocky mountains, we may claim some notice in the West.

The center of this mining camp is Silverton, a town four years old, with about 3,000 inhabitants, and located in one of the most beautiful parks in the Rocky mountains. The best mines are located from one to 12 miles around this place. We have sulphuret ores, heavy spar and gray copper, ruby silver and galena ores. A number of mines have paid their way from the grass roots, and this speaks volumes for their richness, when we only get 41 cents per ounce for 100-ounce ore, and 62 cents per ounce for 200-ounce ore. Ore has to be packed on burros, and freight is high yet. From this can be seen that ore less than 100 ounces would not pay unless easily extracted and in great quantity. Still there are a great many mines remunerative to their owners. The pioneer and only smelting firm of San Juan county, at present, is Geo. Greene & Co., at Silverton. They have treated ores successfully for the last two years and are increasing their capacity to 30 tons a day. The present prosperity of the camp is largely due to them, and although they don't pay such prices for ore as the miner could wish, they have helped them along to open their mines. The Aspen and Victory, on Hazelton mountain, are furnishing most of the ore (galena) to these works.

The lixiviation works of Messrs. Dow & Waters, at Gladstone, on Cement creek, will be ready for operation in a few weeks. There are a number of mines within four miles, on Cement creek and Poughkeepsie gulch, which have a good many tons of ore on the dump which is adapted to the process of lixiviation. Messrs. Dow & Waters are working the Pride of the Alps and Poughkeepsie lodes under lease, and are extracting a large quantity of ore. These are two of the most prominent veins of this district. The Columbia and Helvetia have been extensively worked, a good many tons of ore are on the dump and plenty is in sight in the stopes. The Saxon and Alaska will yield some rich ore this summer, and there is a half a dozen more. All these mines are owned by individuals. They have done a good deal of work on their property, and had no other resources than what they took out of their mines. If companies would own some of this property and open it extensively, large dividends could be declared monthly.

Crook Bros., of New York, will build a smelter at Boulder gulch, one mile from Silverton. Their reputation for treating ores is so well known it needs no comment. Their addition to this camp will open a new epoch to the prosperity of the miners who have leads with low-grade ore. Other capitalists are bound to follow such enterprises, and the day is not far distant when San Juan county will be known as the best mining camp in Colorado.

F. STEINEGER.

Silverton, Col., June, 1878.

Salt River, Arizona.

[Correspondence of the PRESS.]

Irrigating with Saline Water.

EDITORS PRESS:—Here I am, "up Salt River." Please, Messrs. Editors, take this in a geographical and not in a political sense. Still the situation is a trying one, for this is about as rough and worthless a country as lies out of doors. This river is laid down on the earlier maps as the Saliuas, and I cannot help thinking it would have been well to have retained that more euphoneous and equally appropriate name. The stream derives its name from the saline character of its waters, which are so strongly impregnated with salt that it requires some time for new comers to accustom themselves to its use. It is the largest and most important of all the interior streams of Arizona. On its banks are the productive farming lands of Phenix and Tempe, where the happy ranchers live without anxiety about the failure of crops, for they know to a certainty that every acre properly tilled will yield them from 30 to 60 bushels of grain every year, and that their lands are not being impoverished or exhausted so rapidly as those cultivated without irrigation.

Though some have had the hardihood to claim that this salt is a benefit to the land, no well informed person will be likely to admit it. Salt in great quantities has never been recognized as a fertilizer and salt marshes have always been found difficult to reclaim for agricultural purposes, and there is no question but the purification of the water of the salt it contains, were this practicable, would be of great advantage to the settlers along this river. It may even transpire in the future that the constant use of this water will have such an injurious effect upon the soil as to eventually render it worthless.

Where the Salt Comes From.

The water of this river is not salty at its source, but acquires this property from several springs near its banks and along its tributaries, far up in the Apache mountains. The principal and most important of these springs is located directly on its northwest side, about 30 miles below its junction with White river, and the same distance in a direct line from Globe City. This spring, or rather group of springs, runs a head of about six miners' inches of water, carrying five grains of salt to the ounce. An analysis of some stalactites taken from the overhanging rocks resulted in 86% chloride of sodium, the remaining 14% consisting of impurities common to the mineral.

Turning this Salt to Good Account.

The utilization of so large a supply of this commodity is a want that cannot be long postponed, because of the rapidly growing demand for it in Globe and neighboring mining districts for the reduction of refractory ores. In fact, an enterprise looking to that end would be a paying one to parties able to furnish the necessary capital. The evaporation could be carried on with the aid of the sun alone, whose heat, reflected from the high cliffs on either side of the river, heats down with great intensity.

Basaltic Mesas.

The reason that these springs have not yet been so utilized nor even appropriated by the greedy speculator is that they lie in a region almost inaccessible because of its steep cliffs and deep canyons. Only the roving Indian scout and the hardiest of prospectors have ever visited it, though so near to Globe, and nearer still to McMillenville, the site of the famous Stonewall mine. Towards its sources, Salt river and its tributaries run through "box canyons," being deep cuts with perpendicular walls on either side, formed in the basaltic rock by the constant wear of the streams. The ruggedness of the country here is due to the peculiarities of this rock, which are great hardness, horizontal stratification and right-angled fracture. Thus the result of denudation is always a cliff and never a slope, as in countries composed of friable rock or that having more tendency to decomposition. The hardy prospector, picking his way among the loose rocks of the "mesas" or high plains, often finds himself trembling on the verge of one of these fearful precipices, many hundred feet above the river, which winds, like a silver wire, through the canyons below, and often it is a day's labor or more to hunt out some by canyon or old Apache trail by which to effect a descent to the water below. To make one's way with expedition or even with safety among these canyons, requires an intimate acquaintance with their devious windings as well as with the Indian trails, which latter have often, in times past, been the safe lurking places of the wily savage. The country has not yet been explored for a wagon route from Globe to the Springs, nor will it be easy to find a feasible route for this purpose, though a mule trail could be easily and cheaply constructed. Packing would, however, be expensive, besides being objectionable on other accounts. It may be found practicable at certain seasons of the year to raft the salt down the river, some 20 miles, to the crossing of the Globe and Pheuix road, at a point about 40 miles from the former. In any event, these springs are bound to become of great value, as there is no prospect that salt can ever be supplied at Globe and surrounding mining camps from any other point for less than $70 per ton, it being, of course, much higher at present.

Picacho Colorado, Arizona, June 8th, 1878.

THE WAY THEY TELL IT.—A correspondent of an Eastern paper relates the story of James G. Fair this wise: There is a man alive at this present moment who, if he were so minded, could give his daughter a marriage portion of one hundred and fifty million dollars. He would then have about fifty millions left for himself. He lives half-way up a mountain-side in Nevada, and his daughter lives with him. Seven years ago he was a poor man; to-day he is the silver king of America. He has dug two hundred million dollars' worth of silver out of the hill he is living on, and has about two hundred millions more yet to dig. If he lives three years longer he will be the richest man in the world. His name is James Fair, and he is the manager, superintendent, chief partner, and principal shareholder in the Consolidated Virginia and California silver mines, known to men as the "big bonanzas." He has an army of men toiling for him day and night, down in the very depths of the earth, digging, picking, blasting and crushing a thousand tons of rock every twenty-four hours. He works as hard as any man of them. The man, who, by his own unaided exertions, can rise to such marvelous wealth in so short a time is worth knowing something about. It is worth while to hear how such a fabulous fortune can be accumulated.

LIVELY BUT ROUGH.—Sheriff Harper returned this morning from a trip to Ione, Grantsville and that portion of Nye county. He says Grantsville is lively, but the roughest camp this side of the Union Pacific railroad; that it is crowded with tramps, roughs, scrub fighters, thieves and scalawags, who make day disorderly and night hideous. He thinks the place will pan out a big ledge of criminal business for the Nye county courts.—*Reese River Reveille.*

Union Mining District.

A correspondent at the new camp sends us the following particulars about the new district: The district recently organized embraces an extensive mining section, heretofore comparatively unknown. It is situated sixty miles from Eureka, and about seven miles from the E. & P. R. R., by way of Bruffy's Hot Springs. There are immense tracts of timber throughout the district and adjoining country, with water enough to run an unlimited number of furnaces. The great mineral belt of the district trends nearly north and south, and can be easily traced for nearly six miles. On the north end of this belt are immense bodies of the finest and easiest smelted ores in the country, working from fifty to one hundred and fifty dollars per ton in silver, and from twenty to sixty per cent. in lead. At the south end the ore changes materially—resembling the rich chloride rock found at Mineral Hill, assays of which range all the way from seventy-five to two hundred and fifty dollars per ton. About one mile east of this, another ledge crops out for a distance of a mile or more, bearing rich carbonates similar to the ores of Ruby Hill, the average assays of which are about fifty dollars in silver and twenty-five dollars in gold. Further east are other well-defined ledges, easily traced for several miles in length; some assays of rock brought in from this locality went as high as $3,000 to the ton. The district embraces an unlimited number of spurs and cross veins, which would require too much space to describe at present. Suffice it to say that the little camp has a bright future, and if we may judge by the present outlook, is destined at no distant day to take rank as a bullion producer of the first magnitude.—*Eureka Sentinel.*

BRIEF HISTORY OF THE SUTRO TUNNEL ENTERPRISE.—Ground was broken for the Sutro tunnel on the 19th of October, 1869. The work has therefore required eight years, eight months and ten days to complete. The progress was very slow at first, all drilling having been by hand; but in the spring of 1874, experiments with a Burleigh drill having demonstrated the advantages to be derived from the use of that machine, a carriage capable of supporting six of those drills while at work was made, and on the 22d of June, 1874, four were started. The progress was now much more rapid than ever before in the history of tunneling in the world, and on August 7th, in the same year, two more drills were put to work. This made six altogether. From that date the average progress was over 300 feet per month up to April, 1877, when the header having entered the broad Comstock mineral belt, the heat became so intense that two drills had to be taken off the carriage. From that day the average monthly progress did not exceed 250 feet. Work has been continued uninterruptedly from the time that ground was broken until to-day, but at times only two men were at work in the tunnel. The greatest progress was in December, 1875, when the header was advanced 417 feet, and the least in October, 1870, when it was only advanced 19 feet. The total length of the tunnel, as stated in the official chart published last September, is 20,170 feet. The tunnel being connected with the Comstock workings, the next move of Mr. Sutro will doubtless be to start north and south drifts to connect with all the mines on the lode. The work has cost nearly $4,000,000.—*Virginia Chronicle.*

PHENIX MINE, AMADOR COUNTY.—The Ione City *News* thus describes a visit to the Pheuix mine: In this mine there are two shafts, the north shaft being 1,200 feet deep and 18 feet wide at the bottom. The north drift in this shaft, according to the opinions of those who "savy," promise everything desirable in the way of rich treasures. The south shaft is 1,100 feet deep, and 35 feet wide at the bottom. From this level we were shown handsome specimens of free gold bearing ore exceedingly rich. The level is now in 150 feet running south. The 1000 level in the same shaft is about 46 feet wide, presenting a strong body of ore of the full width and almost entirely without a seam. The level is now 800 feet from the south shaft and the ore is being taken out in a solid body, with indications of widening as the level is extended. All this rock carries a large percentage of sulphurets, of which the mine produces three tons daily. The highest assay value is $175; the second, $150. The sulphurets are reduced by the Phenix Sulphurets works, situated at Drytown, the works guaranteeing 85% of the assay value. The average yield per month, including sulphurets, is from $25,000 to $40,000, and prospects suggest that this handsome sum will be augmented. Alvinza Hayward, the San Francisco capitalist, is the chief, if not the sole, owner of this snug piece of property.

WOOD FROM ALPINE COUNTY.—The big drive of 50,000 cords of wood is now on its way down the Carson river to Empire City. The head of the drive is expected to arrive in a day or two. The parties who are bringing down the drive are to receive $25,000 or 50 cents per cord for the job. They take the wood at the head of the Carson river and are to land it at the Mexican dam. The river is now falling a little, and unless there shall come a very warm spell or a rain at the critical time, the contractors are likely to have some trouble in bringing in the tail end of the drive. To take the wood out of the river will give employment to a considerable number of men for some time.—*Carson Tribune.*

Transparent Pictures on Glass—Chromatropes.

The names of chromatropes is given to certain revolving multi-colored rosettes which, when projected by magic lanterns, produce the effect of balloons and throw out lozenges, spheres and brilliant stars in every direction. It is one of the most beautiful examples of the continuance of luminous rays on the retina. They are obtained by making two glasses which have similar designs turn in contrary directions by means of a wheel work. The opening in which the two frames revolve is cut in a strip of wood. They can be made in the following manner:

Some squares of very white glass are cut in circular form over a paper model, and the edges smoothed on a grindstone. The design is first traced on a paper securely fastened, but not too thick. The drawing is generally formed of numerous narrow oblique stripes, which, crossing one another when the glasses are turned in opposite directions, produce regular figures. The drawing must be made a little smaller than the glass, so as to make allowance for the frame. The paper is cut of the exact size of the glass. The glass, which must be well polished, is put over the drawing and the latter is then copied on with a pen and ink or black varnish. The reproduction is more easily obtained by the following process: By attaching sketching paper with strips of gummed paper under and over the glass. The sketching paper must have a coating of black or blue on the side next the glass. The drawing is on the top. The three folds being of the same size and perfectly coinciding, on going over the drawing with a fine drawing-point the design will be reproduced on the glass.

As two glasses are required, the process has to be repeated. If there are portions of the glass large enough to be paneled black, this can be done with black bituminous varnish, but it more convenient to paste on black paper which is cut by having a tracing of the design, or by making use of red or blue tracing paper, so as to show the outlines. This paper is doubled and the edges glued and then cut with scissors or a good pointer on glass or zinc. A little copal varnish will keep them on the glass. The transparent colors are then applied to each glass. The finest stripes are in the center and the color is put on with a steel pen. The light colors are put on first. The colors on one glass must not be different from those on the other, nor must they neutralize each other when superposed. Care must therefore be taken not to place yellow and violet opposite to one another, nor green and red, nor orange and blue, as these colors would negative each other and only give grayish tints. The effects of running water, of flames or smoke rising in the air, are obtained by projecting on the drawing a chromatrope which revolves in a second projecting apparatus placed alongside the first. The chromatrope must have green stripes to imitate water, orange for fire and fuliginous or sooty rays to imitate smoke. These lines cross on the corresponding space of the drawing which is alongside, and which is projected on the screen. Snow effects are obtained with black paper, perforated with small holes and rolled up and down in the second projector. The summer landscape is first seen; the second apparatus is seen progressively, in which the perforated paper is rolled up so that the snow seems to fall on the screen, and finally the view of summer on the first apparatus is replaced by the winter scene. Other pictures with mechanical effects can be had, which represent mills with the wheels in motion, beehives with the insects flying round them, ships in motion, stars revolving in their orbits, etc. The moving objects of thaumatrope and the symmetrical and infinite variety of the kalcidescope can be projected on the screen.—*Translated from the French for the Jeweler.*

MATTERS ABOUT TUSCARORA.—We have heard that a rich silver-bearing quartz ledge has been discovered in the Revenue mine in this district. The new find is remarkably fertile in chloride ore, which assays an average of $600 per ton. The ledge is said to be seven feet in thickness, and is probably one of the richest discoveries yet made in northern Nevada. We have the promise of more light upon the new bonanza shortly. Lone mountain is a solitary butte of lofty proportions, which rises midway between Tuscarora and Elko. It is one of the most conspicuous landmarks in the State, as it is visible from every point of the compass at the distance of 50 miles or more from its summit. Lone mountain contains several strong ledges and deposits of copper, lead and iron.—*Times-Review.*

INDIAN RESERVATION IN MONTANA.—Frank Decker, Agency miller, says that at no time during the past eight years, in which he has had knowledge of agency affairs, have the Indians made such remarkable progress in the arts of civilization as during the past year. He has ground about 8,000 bushels of grain at the agency mill during the last season, and he knows of there being made by Indians over 40,000 rails, which now inclose ground that is under cultivation, in addition to former farms. —*Independent.*

THE Valparaiso *Mercury* reports an immensely rich silver-bearing district to have been discovered in the vicinity of the Rio Colorado, in the Andes range of mountains and not very far from the city of Santiago. Assays of the ores are said to average $8,000 per ton.

MECHANICAL PROGRESS.

The Application of the Microphone.

We lately gave a brief description of the microphone, which in addition to the transmission of sound as in the telephone magnifies it or rather increases its volume immeasely. We read in *Iron* that one of the earliest practical applications of the microphone has been made in England, by Sir Henry Thompsen, who, recently lectured at University College Hospital on the use of the microphone in the diagnosis of stone in the bladder. The lecturer explained the principle of the microphone, and showed how a small accoustic wave is converted by it into a large electrical vibration which is reconverted into sound at the diaphragm of the telephone, where it is received by the ear of the operator. The minute wave transmitted through the sound on its impact with a very small stone is thus so magnified that the operator is enabled to determine with certainty on the presence of the smallest stone or particle of stone or other foreign substance. The experiments were conducted with a couple of steel sounds, each fitted with the microphone, and an artificial bladder, in which was concealed, in turbid fluid, a naturally-formed uric-acid stone, about as large as a pea. In concluding his lecture, Sir Henry stated that the honor of this application of the microphone to surgery had been won by London from the great Continental centers of surgical science.

We are are also furnished with the latest authentic information concerning the construction of the microphone by Dr. Mann, as follows: "By the microphone sounds are heard which are more faint than those with which the stethoscope deals in explorations of sounds within the chest. There is, therefore, reason for the hope that with some further development of the powers of an instrument new but in its early infancy, we may yet find that it will prove of great service by hereafter detecting sounds in the living economy which are not now distinguishable by the ear. My own ground for this belief is a confidence that some intermediate instrumental agency will be devised which will be capable of transmitting such soft-sound vibrations as originate in the movements of the living economy to the charcoal of the microphone, and so bring them within the sphere of its operations. The soft shock of the contractions of the heart must, so to speak, have some kind of sounding board of their own before they can be efficiently taken up for augmentation by the carbon of the microphone. That, I think, is the intermediate agency which the ingenuity of science has now to endeavor to supply. I may also be permitted to say that the microphone is essentially a rod of charcoal resting, by the light contact of its own weight, upon a disc of charcoal. The perfection of that contact for the transmission of the electrical current varies with the condition of sonorous vibration which is present in the carbon mass at each instant.

MECHANICAL EQUIVALENT TO HEAT.—According to *Cotton*, Prof. H. F. Webber has calculated the mechanical value of the unit of heat from the results of experiments based on the consideration that in a galvanic circuit, traversed by a constant current, in which evolution of heat is the only action of the flow of electricity, the amount of heat developed is the equivalent of the work expended at the same time. Both weak currents circulating for a long time and strong currents circulating for a short time were employed. The mean obtained from a large number of experiments was 428.15 meter-kilogrammes, temperature being measured on the air thermometer. From the relation between the specific heats of atmospheric air the mechanical equivalent is found to be 428.95. In 1849, from friction experiments, Joule found the value 424.39, and his more recent experiments confirm this result. Unfortunately, this number cannot be compared with that obtained from the specific heats of air (428.95), since the units of reference are different. An air thermometer was employed in the latter case, whereas Joule's unit of temperature is that of his mercury thermometer. These two temperature units may possibly differ by 1%.

CAR WHEELS.—The master car builder of the Michigan Central road tells the *Railway Age* that the new 42-inch wheels introduced on the passenger coaches, last summer, are proving to be of great merit and durability. The average 33-inch car wheel is considered to have done good service when it has been run 50,000 miles. The 42 inch wheels on the Michigan Central have run 80,000 miles, and Mr. Miller is confident that a run of 100,000 miles will not affect them to the extent that half that distance does the smaller sized wheels.

SAVING LIFE AT SEA.—The Council of the Society of Arts offers its gold medal for the best means of saving life at sea, when a vessel has to be abandoned suddenly, say with only five minutes' warning; the shore or other vessels being in sight. Appliances intended for the competition must be sent in not later than the 31st of October, 1878, addressed to the Secretary, Society of Arts, John Street, Adelphi, London, W. C., and must in every case be accompanied by a short description.

SUCTION BY ELASTIC TUBES.—Some improvements in the construction of hydraulic and air pumps, in which the sucking and forcing action is derived from the alternate compression and expansion of elastic tubes, have been invented by Mr. Francois Bruyas, of Paris. The pump consists of a body or framework, which may be formed of one or more sections of a metal pipe of any required caliber. Within this there is a double cross piece, in the center of which is mounted the driving shaft, carrying an adjustable arm, terminated by bearings of the revolving runner. A tube of caoutchouc or other suitable elastic and compressible material, of any required caliber, is coiled inside the frame, from which its extremities egress in opposite directions through openings. A handle is keyed to the end of the shaft and may be replaced by a fly-wheel or other equivalent. In the rotation of the shaft, the runner in its passage round the circular body compresses the tube against the plane surface of the latter, thus giving rise to suction through the end of the pipe immersed in the fluid and to forcing through the upper or outlet extremity. The form, dimensions and general details of this apparatus may be varied according to circumstances.

THE USE OF ANTIMONY IN GALVANISM.—Mr. R. J. Nunn, writing to the *Journal* of the Society of Arts on this subject, asks to be allowed to call the attention of electricians to the use of antimony as a negative element to replace carbon in some galvanic batteries, those, for example, in which sulphuric acid is employed, as an exciting fluid. He says, I have used this metal for this purpose for about five years in some batteries, employed for medical purposes, and the result has been satisfactory. The advantages are—its cheapness; the absence of scaling or disintegration, while the broken plates always retain their commercial value, and may be melted up and recast; finally, galvanization begins immediately upon immersion, which is often not the case with carbon. The chief disadvantage of antimony is its brittleness when formed into thin plates, but this I have corrected by casting it on a core of toughor metal, such as copper, or by alloying it with a very small percentage of some other metal. Although, perhaps, not so good a negative as carbon, the superior conductivity and other advantages of antimony may often make it a useful galvanic element.

A DINING ROOM CLOCK.—There was recently received at the Milan exposition a great curiosity in the shape of a clock made entirely of bread. The maker is a Peruvian, a native Indian, and he has devoted three years of his life to the construction of this curiosity. He was very poor, and being without means to purchase the necessary metal deprived himself regularly of a portion of his daily bread, which he devoted to the construction of this curiosity, eating the crust and saving the soft part for his work. He made use of a certain salt to solidify his material, and when the various pieces were dry they were perfectly hard and insoluble in water. The clock is of respectable size, and goes perfectly well. The case, which is also of hardened bread, displays great talent, both in design and execution, and taken altogether it would be difficult to find a greater curiosity.

JAPANESE COPPER CASTINGS.—Before the Iron and Steel Institute, at its recent London meeting, Dr. Percy gave some particulars as to the manufacture of Japanese copper. Bars of this metal present a beautiful rose-colored tint on their surface, which is due to an extremely thin and pertinaciously adherent film of red oxide of copper or cuprous oxide. This tint is not in the least degree affected by free exposure to the atmosphere. Dr. Percy placed before the meeting bars which had been in his possession for 30 years, and which had undergone no change, although freely exposed to the atmosphere. The secret of this result lies in casting the copper under water, the metal being very highly heated and the water being also made hot. Dr. Percy stated that he had succeeded in casting copper in this way, and had produced similar results to those shown in the Japanese metal.

BISMUTH PLATING.—Copper or brass may be plated with bismuth in a bath composed of 25 or 30 grammes of ammoniacal chloride of bismuth per liter of water slightly acidulated with hydrochloric acid, operated cold. If heated to 100° the bismuth will not deposit. A single Bunsen cell only is necessary; with a single Daniell cell the deposit is long forming, and but slight. On coming from the bath the articles are covered with a dark deposit, under which is the bismuth with its especial brilliancy, and adhering strongly. By substituting the double chloride of antimony and ammonium antimony may be similarly deposited.

THE DIRECT CABLE DUPLEXED.—Dr. Muirhead has just successfully applied the duplex system to the direct cable between Torbay and Ireland, the longest line yet duplexed. Trial tests show an actual speed in working commercial messages of from 17 to 20 words a minute, thereby doubling the capacity of the cable.

NEW WHEEL TIRE.—A new wheel tire has recently been invented. It consists in passing around the usual tire a rubber tire, and around this again an iron tire made in sections, so that each section may yield inward as the weight comes upon it. It is said to lessen noise, jarring and wear.

SCIENTIFIC PROGRESS.

Compounds of Sulphur and Bromine.

Mr. J. B. Hannay recently presented a paper at a meeting of the London Chemical Society "On the Action of Bromine upon Sulphur." On treating ordinary flowers of sulphur with bromine, the author found that some of the sulphur remains undissolved. This insoluble residue was found to consist entirely of prismatic sulphur, and amounted to 0.08% of the sulphur used. Carbon disulphide leaves about 0.12% undissolved. Roll sulphur when treated with bromine dissolves completely. The author examined with a spectroscope the vapor overlying a mixture containing SBr. He found that even at 0° the vapor gave the characteristic spectrum of bromine vapor as mapped by Roscoe and Thorpe. If more sulphur were dissolved, however, the spectrum disappeared; thus, with a layer of liquid 0.5 meter thick, the absorption spectrum ceased to be visible in a liquid containing S^3 Br at + 42°, S^5 Br^2 + 33°, S^2 B^2 + 25°, S^4 Br^3 + 13°, SBr + 3°. The author finds that the liquid in large mass begins to boil at 72°, and rises without any pause, so that no evidence of the existence of a definite compound can be obtained by the boiling points. On mixing bromine and sulphur in the requisite amount, a rise of temperature of 20° was observed; some of this rise the author believes to be due to the change of state of the sulphur, because the amount of heat when plastic sulphur is used is distinctly less, only 12°. The author also estimated the specific gravity of various compounds or mixtures S^3 Br 2.293, S^2 Br 2.625, SBr 2.628, SBr^2 2.820, SBr^3 2.880, SBr^4 2.905, but without obtaining any evidence of the existence of SB^2. An examination of the freezing points showed that the liquids became oily without solidifying, even at temperatures at which bromine is solid. The estimation of the vapor tension was also without avail. If a small quantity of arseuic be dissolved in the liquid, SBr, and the mixture cooled to 18°, beautiful dark-red crystals are obtained of the composition AsS^2 Br^3, probably AsSBr, SBr^2. The author therefore concludes that the action of any quantity of bromine on any quantity of sulphur is an action on the whole mass and not in multiple proportion, but that if at low temperatures the compound SBr^2 meets a body with which it can form a molecular combination it assumes the crystalline form in conjunction with such a body. The action of bromine upon sulphur increases in a regular manner up to SBr^2, totally ignoring SBr; above SBr^2 we may have another curve to SBr^4 and another fainter curve to SBr^8 but we have no evidence of the existence of S^2 Br^2.

High Melting and Boiling Points.

At the late meeting of the English Chemical Society there was a paper "On the Determination of High Boiling Points," by T. Carnelly and W. C. Williams. The determination of the melting points of a large number of metallic salts by Carnelly enabled the authors, in cases where only approximate results were required, to ascertain the boiling point of a substance by observing whether or not certain salts fuse when exposed to the vapor of the substance in question when boiling. The metallic salts are contained in capillary tubes thus determined:—S boils 446°-451°; Regnault gives 447°. Anthracene 339°-359°; HgI_2 339°-359°; AsI_3 394°-414°; $BiCl_3$ 427°-439°; SbI_3 414°-427°; $ZnBr_2$ 695°-699°; $ZnCl_2$ 708°-719°; PlCl, 719°-731°; NI, 806°-814°; Cd, 772°.

Another paper treated of High Melting Points, by T. Carnelly. The author has carefully investigated and got rid of two sources of error which existed previously in his method. He now uses a much finer platinum wire to suspend the crucible, and has redetermined the value of his colorimiter with very great care. In the present paper he gives the melting points of over 100 substances and promises in a short time some interesting theoretical results which he has deduced from the above observations. The most important being that in simple binary compounds one of the elements remains the same when the melting point is a periodic function of the atomic weight of the other. The author also hopes to be able to indicate a method by which many unknown melting points may be predicted.

NEW TEST FOR GLYCERINE.—A paper was recently read before the London Chemical Society "On a New Test for Glycerine," by A. Senier, M. D., and A. J. G. Lowe. This test is founded on the fact observed by Iles, that borax, when treated with glycerine, gives to a Bunsen flame the green color characteristic of boracic acid. The test is applied by the authors thus: The solution is rendered slightly alkaline by dilute soda and a borax bead placed in it for a short time. The bead is then held in a Bunsen flame, if the solution contains one per cent of glycerine a distinct reaction is observed; erythrite and glycol give the same color, or a little of the solution is mixed with some powdered borax, and some of the mixture placed on a platinum loop and treated as before. By means of this test, after concentration, etc., 1-10th of a per cent. of glycerine was detected in beer, one per cent. in sherry, one per cent. in milk, five per cent. in treacle.

Helminthology.

Important additions have been made to this science during the past year, says the *Medical Record*, and the necessity for more extended investigations is evident. A recent discovery in helminthology has important relation to the origin of many obscure diseases. It appears that a Mr. Bancroft wrote from Brisbane, in April, 1877, and incidentally remarked: "I wonder if mosquitoes could suck up the hematozoa and convey them to water! They appear to die in water. I will examine some mosquitoes that have bitten a patient, to see if they suck up the 'filariæ.'" At the time Bancroft was surmising, Dr. Manson, of India, demonstrated this to be a fact. In November, 1877, Dr. Manson wrote to Dr. Spencer Cobbold, the eminent helminthelegist, announcing the discovery of this parasite in the stomachs of the mosquitoes, which had fed on hæmatozoal patients, describing also the developmental changes it undergoes during its residence in the insect.

He also supplements the 15 cases of this human hæmatozoa, giving details of no less than 35 additional cases, and a mass of valuable statistics in relation to the prevalence of "*Filaria sanguinis hominis*," Thus, what the Russian traveler Tedscheuko showed in relation to the case of the "cycleps," considered as the host of the Guinea worm, Manson has shown to obtain in the case of the "Culex mosquito." True, there was a difference in detail, but both play the role of intermediate bearer, the little crustacean and the small mosquito. Dr. Cobbold, as a practical comment on these discoveries, well remarks that "if physicians will only reflect to what extent diseases hitherto obscure are to be associated with the bite of a gnat, they will, perhaps, be not less ready than hitherto to extend a helping hand to those who, at great sacrifice, labor in the fields of helminthology."

A New Infusorian.

Under the name of *Leptodiscus medusoides* Hertwig describes an exceedingly interesting noctiluca-like organism, which he had the good fortune to discover in the harbor of Messina, during the winter of 1876-77. The New York *Independent* says this new form is perfectly discoid in shape, with the flagellum characteristic of noctilucæ. Its size varies, measured across the disc, from 0.6 min. to 1.5 min. The disc is thickest in the center; somewhat raised or convex on the dorsal side, while the ventral is concave. Near the ventral surface and in the center there is a bipartite, oroid nucleus, the smaller half of which is homogeneous, the larger granular. The numerous oil globules are imbedded just beneath the dorsal integument; but, with the exception of the whitish spot (granular area) in the center of the disc, is clear and transparent, exhibiting slight iridescence of the convex side. As the name indicates, this organism is Medusa-like; but this likeness becomes still more strikingly manifest when the organism moves. As in Medusæ, change of place is effected by the powerful contraction and dilatation of the umbrella-shaped body, like the former, forcing the water suddenly from the cup-like cavity. In the energy and rapidity of the contractions Dr. Hertwig says it is not behind any Medusa, provided the little creature is touched with a glass rod. Under these circumstances it darts, like a rhopalonema, through the water as swiftly as an arrow, by the quickly succeeding pulsations or contractions of its umbrella-shaped body. The strongest contractions were produced by osmic acid. The creature under the action of this reagent becomes bell-shaped, about half as wide across the free border of the bell as it is high. As in Medusæ, the animal has the power of bending portions of the free border of the umbrella inward; or sometimes the opposites halves of the disc become bent toward each other, like the opposite valves of a mollusk.

NEW VOLCANO IN PERU.—A Peruvian newspaper, the *Bolsa*, says that extraordinary phenomena have been observed in connection with the "Corpuna" volcano in the Province of Castilla, which have caused great alarm among the population. The immense banks of snow which have crowned its summit from time immemorial have suddenly melted away with such rapidity as to cause torrents to rush down the sides of the mountain, washing out immense quantities of stones and earth. The river below, being unable to contain the great body of water so suddenly added to it, overflowed its banks, causing great damage and distress. A great chasm or lateral crater next opened on one side, throwing out volumes of smoke and steam as well as tongues of flame, which were distinctly visible at night, accompanied with loud subterranean rumblings. It had never been supposed that Corpuna was or could be a volcano, and there is no tradition that it was ever in a state of eruption. Nor within the memory of man has its crown of snow ever been absent.

NEW CHEMICAL ELEMENT.—It seems probable that a new element will be before long brought to light. Recently, M. Soret found in the ultra-violet spectrum of gadolinite lines which belong to the spectrum of no known metal, thus confirming the opinion expressed some time ago by Marignac and Delafontaine, that gadolinite contained other bases than yttria and the oxides of erbium and terbium.

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

California.

AMADOR.

THE PHENIX.—*Ledger*, July 6: It is rumored that this mine has been sold for $2,000,000. Many improvements have lately been made on this property, among others a saw mill, which saws all the lumber and timber that is used in the mine. This is a great saving, and benefits the company materially in a pecuniary point. In the blacksmith shop the old-fashioned bellows has been dispensed with, the air for the forge being now furnished by steam pressure. It is conveyed through a large pipe in the workshop, from thence by smaller pipes to the different forges. By turning a small faucet or lever a valve is raised, admitting the air in any desired quantity to suit the work in hand; this air is supplied constantly by the motive power that runs the mill. The prospects of this mine never were better than at present.

THE Potosi mill, near Drytown, has been stopped temporarily for want of sufficient water. The rock, however, continues to look as flatteringly as ever.

CALAVERAS.

GWIN MINE.—*Citizen*, July 6: The sinking of the shaft at the Gwin mine is completed and the level—the 1550—is being run. As but a short distance intervenes between the shaft and the chimney, it is expected to have stopes opened within a couple of weeks. In the meantime the stopes of the level above are furnishing an abundance of fair grade ore to keep all the batteries in constant employment.

GOOD RESULT.—The value of the last clean-up of the Thorpe mine was $1,000. This mine is situated at Fourth Crossing, and having free water at hand and every facility for cheap working will undoubtedly prove valuable. It is owned by Messrs. Thorpe, Friedberger, Bode & Co.

INYO.

REX MONTIS.—*Independent*, July 6: This company yesterday shipped a $700 bar of bullion, the result of tailings worked. For the reason that considerable dead work has to be done before ore can be extracted in sufficient quantities to keep the mill running to advantage, it will be several weeks before the mill will start up. The new ore strike at the lowest point of working in the Rex Montis is a vein of 16 inches of ore of an average assay of $400 per ton, selected specimens of the sulphurets and chlorides going as high as $30,000 per ton. Certainly no company could have more incentive to vigorously prosecute work, with such a showing at the bottom.

LOS ANGELES

SANTA ROSA MINES.—*Gazette*, June 29: The first discovery of gold and silver-bearing lodes in the Santa Rosa mining district was made in August, 1877. This district lies in the Santa Ana mountains, to the southeast of Anaheim, and contains a great number of ledges, upon some of which a considerable amount of prospecting work has been done. The ore assays fairly, some of it as high as $200 per ton, bearing both gold and silver. There are now over 100 people in the district, and some 60 mining claims have been located and recorded. A town site has been laid out and a pack train built up the mountain, which is steep and rugged. The district is fairly supplied with wood and water, and seems to have an encouraging future before it.

PLACER.

THE BELL MINE.—*Herald*, July 6: The strike made by Bell in this mine about a year ago which created such a stir at the time, it being one of the biggest strikes made in California for many years, proves to have been simply a small stringer from the main body of gold. After he took out enough last year to do him awhile, he quit work and offered to sell the claim for $20,000. He says it was a lucky thing for him that the parties who talked about buying, but who he now thinks had no other object than to go down in the mine and procure some fine specimens, failed to come to time.

THE Little York company has closed down the Liberty Hill mine for the season, owing to the water failing, but their ground at Little York will run for two months longer. Both mines draw their supply of water from the same source and are under the same management.

SISKIYOU.

QUARTZ VALLEY.—Yreka *Union*, July 6: We learn from A. M. Johnson, that on Saturday last he finished a crushing of 49 tons of quartz from the Lindsey & Co.'s ledge, at his mill in Quartz valley, which cleaned up a little over $80 to the ton. The company has a well-defined ledge and the quartz is rich. Mr. Johnson has also within the past few weeks made another crushing of some 20 tons from his own ledge, which cleaned up $28 to the ton—about $5 per ton better than his last crushing. The Allen Bros. are now getting out some fine rock from their mine. Mr. Johnson has crushed some 150 tons of quartz for them which paid about $15 per ton. The rock they are now getting out is much better, however. There is considerable activity in quartz in that vicinity. The splendid result of the crushings of these two or three mines having awakened the people to a realization of the wealth lying dormant around them, and many more ledges are now being prospected.

AT ORO FINO the water has given out and hydraulicing has perforce stopped for the season, and they have now commenced to clean up. There has not been sufficient ground cleaned up yet to tell just what the yield will be, but it is expected to have been a very good season, as most of the claims have washed away an immense quantity of dirt.

ON LITTLE HUMBUG AND OAK BAR.—Last week Jack Pierson purchased the claim adjoining his own, of its owner, Robt. Smith, for $300. Fred Kohls has sold his claim on Little Humbug to a company of Chinamen. They paid him $600 for the ground. Mr. Walker has also sold his claim opposite Collins' sawmill to a company of Chinamen. We did not hear the price paid for it. The Portuguese company near Oak Bar will start taking out the dust shortly. They are now at work in their claim and have recently built a very large dip wheel. Owing to the lack of current at the point in the river where they put in the wheel, when it started it went the reverse way; this mistake has now been rectified. There is considerable activity reported in mining all along the Klamath river.

TRINITY.

DEADWOOD.—*Journal*, July 6: The prospects of the camp are considered good, Trotter, Dienner & Co., have made a "new discovery" and showed us some rock which will go from $125 to $150 to the ton. Sebastian made a recent clean-up in his arastra, realizing $1,600 from 20 tons of rock. Frick & Davis and Phillips & Willey both have good ledges and are certain of a "big thing."

DONE FOR THE SEASON.—Mr. Fred. G. Haas has finished mining in his Junction City claim for this year, water having failed. We are glad to note that Mr. Haas is entirely satisfied with the result of his season's work, but did not learn the amount taken out.

Nevada.

WASHOE DISTRICT.

CON. VIRGINIA.—Gold Hill *News*, July 10: The south drift on the 1650 level is steadily advancing, the face still in blasting porphyry. It is now in a distance of 170 feet from the north line of the mine. The south lateral drift on the 1850 level is in a distance of 215 feet, the face in hard blasting porphyry. Another crosscut west (No. 4) has been started on this level. The drifts both north and south from No. 2 winze on this level are steadily advancing, the face of each in good ore. The north drift from No. 3 winze on the 1750 level is making good progress. It is now in 82 feet north of the winze. The north drift from No. 2 winze is making good progress, the face in low-grade ore. Repairing the main shaft is making the usual fair rate of progress and will be completed to the 1300 level in about 10 days more. The heat both in the shaft and ore stopes is intense, and greatly interferes with the rapid execution of the work.

CROWN POINT.—The south drifts on both the 500 and 600 levels are being driven vigorously forward to reach a point far enough south for crosscuts to penetrate under where the rich ore was taken out on the upper levels. A drift north from the bottom of the winze on the 2300 level has been started on the west side of the ore vein.

MEXICAN.—The new north lateral drift on the 1600 level has been enlarged, timbered, repaired and a T rail track laid in order to make it what it was intended, a main working passage. At the same time the joint east drift on the north line of the Ophir on this level is being cleaned out, preparatory to again driving it ahead to reach and cut the ore vein.

ALTA.—The new east drift at the 1450 station is being pushed steadily ahead to reach and prospect the ore vein. The north drift on the 1350 level is making good headway, the face in fine quartz and vein matter. The north drift on the 1250 level is also being pushed vigorously forward.

GOULD & CURRY.—The heat is so great and the air so bad on the lower levels that all work in that portion of the mine has been stopped until the large lift pump now being put in at the 1900 level of the main incline is ready to run, and the large 20-inch air pipes from the 1500 level, now being put in down to the 1900 level are ready for use.

OVERMAN.—The south drift from the bottom of the winze on the 1600 level is making good progress, without any valuable change to note.

CALIFORNIA.—The ore stopes on the 1600 and 1650 levels are yielding good ore. A sill floor has been started on the 1750 level for the purpose of commencing ore stopes at that point. The south lateral drift from the winze on that level is in 60 feet, the face in vein matter. Work has been resumed in the north drift from the Consolidated shaft on the 1650 level. A connection has been completed between this drift and crosscut No. 4, which is now being repaired and will soon be again in good working order. This main north drift is now in a distance of 325 feet. The repairs to the main air passages on the 1500 level is still going forward. The repairs to the Consolidated shaft are being pushed ahead with all the speed possible, the great heat still being a constant drawback to the work in all parts of the mine.

CHOLLAR-COMBINATION SHAFT.—No sinking has yet been done. The ropes are now all in good order for sinking to the depth of 3,000 feet. Guides are being put in the pumping compartment of the shaft. The flow of water at the bottom of the shaft appears to be steadily on the increase, having averaged from 65,000 to 70,000 gallons per day for the past week.

BEST & BELCHER.—The joint east crosscut from the bottom of the joint winze on the 1900 level is making favorable progress, the face in hard blasting porphyry. This drift is now in a distance of 42 feet. The south drift on this level from the bottom of the winze is in a distance of 134 feet, the face also in porphyry. This drift is intensely hot and the rate of progress is necessarily much impeded.

SAVAGE.—The greatest feature of interest in this mine during the past week has been the connection of the east drift on the 1640 level with the Sutro tunnel. The blast which completed the connection made a hole about five feet square, through which poured a blast of hot, sickening air, the temperature of which was 110°. This current of hot air rushed with great force up the Savage shaft and out at the top of the ventilators on the top of the building. All work had to be at once suspended in both the Savage drift and the face of the tunnel, in neither of which has anything since been done. The force of the air current is very strong and appears to be increasing. The temperature of both the tunnel and drift is gradually subsiding, that in the drift and Savage shaft having, up to 11 o'clock to-day, fallen four degrees since the opening was made. This tremendous draft of air must soon cool the entire mine and add greatly to the facilities for prospecting the lower levels.

OPHIR.—The northeast drift on the 2000 level is in a distance of 108 feet, the face still in hard porphyry. At a distance of 100 feet from the starting point of this drift, a crosscut, No. 2 east, has been started, which is now in 15 feet, and have from 35 to 40 feet yet to run to reach the ore vein. The milling of 353 tons of the ore taken from the winze while sinking, gave a yield of $38,053, or nearly $108 per ton.

LEVIATHAN.—The north and south lateral drifts on the 750 level are being advanced rapidly through good working ground, and are now in 30 feet each way from main east drift. The north drift is already penetrating a similar character of rock encountered on the 600 level when approaching the ore discovery made on that lead. The drifts are west from and running parallel with the vein. Ten feet have been added to each of the branch drifts.

HALE & NORCROSS.—It is likely that a portion of the air current coming through the Sutro tunnel into the Savage mine will be turned through the connecting drifts into the Hale & Norcross, and create, instead of the downcast current now had, an upcast, which must greatly benefit the ventilation of the lower levels of the mine.

BULLION.—The face of the east drift on the 1840 level is showing more water and a much more favorable appearance of a quartz and ore formation.

UNION CON.—The repairs to the north drift connecting with the Sierra Nevada mine on the 1600 level are making favorable progress. The joint east cross-cut on the Mexican north line is also making steady headway.

TROJAN.—The extraction of ore from the 350 and 400 levels of the mine continues with the usual energy. The ore is of a paying quality, and is being crushed at the Vivian mill on the Carson river, nearly as fast as it is taken out. The ore crushed last month gave a return of between $5,000 and $6,000.

BELCHER.—The main south drift on the 2160 level is steadily advancing, the face in vein matter and showing a greater quantity of good looking quartz. The main east drift on the 2360 level has reached the vicinity of the ore vein, where it has been stopped and a drift started southward on the west side of the vein. The 2360 station is completed, and the north drift on that level, connecting with the Crown Point mine, has been thoroughly timbered and a drain cut for any flow of water that may be encountered in crosscutting that portion of the mine.

SIERRA NEVADA.—Sinking the main south incline has been suspended on account of strong indications of water, which seemed likely to flood the shaft. In order to avoid this, a diamond drill is being run ahead. The last 25 feet of the shaft is in quartz of a very favorable character, in fact the best of any that has ever been found on the lower levels of the mine. Finding so favorable a body of mineral-bearing quartz and a well-defined vein at this depth, is a great encouragement, and gives great assurance that a new ore formation is setting in.

YELLOW JACKET.—The new shaft is down 1,570 feet, bottom in hard, dry ground. About 13,000 gallons of water per day is raised from the shaft, most of which comes in at the depth of 900 and 1,200 feet. The huge new pumping engine has been in motion during the past week and works very smoothly.

JUSTICE.—The north drift on the 1300 level is steadily advancing toward the Lady Washington line. This drift is being run in the west country rock. The south drift recently started on the 1225 level is still advancing, following a small vein of rich ore.

JULIA.—On Saturday last the pump-rod broke, which allowed the water to rise in the 2000 level drift, compelling the stopping of all work on that level.

CON. IMPERIAL.—The two west crosscuts from the main north and south lateral drift on the 2400 level are being pushed vigorously forward, the face of each in vein matter, carrying streaks of quartz, which give low assays.

UTAH.—The northeast drift on the 1150 level is still advancing, the face in hard, dry vein matter. The repairs to the main north and south lateral drifts on the 1350 level are making steady progress.

SILVER HILL.—The main south drift on the 800 level is steadily advancing, the face still in quartz and vein matter. The main east drift on the 900 level is also advancing in very encouraging vein matter.

SUCCOR.—The northwest prospecting drift on the 1050 level is making steady and favorable progress, the indications for the finding of a good ore vein being still excellent.

WARD.—The lengthening of the ropes has been completed and sinking the main shaft is being pushed ahead vigorously with an increased force of men.

LADY WASHINGTON.—The north drift on the 1300 level of the Justice will reach the Lady Washington line in a very few feet more, when crosscuts will at once be started to determine the width and character of the ore vein.

BELMONT DISTRICT.

ABOUT GRANTSTILLE.—Belmont *Courier*, July 6: Part of the new machinery for the new 20-stamp mill is on the ground. The Alexander mine is producing large quantities of good ore, which keeps the mills at Ione and Ellsworth pounding without intermission. This company ships bullion regularly to San Francisco and has a pay day on the 20th of each month. Carpenter and Graham are working on an extension of the Alexander. Their mine is located between Grantsville and Union, and the locators are opening it out as fast as possible. The ditch is dug and waiting for the pipes, these will be laid as fast as they arrive, and will be ready to supply Downeyville with water by the 10th of July. The furnace will be completed before that time but will have to wait for the water. Several men are working in Paradise district for M. San Pedro. This district is about 15 miles west of Grantsville and south of Ellsworth about the same distance. The mines at Ione are not worked and have not been for some time, consequently that camp is quiet. Raymond's mines at Lodi are producing sufficient ore to keep the furnaces steadily employed.

BRISTOL DISTRICT.

HILLSIDE.—Pioche *Record*, June 29: The furnace at this mine started up at three o'clock on Monday afternoon. From that time until Tuesday noon two stoppages had to be made in consequence of things not working right. After that time the furnace commenced working splendidly, and has been going along smoothly ever since; bullion is being turned out at a rapid rate and every one is pleased with the prospect, and the future of the company looks very bright indeed. The furnace is turning out 60 bars per shift, and there are three shifts per day, thus making a run of 180 bars every 24 hours.

ELY DISTRICT.

RAYMOND & ELY.—*Record*, June 29: No change to notice in the workings of this mine. Are still extracting good ore from the upper levels and shipping to mill about 15 tons daily. The bed-plate of the compressor has been ten days on the road from Desert springs, and ought to have arrived. Work on other portions of the machinery is carried on as rapidly as possible.

MEADOW VALLEY.—Continue hoisting screenings from the 2d, 4th and 7th levels in as large quantities as mentioned in our last issue. The mill is steadily at work turning out bullion at a very fair rate.

ALPS MATTERS.—As a majority of the creditors have refused to give them more time, there is hardly a doubt but what the Alps silver mining company will settle their business only by going through bankruptcy. Twenty-four of the miners took possession of the Mazeppa shaft Wednesday afternoon with the intention of working it. The sheriff informed the miners that the mine was under attachment and their work would be for nothing, as they would not be allowed to move anything.

EUREKA DISTRICT.

MT. JACKSON MINE.—*Sentinel*, July 2: The connection between the shaft and tunnel of this mine has been made, and a fine current of air secured for the miners. In sinking the shaft a strata of rich ore was cut, and it is now the intention to work it, running the ore through a chute to a car beneath the shaft. At last, therefore, the desired objects have been successively attained, and in about two weeks the furnaces will be started up and the process of money making begun.

THE EUREKA TUNNEL.—The contractors are in over 300 feet, and still in shale, the indications being favorable for striking the ledge before proceeding much further.

Arizona.

TIPTOP COMPANY.—*Enterprise*, July 2: This company have succeeded in finding abundance of water, by shaft and drift, in the Agua Fria, and will shortly start the mill. The hot, dry weather caused the water to sink beneath the sand and gravel of the creek, hence the necessity of sinking and drifting. The company has plenty of very rich ore at their mill and mines, so lively times are now looked for.

SANTA MARIA DISTRICT.—This district is well watered, has plenty of wood for mining and other purposes; but it is not down there, just now. They have good mines, some of which are pretty well prospected.

HASSAYAMPA.—Doane has suspended operations on the Spaulding mine, temporarily, pending the arrival of a new pump from San Francisco. Native silver has been struck on the Constantine, two and a half miles southeast from Aztlan mill, on main road. On the Gen-

eral Sherman mine, Gormley & Green are taking out rich ore and mine is improving. The U. P., owned by Col. Head, is being worked and is in a flourishing condition. R. Stahl is working on his new mine, just across from Senator. Has a tunnel in 40 feet. The Senator mill started up steam yesterday morning.

MOHAVE COUNTY.—The Mineral Park mill, which has been remodeled and changed hands, is now running on good custom ore. The Hackberry has started up and has about 600 tons of very fine ore on the dump to work. A tunnel in the McCrackin mine caved recently, burying one of the miners to such a depth that no attempt was made to rescue him, as death must have been instantaneous.

THE SEVENTY-SIX MILL.—The mill at Picket Post started up on the 27th ult., is now running steadily and will soon send concentrations via Yuma to San Francisco. It is the best five-stamp mill in Arizona, and runs as easily as a sewing machine, and when the stamps are hung up, the machinery makes as little noise as the turning of a grindstone.

Colorado.

CLEAR CREEK COUNTRY.—*Miner*, June 29: The valuable ore deposits lying on the south-east slope of Republican mountain, directly above the Lebanon tunnel, are shortly to become the center of systematic and vigorous explorations, a company having been lately organized for that purpose, with a capital of $1,200,000, $200,000 of which is set aside for working purposes. The consolidated property comprises 12 claims, which vary in length from 600 to 1,500 feet each. They are contiguous veins, the majority of which have the general direction of lodes in this section, forming a belt about three-fourths of a mile in length. Four of these claims are covered by government patents, and there is not a dollar's worth of incumbrance on any of them. A good deal of work has already been done on this property. Operations will now be actively pushed and reduction works put up at an early day. The ore is of a superior quality, running as high as 600 ounces of silver per ton. Several tunnels start in at different points on the surface of the mountain. The mountain slopes at an angle of 45° along the line of the lodes, offering peculiar advantages for tunneling. From $30,000 to $40,000 was extracted from these veins while working them sufficiently to determine their courses and fulfill legal requirements. Beyond and above the cliffs which form the brow of the mountain, under which the mines are situated, a considerable forest of pines stretches away to the north, presenting an adjunct indispensable to mining operations.

COLUMBIA MOUNTAIN.—In the upper tunnel of the Baltic lode, the lessees have struck two and a half inches of ore. It is about 175 feet above the main level, and carries gray copper, wire silver and other indications of good quality, but no assays or mill runs have yet been made.

THE Peabody is situated near the summit of the mountain. This is a rich lode, some of the mineral assaying as high as 20,000 ounces. There is a large body of mineralized quartz in the discovery shaft, which is about 30 feet deep. The boys have been engaged in tracing it down the mountain for some time, and are now 400 feet east of the discovery.

NEW SMELTING WORKS.—San Juan *Prospector*, June 29: The Cooke Bros. are going on with the erection of reduction works on the Animas, at the mouth of Boulder gulch, near Silverton. Joe Reef will have charge of the work, and it will be pushed forward as rapidly as possible. The site is said to be a very desirable one, as it will be convenient to the ore-producing mines on Hazleton, Solomon and Round mountains, and from the upper Animas and Cunningham gulch. The Animas river will be dammed, and a flume and ditch constructed, by which a splendid water power will be secured. The works will be constructed to reduce ores from all the mines from which they can purchase the ore, but for the North Star mine in particular, which is owned almost exclusively by Crooke Bros. This enterprising firm will do a good deal towards the rapid development of Silverton and vicinity, and it seems to us have shown sound judgement in putting up works where ore can be had in any desired quantity. They have at their command an almost unlimited amount of capital, and can go ahead with any enterprise where money is needed.

Dakota.

BLACK HILLS.—*Journal*, June 29: The placers about Deadman's gulch, Rockerville and Hayward are likely to equal any yet found in the Hills, many men are making fair wages there and some are doing remarkably well. The more they are prospected the more extensive the diggings appear to be. Probably the most valuable discovery that has been made is in a gulch two miles northeast of Rockerville, in the limestone formation, and probably nobody other than a tenderfoot or a woman would have stuck a pick in the ground at that point. The exploit of a pilgrim from the States, who recently wandered into that locality, and found it yielding $1.80 to the pan, and shortly thereafter sold his third interest for $1,500, has been already told in these columns. West of this belt of mines comes a different formation, and where true fissure veins are found. In any direction are found quartz and placer mines, and the only trouble experienced is the lack of capital for their development. Those miners already on the ground, have from 10 to 100 leads each, which absorb all the time and money they have to represent and hold their claims. The great drawback of the country is that there are too many mines, and too few practical miners. But these difficulties will soon be obviated with the speedy advent of capital. Ditches will be constructed to the thousands of acres of rich placer diggings; hundreds of mills will be in operation, and constant employment guaranteed to thousands of men and teams. Then the southern and central portions of the Hills will take its proper place as the foremost mining camp in the known gold and silver-producing countries of the world.

Idaho.

MILLER DISTRICT.—*World*, July 2: The diggings in this district lie about 13 miles northwesterly from Bauuer, on the summit of a high mountain, where some work had been done in early days. The spot found by Mr. Graham was small, but it is thought there is more rich ground in that vicinity. On the summit of the mountain are a few flats, from which there are gulches leading down a steep and rugged mountain side. Several men are prospecting there and hope to find placer ground in some of them. At Dry lakes, near by, George Doble and another man have found some ground that they think will pay to rock. A sufficient quantity of water for sluicing can be had only in the early spring, and then but a short time. This will be a great drawback to the successful working of the diggings that may be discovered unless they are rich enough to be worked with a rocker. The gold taken out is richer than the average in this county, and as it is found on the highest mountain of that section, it is probable that a very rich ledge crosses it. Where the gold is found large quantities of quartz are scattered over the surface. The country is favorable for the successful working of quartz, the mountain sides being steep, so that any desirable depth could easily be obtained, and an abundance of timber.

FROM YANKEE FORK.—A gold-bearing lode has been discovered on Ester's mountain, about six miles from Bonanza City. On the surface it is 16 or 18 inches wide, but is not so wide at a depth of several feet, although fully as rich as on the surface. The discoverers pounded out $300 in a hand mortar. A rich piece of placer ground was found late last fall on the opposite side of the river from Stanley Basin. The proprietor has succeeded in getting water on it, and is making money. All the pack-trains in that country are engaged at packing rock to Round valley, from where it will be shipped in wagons to the railroad, thence to Salt Lake City, where it is sold. Lemhi county will not advance to any great extent this year, as no mills have yet been shipped there. The proposed military road would be a great benefit to that county, and the people are anxious to have it put through. The ledge that Amos Franklin discovered on Loon creek last winter is looking splendid.

Montana.

ORE SHIPMENTS.—*Butte Miner*, June 25: Every day during the last week lines of wagons could be seen pulling out from the Original lode claims heavily loaded with ore for the terminus of the Utah Northern. The week's shipments from the Gonyon, aggregate 80 tons, while something over 40 tons was the amount shipped from W. A. Clark's Discovery claim. Newark, New Jersey, is the destination of the greater part of this ore, but some of it goes much further, to Freiberg or Swansea, we are informed.

PENOBSCOT MINE.—There is on exhibition at L. H. Hersfield & Bro.'s bank, a gold bar, weighing 1,429 ounces, fineness .775 and of the value of $23,272, being principally the product of an arastra, which has worked regularly during the last two weeks on ore from the Penobscot mine. It was cast at Molitor's assay office. This bar will be kept here for a day or two, after which it will be forwarded to New York as evidence that the $54,000 and $20,000 bricks from the Penobscot, lately shipped there, has not exhausted the richness of the mine. The mill ordered for the Penobscot, from Frazer & Chalmers, Chicago, has arrived on the ground—the mill-house has been erected, and the stamps will soon be in motion. With adequate milling facilities, the Penobscot will yield such an abundance of gold as will give it rank among the most valuable gold mines in the world.

Utah.

ORE SHIPMENTS.—Salt Lake *Tribune*, June 29: Notice was made the other day of a three car load shipment of ore from the Elmoray mine, on the Sunheam lode, in Tintic. This lot of ore was sampled, assayed and placed on the market yesterday. The assays show the first-class ore, a lot of three tons, to be worth $899 per ton; 16 tons of second-class ore, worth $185 per ton, and 11 tons worth $80. The mine from which this shipment was made is looking very well, it being down by a main incline, a depth of 150 feet, and showing a fine vein of ore in the bottom. Shipments from the Elmoray may now be looked for about once in every 30 days, and in the meantime mining matters in Tintic are coming to the front, especially on the claims along the Sunheam lode. All the ore now being shipped to the smelters from the Cottonwoode and Bingham, is high grade.

PARK CITY.—Salt Lake *Tribune*, July 4: A rich strike has been made in the White Pine and Washington claim which could not now be bought for $25,000. This claim has been opened at intervals for 2,000 feet, showing a hanging wall of rotten porphyry. It is unbroken for that distance, and carries the water on the vein at 30 feet from the surface for that distance. Immediately below and outside the fissure it is dry for 100 feet down. The first extension southwest is the Utah, into which a tunnel is now being excavated to tap the ore body 200 feet deeper than the Washington and White Pine have it. The face is supposed to be within 25 feet of the ore body. The Mohawk, or Secoud Extension, is 1,200 feet distant. It has a shaft 70 feet deep, the same vein, walls, and everything corresponding with the White Pine, so that the Utah stands a moderately sure chance of ore lying between the two, and the additional chance for drainage for the upper 500 feet of the mine. Other good prospects in the neighborhood look very promising. The Pioneer, 1,000 feet west, crosses the ridge at the same angle as the above. It has been reached with a tunnel that taps the vein 1,000 feet below the summit. Lying west of this again, at half a mile distant, is the Central and Iron Horse, crossing the ridge at the same angle. There are three parallel fissure veins presenting the same character of ore, walls and country rock. All have shown good ore on the summit, but more or less broken up, as the elevation is over 9,000 feet, but with the tunnels tapping them low down, which have been quietly running for two years, we expect to take away the reproach of a "one ledge district." John the Revelator, shows ore that assay $118 per ton. The Great Basin tunnel company are also running a drift to strike the White Pine on the east. The Empire company also seem in earnest, and have a large force of men building, hauling, making roads and opening some of their numerous claims.

News in Brief.

ISAAC FRIEDLANDER, the well-known capitalist, died in this city on Thursday morning.

THE grape crop in Sonoma county promises to be large.

A RIDER has been killed at the Long Branch races.

SENATOR BOOTH is expected at Sacramento by August 1st.

YOUNG FREMONT is to be his father's Secretary in Arizona.

THE army worm has appeared in the vicinity of Woodland, Yolo county.

KING HUMBERT and young Menotti Garibaldi are the best of friends.

THE aggregate appropriations made by the last Congress is $157,203,933.

THE bonanza mines have turned out $100,000,000 in gold and silver bullion.

GENERAL FREMONT'S salary as Governor of Arizona will be $2,500 per year.

MANY fatal cases of sun-stroke are occurring in the East, also a few in California.

THOMAS LOWE of Coos Bay, has a second crop of potatoes ready for market.

A MAN named Charles Whittier, a cousin of the poet, died lately at Downieville, Cal.

IN New York, July 6th, Dr. Carver broke 99 out of 100 glass balls thrown in the air.

THE new Mormon temple in Salt Lake, now being built of granite, will cost $5,000,000.

THE army worm is said to be destroying the Dungeness, Washington Territory, potatoes.

TWENTY Nez Perce Indians have been organized at Fort Lapwai as scouts for Howard.

MAJOR DOWNIE, after whom Downieville, California, was named, is visiting Virginia City.

THE waters of Tulare lake, California, are higher this year than during the past 15 years.

A NEW chicory factory has been recently built on Braudt's ranch on the San Joaquin river.

AUGUSTUS HARTSO was killed by a caving of earth in a mine at Blackfoot, Montana, recently.

ANOTHER "fan-tan" house is to be built in Chinatown, at Reno. The license for the game is $400 per quarter.

A FARMER named James Francis, near Victoria, B. C., while felling a tree, was struck by a branch and killed.

THE Nihilists in Russia show their contempt for religion by smoking cigarettes in catbedrals and churches.

WILLIAM CULLEN BRYANT left property valued at half a million and had an annual income of about $10,000.

BY order of the Secretary of War the United States army is to be recruited up to its full force—25,000 men.

TEXAS claims to have 3,000,000 inhabitants, and to be the third in population and the first in size of the States in the Union.

JOHN O'SHEA, Coroner of Lake county for the past eight years, was drowned in Soda bay near Lakeport, last week.

THE campaign against the Cubans cost the Spaniards 80,000 men, and the island is represented as a vast cemetery.

TOM THORP, while drunk at Gridley, Butte county, fell from a horse and fractured his skull, and died a few hours afterwards.

THE Chief of Police announces that since the new police has been assigned to duty but few burglaries are reported.

DR. JAMES AYER, the patent medicine man, died, last week, in Massachusetts, worth a good many millions.

THE wheat crop the coming year in the United States will reach the large sum of 400,000,000 bushels.

FOUR or five white laundries have been started in San Rafael, but there are none now, and John holds the fort.

WHILE bathing at Skowhegan, Me., Osgood Willey attempted to rescue his son, who got beyond his depth. Both were drowned.

THE San Beruardino *Times* says there is no market for honey in that town. The finest white sage, in section boxes, can hardly be given away.

LAST week, C. F. Germann, a shift boss at the Caledonia mine, at Gold Hill, fell to the bottom of the shaft, a distance of 1,450 feet, and was torn to shreds.

Advices from Bolivia state that much suffering exists in Cochabamba. The usual rains have not fallen, and the crops are destroyed.

THE steamer *J. B. Walker*, for Constantinople, is now ready for sea at New Haven, with a cargo of war material valued at $2,000,000.

THOUGH hundreds have been punished for publicly regretting the failure of the attempts against Emperor William's life, there is still no cessation of similar offenses.

A MAN named Anglum, at Chile gulch, Calaveras county, on the Fourth held an ignited giant powder cap too long, when it exploded and blew his hand off at the wrist.

THE condition of affairs on the Mexican border is regarded as very serious by the Government, and will receive attention at an early meeting of the Cabinet.

PERU has for the first time indulged in a census, which gives the population as 2,699,945, of whom 1,365,045 are males; 100 men to 98 women.

OIL has been struck at a depth of about 1,000 feet in the well of the Los Angeles Oil Company, Sespe district. It yields 30 barrels per day of a fine quality of oil.

THE spring clip of wool of Arizona Territory is estimated at 1,000,000 pounds, value between $120,000 and $150,000, after deducting cost of shearing, sacking and marketing.

No fireworks were allowed in the public parks of New York on the last Fourth of July, whereby much expense to the city was saved, and the losses by fire greatly diminished.

POPE LEO, after first making friendly overtures to the Emperor of Germany, has, by the advice of the ecclesiastics surrounding him, determined to adhere to the policy of Pius IX.

AN article will be introduced in the Constitution about to framed in Washington Territory limiting the amount of land which may be acquired or held by any individual or corporation.

JOHN MESSINGER, near Hillsboro, Oregon, fell from the top of a fir tree which he was trimming, a distance of 80 feet, crushing him horribly. He was a fleshy man, weighing about 200 pounds.

WM. WATT, a well-known miner and a prominent citizen of Nevada county and the State, died at North Bloomfield, on Saturday last, from injuries received by being thrown from a carriage a few days before.

PITTSBURG was visited by a severe storm on the Fourth. Several houses were struck by lightning, and in the rural districts houses and bridges were washed away, and crops greatly damaged.

THERE were 76 deaths in the city last week. For the corresponding week last year there were 78 deaths, and the average weekly mortality the corresponding weeks the past five years was 87.

A PAPER has been posted in all cotton mills of Stockport district, England, giving a fortnight's notice of 5% reduction in wages. Operatives seem to favor resistance. A strike there would affect 25,000 people.

"MOLLIE MCCARTHY," the California mare that ran against the horse "Ten Broeck," over the Louisville track, July Fourth, broke down and was distanced. Both animals were badly used up.

THE country east of the Cascade range, in Washington Territory, is settling up fast. The records of the Walla Walla Land Office show that upwards of 300,000 acres of land have been entered during the past year.

LAST week, Numa Dupera, of San Francisco, aged 16 years, who was spending his vacation at Noyo, in Mendocino county, had his neck broken. He was searching for eggs on the edge of a cliff and fell a distance of 45 feet.

JOE MARTIN, aged 13, of Haywards, Alameda county, had his right hand shockingly torn, and his eyes, face and bare legs badly burned, by the explosion of a flask of powder on the Fourth. Frank and Manuel Thomas aged seven and three years, were also considerably burned.

JOHN A. SWAN, a pioneer of Monterey, an Englishman by birth, says in his autobiography: "All my share of the gold and land in California, after 35 years passed on the Pacific slope, is an old adobe house in Monterey, once the first theater in California, with a lot attached to it."

A REPORT from Anaheim, Los Angeles county, says: The cut and wire-worms have entirely disappeared. The corn crops are looking splendid. The barley crop has been entirely exaggerated; it will not yield more than five sacks to the acre. The rye crop will prove most remunerative of all.

ACCORDING to the latest returns, the cultivated land of France is divided into 5,500,000 properties. Five millions are under six acres. Belgium has a like subdivision of property. In Ireland, on the other hand, 110 owners hold more than one-fifth of the soil.

A Great Engineering Feat.

The new railway bridge over the river Tay was opened with much ceremony on the 31st of May. The first movement to bridge the Tay was made about 40 years ago hy the Edinburgh and Northern (afterwards the Edinburgh, Perth and Dundee) Company. It was not till 1871, however, that a project destined to he fulfilled was initiated. In 1870 the necessary act of Parliament was obtained, and on the 8th of May of the following year the contract for the erection was signed. The contract was transferred in 1873 to Messrs. Hopkins, Gilkes & Co., of Middlesborough; and Mr. A. Grothe, who was engineer and manager to Mr. De Bergue, and had shown very great professional skill in the manner in which he proceeded to erect so gigantic a structure was continued by the new contractors, and the admirable, thoroughly substantial bridge which now spans the river is a proof of their wisdom in taking Mr. Grothe into their service. The bridge is 10,612 feet in length—or two miles and 52 feet—and is thus the longest railway bridge over a running stream in the world. The Victoria bridge, Montreal, comes next in respect to length, being 9,194 feet, or 1,418 feet shorter than the Tay bridge. A still more extraordinary bridge than either is one on the Mobile and Montgomery railroad, called the Tensas and Mobile bridge, which is 15 miles in length; but as the greater part of it is carried over immense morasses, it cannot be fairly compared with the Tay bridge, which spans a tidal river.

The bridge starts from the Fife side of the Tay, where the land is about 70 feet above high water, and gradually rises at a gradient of one in 356 until the highest part of the bridge is reached, being 130 feet from the level of the rails to high-water mark. The greatest altitude occurs at the center of the large spans, and from this point towards the north side there is a sharply falling gradient of one in 74. In the structure there are 85 spans of the following dimensions: Eleven spans of 245 feet each, two spans of 227 feet each, one span of 166 feet, one span of 162 feet 10 inches, 13 spans of 145 feet each, ten spans of 120 feet 3 inches each, eleven spans of 129 feet each, two spans of 87 feet each, 24 spans of 67 feet 6 inches each, three spans of 67 feet each, one span of 66 feet 8 inches, six spans of 28 feet 11 inches each. All the spans, with the exception of that of 166 feet, which is made by a bowstring girder, are formed of lattice girders, but in addition to these spans, there are adjoining the north end of the bridge: one span of 100 feet, bowstring girders, one span of 29 feet, plate girders. The 13 largest girders, each being about 200 tons in weight, are in the center of the bridge, and over the navigable part of the river. The girders are arranged in continuous groups, with proper provision for expansion, and are all supported on piers of varied construction. The permanent way consists of double-headed steel rails, fished at the joints in 24 feet-lengths, weighing 75 pounds to the yard, and secured by oak keys in cast-iron chairs. The chairs are fixed at intervals of about 3 feet to longitudinal timbers 17 inches wide, and varying in depth from 7 to 14 inches.

Throughout the whole length of the bridge each rail is provided with a guard-rail to afford additional security to trains passing over the structure. The floor of the bridge consists of three-inch planking, and is covered with a waterproof composition. On both sides of the bridge, for its whole length, a strong handrail is erected, and painted in a light blue color. The foundation of the piers are formed of iron cylinders, with brickwork and cement. Fourteen piers at the south side are built entirely of brick, and on rock foundation, and consists of two cylinders of nine feet six inches in diameter, connected by a wall of brickwork three feet in width. At the 14th pier it was found that the rock suddenly shelved away to a great depth, under beds of clay, gravel and sand, and therefore another kind of pier had to be resorted to which would give an equally sure footing. The weight of the pier was lightened by substituting for the heavy brickwork above high water cast iron columns, fixed together hy horizontal and diagonal transverse bracing, and the cylinders were increased to 15 feet in diameter. The whole of the piers after the 14th are built in this manner, but in the case of the highest piers, supporting the 245 feet spans, they have a cylindrical base of iron and brick in cement 31 feet in diameter, and from 40 to 45 feet in depth, standing a few feet above high water. The whole of the cylinders supporting iron columns are finished with a coping of Carmyllie stone. The first stone was laid on the Fifeshire side on the 22d of July, 1871, and on September 25th, 1877, six years afterwards, the directors and engineers had the satisfaction of crossing over the bridge for the first time in a train.

The contract price of the bridge was £217,000, but the actual cost is £350,000, the great increase being caused because of the original plans of the piers having to be departed from, and plans prepared of another description of piers adapted to the soil in the bottom of the river. The quantities of materials used in the structure are as follows:—3,520 tons of cast iron, 6,281 tons of malleable iron, 90,600 cubic feet of timber, 8,600 of cement, 4,350,000 bricks, 27,000 cubic feet of dressed ashlar, and 355 cubic yards of rough ashlar. The engineers engaged in the construction of the bridge were: Messrs. Alfred Grothe (superintending engineer), Frederick W. Reeves, G. G. Lawrence, R. S. Jones, Theodore D. Delprat, and Thomas Templeton. On Mr. Grothe devolved the responsibility of carrying out the works, and he has done so with remarkable success.—*Iron.*

Paraff's Process.

The Valparaiso *Mercury* contains the following in regard to the result of the legal proceedings instituted against this well-known individual:

The celebrated Paraff process is about to be brought to a conclusion. Although we have frequently spoken of this affair, yet we do not think it will he useless to give an idea of the causes that originated it.

It is now about two years since Paraff said that he was the inventor of an unknown system for working gold, by means of which he extracted a considerable quantity of this metal from ores in which scarcely a particle was found when assayed by the process followed up to that time.

In order to carry out his discovery, two companies were formed in Santiago, which spent considerable sums, without the partners being able to obtain any benefit from the famous reagent, except when Paraff or Rogele took part in the operation.

The downfall of the business caused so much to be talked about it, that the fiscal presented himself and accused Pariff of deception and cheating, and Rogele of having acted in concert with the former to sustain and convince in the existence of a false reagent, and of being he who vitiated the operations with the gold which he threw into the crucibles and coppels.

The course of the action has gone on slowly, and meanwhile the presumed culprits are in prison.

The sumaria being at last terminated, the fiscal's report was presented, and after making an extensive review of the motives for the accusation and the charges brought against Paraff and Rogele, he concludes by requesting that the cause he considered as terminated and the two prisoners be set at liberty, there being no further ground of accusation against them. Since this sentence Paraff has requested to be set at liberty under bail, but the Judge has refused his request. The sentence is expected from one moment to another, unless fresh incidents arise to complicate this long affair.

Red Canyon Placer Mines.—The *News* of last evening has the following in regard to a discovery made by a party of Slippery Gulchers: J. F. Colbath and John Ryan have returned from Silver Lake mining district. In this district, about four miles north of Red canyon, is a promising placer claim, which is owned by eight Gold Hillers. Messrs. Colbath and Ryan brought some specimens with them. The work of development has not yet commenced in earnest. Twelve buckets of dirt from the surface were worked with a rocker, yielding nearly $2 50 in coarse gold. Some of the pieces are nearly as large as a bean. Two men, Henry Peal and William Sibley, were left to look after things on the claim. The locators of this property are well satisfied with the prospects, all of them expecting to become millionaires before long. The only drawback is a scarcity of water, but this will doubtless be removed when full development of the richness is shown. The diggings are about forty miles from Gold Hill. —*Territorial Enterprise.*

The Mines of Dun Glen.—Quite a revival of the mining industry has taken place says the *Silver State*, in Sierra district, Humboldt county, Nevada, since Col. Dave Buel started in there a few months ago. The ten-stamp mill at Dun Glen is running splendidly and successfully. One of the batteries—five stamps—is crushing gold ore from the Lang Syne mine, and the other is crushing silver ore from the Wentworth and Wright mine. The silver ore is worked by wet process up to 82% of its assayed value, and the bullion is over 990 fine. The first shipment of bullion will be made next week. The mines are looking well and the future now seems bright and promising for the old camp.

De Frees Mine.—On Wednesday last this company shipped four bars of bullion of the value of $7,102.67. The De Frees company commenced crushing their ore with their own mill on the 18th instant, and the above shipment includes the entire "strainings," or clean-up, of the concern till Monday last. In addition to this the amalgamators at the mill retorted 230 pounds of bullion yesterday, which is still at the mill. The above statement and figures ought to be pleasant reading to the holders of De Frees stock, this property having been under a cloud since last fall. The showing is tiptop for a week's run with only ten stamps.

A New Railroad in Russia.—It has been announced that the emperor of Russia has approved of the project for a railway from Orenburg to Central Asia, a project which, if carried out, would greatly strengthen the power of Russia in the east. The principal difficulty promises to be a financial one. The total length of the line is over 1,300 miles. This is five times the length of the line from St. Petersburg to Moscow, yet the construction of the latter line necessitated loans to the amount of $207,000,000. Should the projected railway be costly in proportion, it is thought to be doubtful whether Russia could find the capital for its construction.

A Resurrected Mining Region.

Some 14 years ago, a great many mineral-bearing lodes were discovered in the section of country that now constitutes the westerly portion of Nye county, Nevada, drawing into it quite a large population, the most of whom afterwards abandoned it. Lately a number of these lodes have been more thoroughly explored, and some of them seem to be turning out well.

A correspondent of the Belleville *Times* says the Alexander mine, at Grantsville, is keeping two mills running steadily, and that Downeyville is a camp of monster proportions, in a mineral sense, having the richest smelting mine in Nevada. He adds: Here I found a new water-jacket furnace which will be ready to run in five days, 30 houses, stores, saloons, feed stables, coal-burners, brick-makers and prospectors, all engaged in the development of this rich and extensive property; stage lines, Wells, Fargo & Co.'s express, and a new and direct route opened to Wadsworth by Mr. Bell, shortening the distance to less than 100 miles, all of which goes to show the implicit confidence that is placed in the camp. They have something over 2,000 tons of rich smelting ore on the dump. This rich and extensive property is owned and controlled by the Downey Brothers, discoverers of the same.

Mrs. McMurphy, of Spanish belt fame, is the owner of what promises to be a very rich and valuable mine, located on "the extension" of the Alexander lode. It is said there is plenty of ore in sight, which, so far as tried, assays from $250 to $2,000 per ton.

Cast and Wrought Iron Water Piping.—The Hessen *Gewerbeblatt* remarks that it is well known that iron rich in carbon is less subject to oxidation than iron poor in carbon. Wrought iron therefore, exposed to influences which promote oxidation, rusts more rapidly than cast iron. The very simple experiment of laying samples of both sorts in damp earth and leaving them there for a sufficient time will show the difference in their rates of rusting. The duration of wrought piping when laid is thus likely to be less than that of cast piping, and this is proved to be the fact in practice. Commonly speaking, the temperatures of water running through piping in use is lower than that of surrounding bodies, and the walls of the tube are constantly condensing moisture, which powerfully promotes rusting. In house, or in masonry conduits, where the pipes can be got at and kept protected, by tarring, painting or otherwise, from rust, wrought iron tubing can be used with advantage; but in earth it is otherwise. An experienced engineer, who has often had to lay wrought iron piping in short lengths below ground, has always found them, before long, more or less destroyed.

The Cariboo Labor Market.—We mean to repeat what we urged in early spring; Cariboo is in no condition to receive accessions to her laboring population, and will not be until the lodes have proved to be remunerative. Until crushing shall have fairly commenced there will be no field at Cariboo for workingmen. The number of laborers of all kinds already there is larger than can find employment. It would be madness for people without some capital to go to the mines expecting to find a situation awaiting them. Some who have gone in spite of our warning are writing back to friends in California that Cariboo is no place for a poor man. If people will put their hands in the fire after they have been warned to keep them out, is it any wonder they are burned? Men without capital should seek employment near the coast until the time arrives when they may have a reasonable chance of getting work at the mines.—*Colonist (B. C.)*

A New Salt Mine.—Two car-loads of salt arrived here yesterday morning from the works of the Desert Salt Company, on the line of the Central Pacific railroad, near White Plains station. These works are owned by W. Smith & Bro. and Joe Moran, who located the salt field some years ago and are now just getting everything in good shape for producing salt in large quantities. They have springs on an elevated piece of ground, the brine from which may be run to evaporating vats in all directions. Their salt is as white as snow and is chemically pure. If ground it would make an excellent table salt. The salt which arrived here yesterday was consigned to J. B. Mallon, who is the agent of the compay in this city.—*Territorial Enterprise.*

At Last.—The Esmeralda *Herald* learns from ex-Governor Blasdel that the mines at Rockland, on East Walker river, Nevada, are looking remarkably well. His mine at that place shipped the first bar of bullion last week. There are two arastras working an old mine on East Walker river that was discovered as early as 1858—before the discovery of the Comstock. They are taking out considerable bullion. In fact, all the mines on East Walker river are looking well, and that section bids fair to become one among the noted in Nevada.

Tybo District, Nevada.—In Tybo times are lively. The mines never looked better, and are furnishing sufficient ore to keep the works running to their full capacity. Vast quantities of lead are placed up at the refinery awaiting transportation to the railroad, and everything in and around the town indicates a permanent prosperity.

The Engineer.

The State Survey.

We spent a couple of hours very pleasantly on Saturday, says Col. Schuyler in the Stockton *Independent*, at the camp of the State Engineer corps, a short distance down the Stockton channel, inspecting their instruments and general outfit. We cannot enough admire the thoroughness of detail with which Mr. Hall, the efficient State Engineer, has made all his arrangements for prosecuting the work which the Legislature has laid out for him. Stockton has been made a rendezvous as a convenient starting point for the river parties who are to make a detailed survey of the two great rivers of the State. Two floating arks have been built, at a cost of about $900, each adequate to the accommodation of a large party. Each contains a stove and complete kitchen equipment, a long table with folding sides, for dining and drafting purposes, two rows of bunks on the sides, and a locker for each man's baggage underneath the bunks. With these arks and their small boats and the steam launch for towing them about, the parties can thread the rivers and their adjacent sloughs with ease and comfort, having a most commodious home in the midst of the most inhospitable swamp they may chance to be in. For a week or two past they have been regulating the self-registering tide gauges and current meters, and are now ready for work. One party started Saturday night just after we left the camp, to commence work at the head of Old river, a few miles below the railroad bridge. They will make a careful meander of the river, taking cross sections at frequent intervals. No chaining will be done, but all measurements will be taken by means of stadia rods, and a micrometer arrangement of the transit. The notes of the survey will be plotted upon a map right on the ground by a topographer, who will note and sketch in the contour of the river and surrounding country as it appears to him on the spot. Mr. Kluegel will have charge of the party and run the transit, Mr. E. E. Tucker will act as leveler, Mr. E. Grunsky as topographer, and Mr. Frank Soule as rodman for the leveler. There will be three stadia rodmen, besides boatmen, axmen, etc. They will be followed by a hydrographic party who will make observations on the currents, tides, etc. Mr. Boschke starts with the other ark and a full party for the Sacramento river in a few days. At the camp we saw six of the self-registering tide gauges, three of which are to be placed on the San Joaquin below Stockton, and three on the Sacramento. Six more have been ordered. They are very simple, being run by clock work that rolls out a sheet of endless paper at the rate of an inch an hour. A float is so connected with the mechanism by a cord and pulley that a pencil is moved across the paper as it moves, making a diagonal line with the rise and fall of the tide, and registering the state of the tide at every hour or fraction thereof. The only attention they require is to be wound up once a day. They are enclosed in a box which is placed upon a wharf, or in some place where the tube containing the float may be let down into the water. They are of a pattern designed by Mr. Hall, and cost only one-third the price of those in ordinary use. The current meters are beautiful instruments and work at any desired depth. When the survey is complete the exact condition of the rivers in all their parts will be known, and with that information the correction of their weakness may be more intelligently planned. Mr. Warfield, one of Mr. Hall's principal assistants, has gone to Fresno to commence the survey of the irrigation districts of the valley. These surveys, which should have been made years ago, will be watched with interest and the results impatiently looked for.

Comparative Cost of Freight and Passenger Traffic.

We take the following from a paper hy Mr. Francis R. Conder, read before the institution of mechanical engineers, London: On seven leading French railways in 1872, the average cost of conveying 100 tons of loaded train for one mile was 25.4d. The average tare of the passenger trains was 94.5% of the gross load; that of the non-passenger trains was 61.5% of the gross load. It results that to carry a passenger for a mile cost 0.306d.; and that to carry a ton of freight for a mile cost 0.66d. On seven principal railways in 1875, the average cost of conveying 100 tons of loaded train was 26.6d. The average tare of the passenger trains was 82.2, that of non-passenger trains 67.3% of the gross load. The resulting cost of conveying a passenger for a mile was 0.15d.; that of a ton of goods 0.813d. On seven American railways in 1873, according to details contained in the "Investigation into the Cost of Passenger Traffic on American Railroads," by Albert Fink, C. E., the average cost of conveying 100 tons of loaded train for a mile was 50.7d. The average tare of the passenger trains was 93.14%; that of the non-passenger trains 58.37% of gross load. Thus the conveyance of a passenger per mile cost 0.493d., and that of a ton of goods 1.57d. Prices have since been reduced fully 30% in America. On 460 miles of railway in New South Wales in 1876 (according to the report of the government commissioner) the average cost of conveying 100 tons of loaded train for one mile was 55.8d. The average tare of the pas-

senger trains was 93.04 %; that of the non-passenger trains 65.09 % of the gross load. The resulting cost of conveying a passenger for a mile was 0.534d., and a ton of goods 1.598d. Omitting the passenger traffic of India, as exceptionally advantageous to the carrier, the average outcome of the above figures is that a train of 100 tons gross weight conveys either 35 tons of goods or 96 passengers; so that, subject as before provided to verification from accurate accounts, the cost of the conveyance of a ton of goods is equal that of the conveyance of 2.74 passengers. It follows that in order to derive an equal proportionate profit from passenger and non-passenger traffic, the freight per ton on the average of the lines in question should equal 2.74 times the average fare of a single passenger for equal distances.

Proposed Railway to Yellowstone Park.

The *Railway Age* looks with distrust upon a project mooted in Omaha. A company has been incorporated in Nebraska with the ambitious object of building a railway to be called the Omaha & National Park railway, from Omaha via the Niobrara valley to Yellowstone park. This great national pleasure ground, it may be necessary to remind our readers, lies in the northwestern corner of Wyoming Territory, and is a tract of land 55x65 miles in extent, near the center of which lies the Yellowstone lake, a body of water 15x22 miles in size, with an elevation of 7,427 feet above the sea. This region, which has wisely been set apart by Congress for the public, comprises some of the most sublime and astonishing natural features to be found on the earth, and in the course of time as the means of access are improved, it will be the resort of wonder seekers from the four quarters of the globe. The project of a railway from Omaha, however, is almost chimerical. The distance is at least 800 miles, and while the route up to the Niobrara valley nearly to the Wyoming line is practicable, the remaining half of the distance is largely a wild, mountainous, barren, unpeopled country, through which a railway will be, for decades at least, only a dream. It is not supposable that the projectors of the "Omaha & National Park railway" think seriously of such a destination as the name indicates. The National park, however, will, before many years, be accessible without difficulty, as the proposed line of the Northern Pacific railway runs up the Yellowstone river through Montana, to within 50 miles or so of the Wyoming line, and the prospects for the completion of that great enterprise now seem encouraging.

Lighting and Extinguishing Street Lamps by Electricity.—It may be that the days of the lamp-lighter are numbered. At a recent meeting of the English Society of Engineers, a paper was read by Mr. St. George Lane Fox, on "The Lighting and Extinction of Gas by Means of Electricity." The author commenced by alluding to what had already been attempted in this direction, with special reference to the pneumatic system proposed some time ago, in which an extra pressure in the gas mains was made to act upon an apparatus provided for each lamp. He then explained the difficulties that presented themselves, and which led him to design the electric system, which he proceeded to explain. In this system the lamps to be operated upon are connected together by an insulated wire, so that electric impulses sent from one point or station will operate simultaneously on every lamp in the circuit, through the instrumentality of an apparatus with which every lamp is provided, so as to turn the gas on or off independently at any burner, and also to light it. The lamp apparatus consists chiefly of a small induction coil which produces the spark for lighting the gas at the burner, and the soft iron core of this coil supplies, in conjunction with a permanent magnet, the necessary force for opening and closing a valve of peculiar construction, which forms a special feature of the invention. Taking a district of 3,000 lamps, placed 45 yards apart, he estimated the first cost of the system with overhead wires at £4,886 15s., and that of the system with underground wires at £7,499 5s. The cost of working was placed at 4s. per lamp per annum, for cleaning, lighting and extinguishing, equal to £600 per annum. The cost of working on the ordinary system, as per estimates supplied by the gas companies, was stated to be 18s. per lamp per annum, or equal to £2,700.

The Cost of the Canadian Pacific.—The total cost of the Canadian Pacific railway is estimated at $100,000,000, divided as follows: Lake Nipissing to lake Superior, $23,000,000; lake Superior to Red river, $14,700,000; Red river to Rocky mountains, $26,000,000; Rocky mountains to Pacific, $35,000,000; Pembina branch, $1,300,000. But, says the *Railway Age*, the vast sum of $15,000,000 has already been expended in surveys and contracts, and all there is now to show for it is some 70 miles of track from Thunder bay on lake Superior westward into the wilderness, and a few miles of track from Winnipeg, in Manitoba, eastward. The cost of the Union and Central Pacific roads with equipment was about $250,000,000, and these lines are much shorter than that of the Canadian Pacific, and for a large part of the distance are through a much easier country. It is true that railways can now be constructed much more cheaply than 10 years ago, but it is not at all likely that the Canadian enterprise will be confined to the limits of the original estimate. That it will eventually be completed is probable, though not for many years.

Useful Information.

The New Gas-Making Process.

We had not long since some notes on a new process of making coal gas which promised great things. We learn from Eastern exchanges that Prof. Adams, the inventor, lately gave a practical demonstration at his new works at Astoria, near New York city. He claimed, and experts present allowed the claim, that he, by his new process, makes seven feet of gas from a pound of coal, instead of four and a half feet, which is the maximum attainable by the old process. Second, that he extracts all the bituminous matter from the coal in the shape of gas, producing no tar and no ammoniacal liquid, and leaving as the only residuum coke of a better quality than that produced by the old process. Third, that the quality of the gas is much better than that of the old process, and fourth, that he can produce it just twice as fast.

The first point of difference between the old process and Prof. Adams' is that the retorts, instead of being complete in themselves, are made in pairs, with reciprocally acting connection by pipes. As the burning out of a retort takes four hours, the first retort is charged two hours before the second; and each one being charged as often thereafter as it becomes exhausted, it follows that one is always two hours ahead of the other. As, by the old process, the gas generated during the first and last part of the time occupied is inferior to that when the operation is in full blast, the pipes mentioned are so arranged that the product (gas, tar and ammoniacal liquid) of the retort that is producing the poorer gas is forced through the retort that is in full operation. Being thereby subjected to the influence of heat for the second time it is rendered into pure gas. This was at first doubted by some of those who examined the works, but an examination of the pipes from which tar and ammoniacal liquor would flow according to the old process (which pipes Prof. Adams has had made and placed in position) showed that not a drop of either was flowing.

This double distillation, while it effects a complete saving of the bituminous matter formerly used up in the tar, etc., is assisted by the filtering in of a small amount of petroleum and by the simultaneous decomposition of superheated steam, by which means the quality of the gas is improved. The final product is not a mixture of coal gas, petroleum gas and water gas, as might be supposed, but is a compound fixed gas of great purity.

Should the process be found to be practicable on a large scale—and Prof. Adams has manufactured many thousand feet already—the result will be a great saving to the gas companies and to the public, as gas can be produced for 40 cents a thousand feet, according to Prof. Adams' calculation.

To Color Gold Wares.

Our jewelry manufacturers will be interested in some notes on coloring gold of low grade of purity, as translated from German authorities for the *Jeweler and Silversmith:* Some colors have been prepared for producing a fine yellow color on 14 and 18 caret gold wares. Articles of less than six carets cannot be treated in this manner, but must be gilded. Coloring is only used in general for red gold, as yellow is mostly burnished. An excellent coloring for gold ware consists of 30 grammes of gold, 60 grammes of chemically pure saltpeter, 30 grammes of chemically pure salt, and 30 grammes of chemically pure hydrochloric acid. Several operations have to be performed, however, before coloring can be proceeded with. The red gold wares must be thoroughly burnished with tripoli, and must have a uniform dark surface and be boiled without having any specks. This is done by putting the article in boiling water containing borax, heating to a red heat in a clear coal fire, and then quickly cooling in water, afterwards letting it boil in dilute nitric acid (60 parts rain water with 2 parts of nitric acid) until the black coating has disappeared. The articles must not be touched with the hand, but a fine silver wire attached to them, and kept in water. Only earthenware must be used for the purpose of coloring. The crucible pot can also be employed. Two vessels must be placed right and left of the coloring matter with clean hot water for cleaning. A small piece of sal ammoniac is put in the coloring during its action, or even some urine. The color of the gold is far finer and more durable by this addition, which has been a secret to many. Karmarsch and Heeren give the following recipe in their "Technological Dictionary:" To one part of the gold take two parts by weight of common salt which has been dried over a fire, and four parts of saltpeter; they are rubbed well together and then boiled in an earthen vessel with a small quantity of water until the whole has become a dry powder. Then add three parts of spirits of salt (of the specific gravity of 1.165) and let boil until complete dissolution and a perceptible formation of chlorine gas. The objects are then immersed and kept quickly stirred, now and then raising them to see how the coloring is progressing. The process is generally completed in five or six minutes. The articles are then rinsed in hot water and then in cold water and finally in boiling water so that they may dry rapidly. Water must be only added to the color when unavoidable. Soldered places color at first black but afterward become yellow. The color cannot be made use of a second time, but may be kept and the gold recovered by aquafortis, filtration and precipitation through green vitriol. Herr Wagner recommends a solution of one gramme bromine, and 30 grammes of hromide potassium in 1,000 grammes of water as a gold color.

Inflammable Dress Goods.—Steam-Boiler Inspector Siebdrath, of Dresden, we learn from the *Polytechnic Review*, was lead by several distressing accidents that happened to female operatives in factories, from the catching fire of their dresses, to experiment to find a simple plan of rendering such dress goods uninflammable. He tried alum, but with little satisfaction, as the goods so treated burned afterward with more or less readiness. They were likewise injured in appearance. A 5% solution of phosphate of ammonia, however, gave very satisfactory results; the goods (linen and cotton) after treatment refusing to inflame—simply charring when brought in contact with flame. Treatment with a mixed solution of 5% alum and 5% phosphate of ammonia, gave equally satisfactory results. Even when gunpowder was rubbed into goods thus treated, they simply charred and the powder simply puffed. He suggests that female operatives exposed to danger from fire should have their working dresses impregnated and rendered uninflammable by the plan above described. The dress could be used a considerable time without requiring to be washed, and hence the cost of reimpregnation (about 50 cents) would not prove a serious item, especially when considered in connection with the immunity from danger that it carries with it.

Cement for Precious Stones.—The Turks glue diamonds and other jewels to their metal settings with a mixture made as follows: Dissolve five or six bits of gummastic, each the size of a large pea, in as much spirits of wine as will suffice to render it liquid. In another vessel dissolve in brandy as much isinglass, previously softened in water, as will make a two-ounce vial of strong glue, adding two small bits of gum ammoniac, which must be rubbed until dissolved. Then mix the whole with heat. Keep in a vial closely stopped. When it is to be used set the vial in boiling water. This cement perfectly resists moisture, and it is said to be able to unite effectively two surfaces of polished steel.

Coal.—Anthracite contains a small portion of volatile matter, its component parts being carbon, oxygen, hydrogen and nitrogen—the hydrogen being either combined with the oxygen to form water, or with a small portion of carbon to form carbureted hydrogen, which exists in a gaseous state in the pores of the coal. In bituminous coal, the hydrogen is combined with a larger proportion of oxygen and nitrogen, the mechanical difference being that the bituminous and free-burning coals, in particular, melt by heat when the bitumen reaches the boiling point—whereas authracite is not fusible, nor will it change its form until it is exposed to a much higher temperature.

Good Health.

Hints to Nervous Invalids.

Dr. Holbrook, in the *Herald of Health*, gives the following advice: Take plenty of sleep. Eight or nine hours each night will be better than less. But this is the chief difficulty; if you are nervous you cannot sleep; and a good night's sleep is both the cause and effect of coming recovery. When your sleep departs you are sick; when it returns you are well. So that hints to nervous invalids simply resolve themselves into rules for getting sleep. I give you mine, which has been burnt into me by a long experience.

1. Take not less than two hours of physical exercise each day, and in the open air if possible. Work of some kind is better than gymnastics, but swinging dumb-bells or Indian clubs is better than nothing. Useful labor I believe to be far the best, since the mind as well as the body has something to do with sleep and health. It is said that Lyman Beecher used to keep a pile of sand in his cellar and shovel it for exercise. Doubtless it was better than nothing; but for me let it be work, with hoe or spade, or ax or saw, or broom or flatiron, or washtub or kneading-trough, or something that does somebody some good. If you are too rich or too busy, or your time is too precious for you to do any of these things, or if you are so elegant, refined and fashionable that you are afraid of losing caste and soiling your white hands, then know that you are probably too refined and too lazy ever to have the best sleep and health. Excursions and travel may do you good, but never what some manual labor would do. God has made a law about "the sweat of the face," and no mortal can dodge it. The banker and the beggar, the queen and the maid-servant are alike subject to it.

2. Do not overwork the brain. Reading, writing, the hard study of books, and continued thought without any books, are all of them very healthful in moderation. But a little excess in any of these things will overtax your nerves and brain and drive away your sleep. Going to parties, making and receiving calls are all subject to the same law. If you see company and talk more than you ought to, you will not sleep.

3. Avoid all mental labor at night. If you are very feeble you may have to stop reading and writing, and stop seeing company and holding conversation as soon as the sun goes down—possibly before—and devote yourself to the sole business of keeping quiet. It may aid you to record in your diary the number of hours each day that you devote to manual and mental labor and to company, and the result of each day's work upon your health, until you have learned how much of each you can do without driving away your sleep.

4. When preparing to retire, warm your feet, with a hot bath if may be, and let your head cool. Warm your back, the naked skin; heat it between the shoulders—with a firebrand or some other way—as hot as you can endure it, but be careful not to heat the back of your head. If necessary, ask your physician for a counter-irritant, of croton oil or something, and rub it up and down the spine, especially between the shoulders, until it brings out an eruption. It will draw the blood from the head and greatly relieve you. A vigorous rubbing of the back by an attendant will help greatly. But do not let the attendant talk too much. Even the glare of the lamp drives away sleep. So put it out, and you will get drowsy sooner. The light of a great fire will be enough.

Narcotics and Stimulants.—Mr. Jez. Keelgrew, Commissioner of Agriculture in Tennessee, has published some interesting statistics as to consumption of narcotics and stimulants throughout the world. Paraguay tea, it is computed, is used by 10,000,000 human beings, cocoa by 60,000,000, chicory by 40,000,000, and coffee by 100,000,000. The consumers of betel are set down at 100,000,000, those of bashish at 300,000,000, and those of opium in one or another form at 400,000,000. These figures are, however, eclipsed by the proportions of the demand for Chinese tea, which is said to be used by half a billion; while the consumers of tobacco are not only still more widely distributed, but present the astonishing aggregate of 800,000,000. According to a careful estimate prepared for this report, tobacco is more generally used than any other single article of commerce consumed by man. The United States in 1860 produced more than 430,000,000 pounds of tobacco, but ten years afterwards the yield of the plantations had dwindled down to 260,000,000. The report does not state the exact quantity grown in any subsequent year; but it seems that the exports alone in 1875 reached about 220,000,000 pounds, valued at more than $25,000,000. According to the United States Bureau of Statistics, leaf tobacco valued at nearly $29,000,000 was sent out of the country in the year ending June 30, 1877. These figures would make tobacco rank sixth in the list of exported staples from the United States, cotton, breadstuffs, petroleum, and the precious metals alone exceeding in importance. In 1875 the best customers of the United States for tobacco was Germany, who, notwithstanding the large quantity grown in Prussia, took 56,000,000 pounds; while Great Britain, which produces none, took only 54,000,000 pounds.

Brain-Feeding.—The London *Lancet* is glad to find some small tokens that the need of "brain-feeding" is beginning to be recognized by the lay public. For example, it is at length perceived that to perform intellectual work thoroughly men must be supplied with fresh air. This scrap of wisdom has been excogitated in connection with the controversy about the ventilation of courts of justice. It is not unreasonable to anticipate that in process of time it may dawn on the consciousness of ordinary thinkers that just as muscle is fed and trained for physical exercise, so brain needs to be prepared and sustained in mind-work. The press of work and the strain of worry are so great in these days of hot haste and breathless enterprise that, except under conditions rarely established and maintained, the power of self-nourishment and repair in the mind-organ is not sufficiently strong to keep it in health. It follows that it must be fed and nourished by special design. An adequate supply of oxygen is the preliminary requirement. Then comes the question of food; and, whatever else may feed the brain, workers with this organ should be assured that alcohol will not sustain it. Alcoholism and oxygenation are directly antagonistic processes; and even if alcohol be food for the brain, the organ cannot feed when the nutrient fluid circulating in its vessels is disabled from the task of conveying oxygen, which happens whenever spirit is present in more than very moderate proportions in the blood. The relief afforded by alcohol from the sense of depression procured by a sack of oxygen, is, therefore illusory. It is produced by over stimulating an organ which is both exhausted and impaired.

The Black-Bottle Spider.—The Modesto *Herald* says that people would do well to guard against this poisonous insect. Several very sad cases have resulted from its venomous sting, and just now there are some patients undergoing treatment from that cause. Its bite, or sting, frequently results in paralysis, and one man we learn of had the left side of his body completely paralyzed from a bite on the shoulder. It may be recognized by a black, bottle-shaped body, average size, and long legs. We are informed that it will only be found where webs are permitted to remain without molestation, so it behooves all to see that their dwellings are rid of the unsightly spider web.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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NEW ADVERTISEMENTS

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The Week.

The week has passed without noticeable events in the industrial world, nothing having transpired to greatly disturb the ordinary currents of business. The suspension of the Sierra Flume and Lumber Company by checking the manufacture of lumber and throwing out of employment nearly 1,000 workmen will prove a serious detriment to the local interests of the section of country where their operations were carried on. Creditors, however, will not suffer, as the company have ample means to satisfy their indebtedness, which does not exceed $200,000, while their assets are valued at $2,200,000; The Indian outbreak has continued to spread until it has come to assume vast and unexpected dimensions, indicating such a general dissatisfaction among the various tribes of Northwestern Idaho and Eastern Oregon as can only be quelled by a considerable force and very determined efforts. Already the whites have achieved several minor victories, and with the troops now in the field it seems probable that the war will be brought to a speedy end through the subjugation by arms or the voluntary submission of the disaffected savages. The troops, both volunteers and regulars, are entitled to much praise for their bravery and general good conduct evinced thus far. A vessel cleared at this port during the week for Callao, Peru, laden principally with mining machinery manufactured here for parties in that country. This, though not the first, is much the heaviest shipment of the kind yet made for South America, the consignment sent forward being only a portion of the entire amount contracted for, and the most of which is completed or in an advanced stage of construction. With the extension of mining and railroad enterprise in that country heavy supplies in this line will be required.

Vein Mining in California.

Taken as a whole, vein mining in California is in a fairly prosperous condition. In some districts the business is both thrifty and progressive, in others it is but moderately so, while in a few it is suffering from chronic stagnation or has been suspended altogether. In San Diego county, the most southerly section of the State where this industry has been pursued, it has failed to make the headway expected, the product of the mines, never very large, having remained about stationary for the past four or five years. Of the mines in this county, it may be said that while they have failed to enrich the owners and those investing in them, they have not, as has sometimes elsewhere happened, been a source of loss to those seeking to develop them.

In Los Angeles, the next county to the north, not much vein mining is or ever has been done. Recently a number of mineral lodes have been discovered in the Santa Ana mountains, in the southeasterly part of the county, leading to the organization of a mining district and some attempts at opening up the same. These ledges carry antimonial silver, with lead and in some instances also gold. So far as explored, they show signs of permanence and promise to remunerate a further investment of capital. A town named Silverado has been laid out in the district, which contains about 100 inhabitants, the most of them claim owners and workingmen.

In Inyo county mining languishes this summer. Results here have, in fact, thus far, caused general disappointment, admonishing all of the impolicy of allowing population, building and all manner of expenditure to get so far in advance of lode exploration and ore development. Of this region it can only be said that affairs having been at least restored to a normal condition, it may be expected that mining here will experience a more healthful growth, as the country possesses extensive mineral deposits, and has been pretty well outfitted with suitable reduction works. Among our lode mining counties Mono is just now one of the most active and prosperous. The large and profitable production made the past year by the Standard mine at Bodie, has served to revive prospecting in this section of the State, giving such an impetus to the business as threatens to bring in too many people and cause everything to be overdone. As yet, however, affairs there are maintained in a tolerably healthful condition, some new and seemingly important districts having been discovered, and many of the recent localities giving evidence of permanent value. While Alpine sustains its well earned reputation of being the county of great promise and little performance, it is due this laggard in the field of vein mining to say that several well conducted enterprises have lately been set on foot there. Albeit others after a long struggle have meantime succumbed and given up the ghost.

Along the gold belt, from Kern county to Tuolumne inclusive, a distance of over 200 miles, we find only here and there anything like a marked success in this department of mining to be noted. About Tailholt and Havilah, in Kern county, a number of small companies are making fair earnings. At Keruville, the big mill of the Jones-Burke company is running on ore of too low grade to afford much profit, and in this neighborhood, the Fryer Royal metal company have secured and are opening a property of standard value. In Mariposa, the Washington and Hite mines continue to do well, while in Tuolumne, the Soulsby, by its late success, has almost regained its ancient fame, there being various other properties in this county that are being worked with remunerative results. Still, so little along this entire stretch of country has been accomplished of an encouraging kind, that we would fain pass it by unnoticed, only that it possesses mineral resources of almost the first order, with great natural facilities for making them practically available.

Calaveras county can boast of several prosperous quartz mining enterprises, foremost among which is the Gwin mine, while in Amador, adjoining it on the north, this interest flourishes to an extent hardly equaled elsewhere in the State. The mines in this section are as a general thing looking and yielding well, and, while some of the mills, dependent upon water for their propulsive power, will be obliged to curtail or suspend operations before the season is over, a few having already done so, the yield of bullion will this year be larger than usual.

While neither El Dorado nor placer have yet distinguished themselves in this province of mining, both claim their ability to do so, and are really doing much towards making this claim good, the business already paying well in some localities and everywhere receiving much attention at the present time. Placerville, Georgetown, Greenwood, Colfax, Ophir and Auburn are here the most active neighborhoods of this industry. In Nevada county quartz mining has during the year made a new departure, an event due to a variety of causes, such as the really good character of many of the ledges, the facilities that exist for cheap mining, the advanced condition of the business and the large success that in many cases has attended its prosecution here. Then, too, the Fryer process, though it failed to achieve what was expected of it, by strongly directing the attention of capitalists towards this interest and really enlisting many of them in it, communicated to the business here an impulse that has carried it forward in a most remarkable manner. To here enumerate the many quartz enterprises now in full tide of success in this county, with others that have of late been auspiciously inaugurated, would require more space than can be spared: suffice it to say the foundation is being laid for a greatly increased gold production here, and that the annual yield from this source will be larger than for any preceding year.

Going north we enter a county where other branches of mining than the one we are considering are in the ascendant. But even here there are mining quartz properties that are making satisfactory returns for the labor and money expended upon them, and in some of which a very small, while in others a very large amount of capital has been invested. In Sierra county the Sierra Buttes and in Plumas, the Plumas Eureka companies continue to enjoy a prosperity extending back through a long series of years, and which there is good reason to suppose may reach into the indefinite future.

Placers on Upper Snake River.

A party writes to the *Idaho Statesman* from Salubria, on the Upper Weiser, inquiring about the chances for finding remunerative gold diggings on the head-waters of Snake river. In answer to this inquiry the editor of that journal replies that he is without definite information on that point, remarking that, however it might be as regards the upper waters of the Snake, there certainly are bars further down on that stream which will pay fair wages and which were worked steadily up to the time of the late Indian outbreak. Seeing like queries in different quarters indicating that there are others who would like information on this subject, we furnish herewith a few facts tending to throw some light upon it.

In the summer of 1870, at the time of the Snake river excitement, one of the editors of this paper made a journey to that region of country, and striking the river at the crossing of the Kelton and Boisie Basin road, followed the same to its source in the Wind River mountains, a distance of nearly 400 miles. As the gold dust found on the bars of the Snake was exceedingly fine, and the country traversed by that stream was mostly of a basaltic formation, and consequently without mineral veins, it was concluded that the gold had come from its upper confluents, which it might reasonably be expected would afford rich diggings. In this, however, we were disappointed, the gold dust, both as regarded fineness and quantity, remaining nearly the same along the river until we reached the foot of the mountains, when the current became so rapid that there was little chance for bars to form. At a great altitude in the Wind River range, the highest portion of the Rocky mountains, Snake river separates into two main branches, having many tributaries. These two branches, known respectively as the North and the South Fork, flow through beautiful grass valleys which, in the summer time, abound with all kinds of game. The bars along these streams all contain gold, but in such small quantities that they will not pay for working, the dust here being just as fine and difficult to save, as it is 300 or 400 miles further down.

After our party had been in the valley two or three days, and before we had time to sink on these bars, a large party of Sioux came in and notified us that we must desist from further searching after gold. They seemed to have no objection to our remaining there and fishing and hunting, but would not suffer us to do any more prospecting, a business we were the more willing to relinquish, as we had already about satisfied ourselves that it would not pay. We found places where a dollar or two per day could be made by sluicing, but this would be but a poor return, considering the shortness of the working season and the cost of getting to and living in this country, supposing the Indians would allow the whites to work there at all.

These valleys in the summer are full of buffalo, elk, bears and other kinds of game, which the Sioux come in large parties at that season to hunt, bringing with them their women and children, dogs, ponies and lodge fixtures. Camping here, they kill these animals in great numbers, and, curing their skins and flesh, pack them, on the approach of fall, down into the plains, where they spend their winters. These mountain valleys are to this people a perfect game preserve, and well knowing that the permanent presence of the whites would destroy it for this purpose, they will never willingly consent to have them there. Only in the summer could mines there be worked, and then these savages would be sure to put a stop to any attempt of that kind, assuming that the dirt was rich enough to pay.

It must be remembered that the Sioux inhabiting this section of country, though not particularly hostile to the whites, are brave and warlike, the men being large, muscular fellows, pretty well mounted and always well armed. They hold in great disdain the surrounding tribes and even show something of this feeling towards the superior race. When they came into the valley, they scarcely condescended to notice our party, riding directly over the camp of our party, as if we had been a squad of Chinamen. As Americans, we felt humiliated, but there was no hope for us. While itching to shoot the rascals, we had to turn it off as a good joke

Records of the Stetefeldt Furnace.—No. 1.

The construction of the Stetefeldt furnace has already appeared in the PRESS, and its method of working is too well understood to require comment. We simply wish to add through our pages the following contribution to technology, for which we are indebted to the inventor himself, Mr. Stetefeldt. We publish these extracts, as far as possible, unchanged from the manuscript which he has prepared for publication in a separate form. The analytical work mentioned was undertaken in the laboratory of State Chemists, Falknean and Reese, and may be relied on as correct. The same may be said of the rest of the matter, which is more than can be usually said even of what are claimed as the reports of disinterested parties.

Improvements in the Furnace Itself.

These consist in slight but important changes in the charging and discharging apparatus. The latter is now effected by making the bottom of the furnace a movable iron damper which rests on brackets with friction rollers. By simply withdrawing this the ore is discharged into a car standing upon a railway beneath. The feeding machine consists of a cast-iron frame, which is placed on top of the shaft, and is provided with a damper, which is drawn when the furnace is in operation, but is closed when, for any cause, the furnace stops for any length of time, or when the screens have to be replaced. This frame contains a cast-iron grate, to the top of which a punched screen is fastened. This latter is made of Russian sheet iron, or of cast-steel plate, with holes one-tenth to one-eighth inch in diameter. Above the punched screen is placed a frame to the bottom of which is fastened a coarse wire screen, generally No. 3, made of extra heavy iron wire. This latter frame rests upon friction rollers. The brackets which hold these friction rollers can be raised or lowered by set screws, so that the wire screen may be brought most to or removed away from the punched screen, as may be desired. By means of a shaft with eccentric the wire screen can be put into a sharp oscillating motion. Above this screen and fastened to movable brackets, extend arms which come nearly in contact with the wire screen. The distance from it can be adjusted by set screws. By means of conical pulleys, the wire screen can be put in motion at the rate of 20 to 60 strokes per minute, just as may be desired. By this means the amount of ore discharged into the furnace may be exactly regulated. This can also be done to some extent by varying the distance between the two screens and that between the wire screens and the blades. The effect of these blades is to keep the pulp in position when the screen is oscillated and to act as distributers of the pulp over the whole surface of the screen. Above the screens is placed the ore hopper. The hopper receives the ore from an elevator which receives its supply from another hopper, into which the fine ore is discharged by the crushing machinery. The ore is generally pulverized through a No. 40 screen. It will be seen that this arrangement enables the charging to be done without any large and heavy building upon the top of the furnace, while the fireman standing below can have perfect control of the feeding machinery.

Critical Remarks Upon the Furnace.

It is evident from the above description that the working of this furnace can be regulated in the most perfect manner, and that no disturbance can occur which does not admit of an immediate and easy correction. Even before it had reached its present perfection, Dr. R. W. Raymond, U. S. Commissioner of Mining Statistics, speaks of it in his report of 1870: "This invention is one of the most important steps of progress yet achieved in our American silver metallurgy."

The Stetefeldt furnace can be used for oxidizing as well as for chloridizing roasting, but it is mainly for the chloridizing roasting of silver ores that it has been generally introduced.

Mr. Guido Kuestel thus describes in his treatise on the "Roasting of Gold and Silver Ores" the chemical changes which take place in the Stetefeldt furnace in the chloridizing roasting of silver ores:

"Considering the old, or rather the usual theory, deduced from the roasting process in the common reverberatory furnaces, that sulphates must be formed before the salts can be decomposed, and not till then will the chlorination begin, it would seem that for these chemical reactions, more time is required than a few seconds, but this is not the case. As soon as the ore and salt enter the furnace, each sulphuret particle ignites in the glowing atmosphere, evolving at the same time sulphur, which, in the presence of the atmospheric air, is turned into sulphurous acid, and the metal into an oxide, or in part directly into a chloride. The sulphurous acid in contact with the ore particles and oxygen becomes sulphuric acid. The temperature is nearly too high from the start to form sulphates, so that the sulphuric action turns its force on the red-hot salt particles, setting the chlorine free. All these unctions are performed instantaneously. The whole space in the furnace is filled with glowing gases of chlorine, hydrochloric acid, sulphurous acid, sulphuric acid, oxygen, steam, volatile base metal chlorides, etc., all of them acting, decomposing and composing on the sulphurets with

great vigor. The chlorine acts on the sulphurets directly, forming chlorides of the metals and chloride of sulphur; it attacks, decomposingly also, oxides and sulphates, if present. The hydrochloric acid performs the same office. Also, metallic silver if it should occur in the ore would be converted into chloride. The sulphuric acid, besides decomposing the salt oxidizes the sulphurets directly, etc.

"Considering now an ore particle in a red-hot condition attacked simultaneously by all these gases while falling, the final chloridizing result is inevitable. The finer the ore particles are, the more perfect the chlorination; but even if some coarser parts (to a certain degree) should reach the bottom not thoroughly chloridized, this would be finished in the pile, as the chlorination and evolution of chlorine gas continues in the red-hot accumulation at the bottom of the furnace."

Of the other purposes to which the furnace is adapted, the following may be mentioned, viz.

(1.) The oxidizing roasting of gold-bearing sulphurets, preparatory to the extraction of gold by Plattner's process or by amalgamation.

(2.) The oxidizing or chloridizing roasting copper sulphuret ores, preparatory to one of the leaching operations.

(3.) The oxidizing roasting and clagging of galena ores, preparatory to their reduction in the blast furnace. By proper changes in construction, the furnace could be easily adapted to this purpose.

Cost of Construction.

Considering the enormous capacity of the Stetefeldt furnace, and its durability, if well constructed, it is by far the cheapest furnace with regard to original cost of erection.

The largest sized furnace, capable of roasting from 50 to 70 tons of ordinary ores and from 30 to 35 tons of very base sulphuret ores in 24 hours, requires the following amount of materials, from which the cost of construction in any particular locality can be easily calculated by any architect or mill-wright, viz.:

Fire-bricks for fire-boxes and arches exposed to flame	1,500
Common bricks of good quality for furnace, large system of dust-chambers, chimney and cooling floor	200,000
Bolts and nuts for anchoring furnace and dust-chambers	2,500 lbs.
Wrought-iron braces, flat iron for car-guides, tools, etc.	4,500 lbs.
In castings	10,000 lbs.

All the castings are very plain and simple, the water jacket on top of the furnace and water damper having been discarded. Considerable work is required only on the feeding machine, feeding machine damper, discharge damper, and some of the fire doors, which will be covered by an additional charge of about $700 added to the price of ordinary plain castings. The cost of these iron discharge cars is $125. For a furnace of 15 to 20 tons capacity without hopper discharge and extensive dust chambers, the amount of materials may be estimated at two-thirds of the figures given above.

We will give an example of the cost of erecting a Stetefeldt furnace of largest size at stated prices for materials, freight and labor.

1,500 fire bricks at $60 per M	$ 90 00
200,000 common bricks at $15 per M, delivered	3,000 00
7,000 lbs. wrought iron in bolts, braces, etc., at 8c	560 00
16,000 lbs. castings at 0c.	960 00
Labor on castings	700 00
Iron discharge cars	125 00
Freight on 12,000 lbs. fire brick and 23,000 lbs. iron, at 2c.	700 00
225 days mason labor at $6	1,350 00
180 days mason's helper labor at $3	540 00
To grading, foundation, sand, scaffolding, etc.	600 00
Superintendence of construction	400 00
Total	9,025 00

This estimate does not include cost of conveyors and elevators, and the building to cover the furnace. A part of this expense belongs in reality to the pulverizing machinery. These items will vary materially according to the price of lumber. From $3,000 to $4,000 is a liberal estimate for most mining districts.

Expense of Roasting.

The expense of roasting in the Stetefeldt furnace can be calculated as follows:

Fuel.—The amount of fuel required in 24 hours is from two to four cords of good wood (or its equivalent in coal), according to the capacity of the furnace and character of the ore. Furnaces of 20 to 25 tons capacity have generally consumed from two and one-half to two and three-quarters cords of nut-pine. Only well-seasoned wood should be used for firing the furnace.

Labor.—Two firemen take charge of the furnace in 24 hours. They work in 12-hour shifts. For discharging and cooling the roasted ore, the number of men is in proportion to the amount of ore roasted. For instance a furnace of 25 tons capacity requires four men in 24 hours to discharge and cool the pulp and get it ready for amalgamation.

Salt.—For chloridizing roasting of silver ores the Stetefeldt furnace requires less salt than any other furnace, because the decomposition of the salt is very perfect and the chlorine and chloridizing gases emanating from the roasted ore at the bottom of the shaft act upon the falling ore which floats in an atmosphere of these gases. Ores which are free from lime and magnesia can be chloridized in the furnace with a minimum of salt.

During a run of nine months at Surprise Valley mill, Panamint, Cal., where an average chloridation of 92% to 93% was obtained in the roasting of silver ores, assaying $75 per ton, only 2½% to 3% of salt was used. In fact a still lower percentage of salt would have sufficed had the saving of it been any object. In cases where the ore carries lime and magnesia or a large percentage of base sulphurets, it is of course impossible, even in a Stetefeldt furnace, to obtain good chloridation with such a slight per cent. of salt, and generally from 5 % to 8 % are required. The salt is either mixed with the ore at the dry kiln and crushed with it, or they are crushed separately and mixed by proper machinery before entering the furnace.

We give an example of cost of roasting in a Stetefeldt furnace of 25 tons capacity in 24 hours, at stated prices for labor, fuel and salt, such as are generally paid in mining districts in Nevada:

2 firemen at $4.50	$ 9 00
4 ore coolers at $4	16.00
2½ cords wood at $8	22.00
Wear and tear of screens, etc.	1 00
Labor and fuel for 25 tons	$48.00
Labor and fuel p r ton	1.92
7% salt at $40 per ton	2 80
Expense of chloridizing roasting per ton	$ 4 72

Chloridation of Silver Ores.

The percentage of silver chloridized in roasting silver ores in the Stetefeldt furnace varies according to the character of the ore and the care with which the furnace is managed. Results as high as 97% have been obtained, while the average chloridation generally range from 87% to 93%. Ores free from sulphur or with only a slight percentage of it, should be mixed with 1% or 2% of iron pyrites, otherwise decomposition of the salt is not possible. Oxidized ores, however, containing peroxide of manganese, or iron which gives off oxygen when heated, can be successfully chloridized by themselves. The best results are obtained by mixing oxidized ores with sulphuret ores, particularly in the presence of peroxide of manganese. In such cases the capacity of the furnace is much increased. The presence of copper is very favorable to the chloridation of silver, and if the ore is of such a nature that it bears a high heat without sintering, the chloride of copper formed in the upper part of the shaft can be almost completely decomposed and very fine bullion produced by amalgamation. As an example we state the result of an experiment made at Surprise Valley mill, Panamint, Cal. The ore roasted at a low temperature gave bullion only 300 to 400 fine by amalgamation, the base metal being copper. By roasting the same ore at a high temperature the bullion produced was almost free from copper, its average fineness being 980 during a run of nine months.

All antimonial ores are chloridized with great facility, and with a good system of duct chambers the loss of silver is almost imperceptible. The same is the case with zinchlende. Silver ores containing galena are treated by the Stetefeldt furnace with good results. The lead, however, has a tendency to produce lower chloridations. Guido Kustel says in this regard: "The baking of the ore during chloridation in the presence of lead cannot take place in the Stetefeldt furnace; and it is therefore very probable that a higher amount of lead will be less injurious than in any other roasting process." This has been fully verified by practical experience.

Advantages of the Furnace.

The Stetefeldt furnace recommends itself not only by its durability, by its economy in fuel, labor and salt, but by the ease with which ordinary laborers can learn in a very short time to control its workings. This has been fully verified wherever it has been introduced, frequently under the most unfavorable circumstances.

Patents.

The claims of the Stetefeldt furnace patents cover original inventions which have been fully sustained in the courts of the United States. The most important of the letters-patent of which the Stetefeldt Furnace Company is the assignee, are as follows, viz:

1. Letters-patent No. 100,237, dated March 1st, 1870. Improved machine for feeding ores into shaft-roasting furnaces.

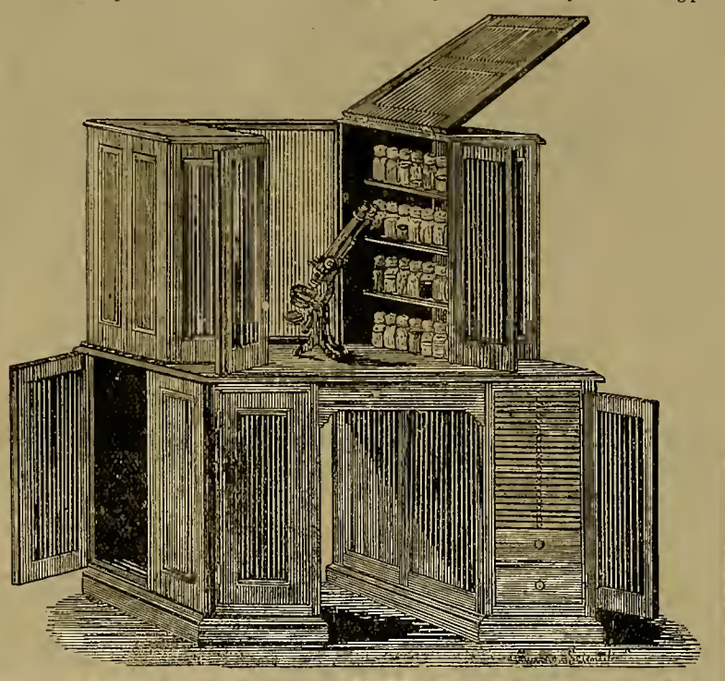
2. Letters-patent, re-issue, No. 3,808, dated January 25th, 1870. Improved process for treating silver ores.

3. Letters-patent, re-issue, No, 8,266, dated May 28th, 1878. Improvement in furnaces for roasting and treating ores.

All these patents have been granted to C. A. Stetefeldt. In addition to these the Stetefeldt Furnace Company has secured the exclusive right to use, for chloridizing purposes, every furnace patented in this country prior to the Stetefeldt patents, with which there could be even a trivial or fanciful interference.

In our next issue we will give an account of some of these furnaces which have been erected, with the results obtained with them.

THE directors of the Atchison railroad expect to push the road as far as Santa Fe, New Mexico, in 1879.



DR. MOUSER'S CABINET FOR MICROSCOPE, ACCESSORIES AND MATERIAL.

Dr. Mouser's Cabinet for Microscopic Work.

Our engraving on this page shows a cabinet, designed by Dr. S. M. Mouser, of San Francisco, one of our leading microscopists and member of the San Francisco Microscopical Society. This cabinet he has had constructed in the best style of the cabinet-makers' art, and, in addition to its high value as a working apparatus, it is a handsome piece of furniture, which well accords with the other appointments of his elegant office. We are prompted to present the engraving and the following description, so that other microscopists may be benefited by the enterprise which Dr. Mouser has carried out for himself. Dr. Mouser furnishes us the following notes descriptive of his cabinet:

Having long felt the inconvenience of working on an open table, where everything was exposed to dust and intruders, I planned this cabinet, which I find a most convenient piece of furniture.

The whole cabinet is 46 inches in length. The lower part is 28 inches in depth, from front to rear, and 28 inches high, with open space in the center—running entirely through from front to rear—20 inches wide and 24 inches high, admitting the feet and knees as the operator sits at his work. On each side of this open space is a door, 10 by 22 inches, inclosing a tier of 26 trays, containing 24 slides each, and two drawers, three inches deep each.

Behind these trays and drawers is a space large enough to contain case for microscope, which is accessible by a door opening at the end of cabinet.

Above the open center is a drawer, the full width of it, two inches deep, and running through from front to rear.

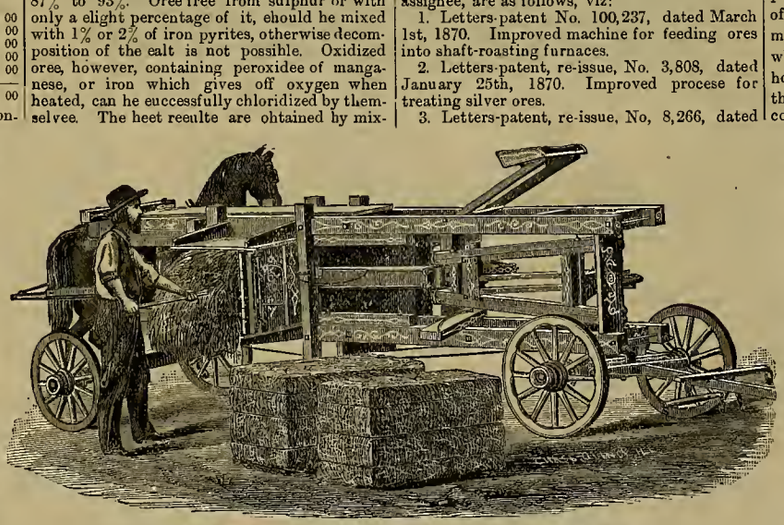
The upper part of the cabinet is the same length of the lower, but only 22 inches from front to rear, and 24 inches high, leaving a ledge six inches wide in front. This upper part also has open space in the center, 22 inches wide, the back part of which is enclosed with plate-glass to admit light, while the front has two panel doors and the top one, which is hinged to one side, allowing the center space to be closed in a moment. In this center space stands the microscope, always ready for use, with whatever material is being manipulated, and can be closed up in an instant and protected from dust and intruders.

On the left hand side of this open space are fourteen drawers in two tiers, three inches deep, and ten inches from front to rear and drawing into the open space. On the opposite side are three shelves, for the numerous bottles necessary for microscopic work.

The whole cabinet is fine panel work of black walnut, finished back as well as front, highly polished, and is a handsome piece of furniture. It is on castors, and can be rolled to any part of the room desired, always placing it with back to a window for light. Everything necessary for microscopic work can be kept in it, and the operator can reach all as he sits at his work.

The Ertel Portable Press.

We present on this page an illustration of a portable hay press, invented by Mr. Geo. Ertel, of Quincy, Ill., who has for ten years been manufacturing the Ertel Beater Hay Press, which has a wide reputation. The public, however, demanded a press of less cost, one that could be operated with less force, that could be used in the field and moved from stack to stack without loss of time. The press can be hauled about by any common wagon team of two horses, and passes through gates where a common farm wagon can pass, and when drawn to a stack, is ready for work. Ten tons of hay pressed by it can be loaded in an ordinary box car. The size of the bales in the press is 18, 24 and 34 inches. They are very smooth and square, and will weigh from 200 to 250 pounds each. Sixty of these bales can be made in a day, and from 100 to 115 of the same can be loaded in almost any ordinary box car. The weight of the complete press, with axles, wheels, tongue, double-tree, tie-making machine, etc., is 3,200 pounds.



THE ERTEL PORTABLE ONE-HORSE HAY PRESS.

This press is worked in a horizontal position, resting on four wheels. The sweep or power is on the side of the press, whereby the levers are drawn in with a chain seven feet in length, which is fastened directly from the levers to the power, and is then worked without the aid of a sheave or pulley, whereby all friction is avoided, being operated in this way:

One horse is hitched to the end of the sweep, and when going to the right, opens the press or levers; then the charge of hay is placed in the press by a door which locks itself as it is shut; while this is done the horse is moving round, pulling to the left, which motion closes the levers or press, bringing the pressure to bear; this operation also opens the feeding door without any further attention. As soon as the horse has reached the extreme end going to the left, he turns around, going the other way again to open the press, and the movement is so repeated until the bale is filled and pressed; then the doors are opened and the three hoops or ties put on; when the horse is started again, which motion runs the follower back, and as the bale is now free it can easily be removed.

FOREIGN PATENTS.

MINING AND SCIENTIFIC PRESS PATENT AGENCY, SAN FRANCISCO, CAL.

In offering the following circular and price list for foreign patents, to our clients both past and future, we have been careful to give the information contained in it in such a condensed form that the inventor can see at a glance the principal facts which he is desirous to know concerning each country, and without the confusion which more detail would add.

When the inventor has fully decided to apply for patents in certain of these countries, we are always ready to give any further information that may be needed.

Our practice has always been to prepare all the papers for patent applications in English speaking countries, so that the inventor may sign them and take out his patent in his own name.

We have skilful and reliable agents in every principal country in the world, and with the experience of the past and our present knowledge, we feel sure that we can give satisfaction to all who are willing to pay a fair price for thoroughly good, conscientious work.

Our rates have been reduced somewhat, and will, we think, be found more favorable in the aggregate than those of any other house.

The importance of obtaining patents in foreign countries, is obvious to all American inventors; but owing to the expense formerly attending these applications, and also to a lack of information on the part of inventors, as to the requirements in introducing and working their inventions, not as much use has been made of the patent privileges of these countries as might have been expected under other circumstances.

The patent laws of many countries, and notably Germany, have been very much improved of late years, and the rights of inventors are much better protected, now as the advantages which a country derives from inventions are better understood and appreciated.

The immense agricultural and manufacturing interests of many of these countries makes the introduction of improved machines and methods of greater importance, and renders the return to the enterprising patentee more certain and remunerative.

In France, Belgium, Austria, Germany, and some other European states, the patent becomes void upon the expiration or lapse of a patent of prior date, obtained in another country; and as in some of these states the specifications are published immediately after application, it is best to take out patents in all the countries in which it is desired to protect the invention, simultaneously.

In France and some other countries, medicines, articles of food, pharmaceutical compounds, and some other inventions are not patentable, although the processes may be; and in some countries warlike inventions are not patented, but are often appropriated by the government upon their own terms.

In England, France, Belgium and Spain, patents are usually granted if in their proper form, while in Germany, Austria, Russia, Sweden and Denmark, an examination is made, and all claims not considered novel are refused.

Germany especially, however, protects her patents, and punishes infringement as a criminal as well as a civil offense. In most of the countries, except England and the colonies, the patent must be worked in the country, and the working officially proved to the government within a certain time, or the patent will be forfeited; but, except in Austria, we can have the patent properly worked for a comparatively small sum of money. The Austrian law, however, requires the machinery to be manufactured in that country. In any case, however, if the patent be sold or disposed of, this difficulty is avoided by the inventor.

Australian Colonies.

See our special circular giving full information for these colonies.

Austria.

The term of an Austrian patent is limited to fifteen years, but the patent may be taken for a shorter period, and prolonged if desired. The invention must be worked in the empire within a year from the date of the patent, and becomes void upon the expiration of a patent of prior date obtained in any other country.

The cost of an Austrian patent, with all expenses paid for the first year, is $100. A small yearly payment must be made to prevent the patent from becoming void.

Belgium.

Patents are obtainable in Belgium for twenty years, but if patented abroad, the patent will expire at the same time with the original patent. The patent must be worked within a year of the time of its being worked abroad. A government tax is payable each year, beginning with ten francs and increasing ten francs each year.

The expense of obtaining a Belgian patent is $90.

Brazil.

Imperial diplomas, possessing the legal force of patents, are granted for terms of from five to twenty years to inventors or importers of inventions. No tax is demanded by government, but the inventions must be worked within two years.

The expense of a Brazilian patent is $300.

Canada.

The patent law of Canada is modeled after, and similar to that of, the United States. Patents are granted in Canada for terms of five, ten or fifteen years, the shorter terms being extensible. A model is required for this province; also a petition and duplicate set of papers of special sizes. The invention must be worked in the province within two years after the date of the patent. The Canadian patent extends to all the provinces north of the United States, known as British America, and must be applied for within twelve months of the date of an American or foreign patent.

The cost of a Canadian patent, including express charges on model, etc., is $65, and upwards.

Denmark.

The terms of a Danish patent varies from three to twenty years, being fixed by government. Patents of importation do not usually exceed five years. The invention should be worked within one year.

The expense of a Danish patent is $100.

East Indies.

An East Indian patent is granted for a term of fourteen years, and must be for a new invention of public utility. The applicant must be the inventor, his executor, administrator, or assignee, and may be a resident, non-resident, British subject, or alien. The papers necessary are a petition, declaration, specifications and drawings, together with five copies, one for each of the Presidencies. The time of working the patent is not limited.

The cost of an East Indian patent is $300.

France.

The term of a French patent is fifteen years, but is limited by the duration of a prior patent in a foreign country. The invention must be worked within two years of the date of the patent. A payment of 100 francs ($20) must be made each year, or the patent becomes void. No model is required. The papers necessary are a petition, specification and drawings, in duplicate.

The cost of a French patent is $100.

German Empire.

Under the law of June, 1877, patents may now be taken out for the entire German Empire. The duration of the patent is fifteen years. A valid German patent cannot be obtained if the specification has been published in any way before the German application is made. It should therefore be made before the issue of the American or English patent. The patent must be worked within three years of the grant. Models are only required in special cases, as in fire-arms. Specifications and drawings must be furnished in duplicate and of special sizes. An annual tax is payable, beginning with £3 the second year and increasing by £2 10s. each year.

The expense of a German patent is $100.

Great Britain.

A British patent includes England, Ireland, Scotland, Wales, the Isle of Man and the Channel islands, but no colonies, as these have their own patent laws. The duration of a British patent is fourteen year; but in order to prevent it from expiring, a tax of £50 must be paid at the end of three years and £100 at the end of seven years. It is not imperative that the patent should be worked within a given time, but it is, of course, for the interest of the patentee to introduce his invention. A model may be deposited in the Patent Office museum, if desired, and will often assist in introducing the invention. The patent is granted to the one who first introduces it, and will not be sustained by the courts if it was publicly known in Great Britain before the date of the patent. No examination is made as to the novelty of any invention for which a patent is asked.

There are two methods of taking out a patent. The first is by filing a provisional specification, as it is called, and then filing a final or complete specification within six months afterwards. In the second, the complete specification is filed with the petition, and the patent is completed at once.

The disadvantages of filing a provisional specification are, the short time which elapses before the final specification must be filed, to prevent losing the patent; and the fact that whoever files the complete specification and obtains the great seal first, will hold the patent, even if another has a provisional specification on file, besides the chance of mistakes in completing the final specification. The patent may be taken out in the name of the foreign agent and afterwards assigned to the inventor, which is the usual practice, or the papers may be completed so as to be signed by the inventor himself, and the patent be taken out in his own name. The latter is our method. The documents necessary are a petition, declaration, specification, on parchment, and drawings in duplicate. No model is required, but the drawings should be very explicit. The expenses of a British patent is $250.

Italy.

The patent may be taken out in this country from one to fifteen years. If taken out for a shorter period, the patent may be extended by the payment of a tax of about £1 16s. for each extension. Patents for less than five years should be worked within one year. Those over five years, within two years; but the time may be extended upon a proper showing. A tax of £3 is payable the second year, increasing by £1 every third year. The documents required are a petition, specification and drawings in triplicate.

The expense of an Italian patent for six years is $200.

Norway.

A Norwegian patent is granted for from five to ten years, the duration being fixed by government. The invention should be worked within two years from the date of the patent. No annuities are demanded. The documents required are a petition, specification, and drawings in duplicate.

The cost of a Norwegian patent is $175.

Portugal.

The terms of a Portuguese patent is fifteen years. A tax of £2 is payable annually. The government reserves the right to appropriate inventions of public utility, an indemnity being paid to the owner.

The cost of a Portuguese patent is $300.

Russia.

Russian patents are granted for three, five and ten years; no extension of the terms for which it was originally issued being allowed. Inventions may be patented in the empire if not publicly worked previously, whether patented elsewhere or not. The patentee may be the inventor, his assignee, either a native or a foreigner. An examination made, as to novelty, correctness, etc., and patents are sometimes refused. The patent should be worked within one-fourth the time for which the patent is granted, and proof of the practical workings should be deposited with the Ministry within six months after such working. The importation of the patented article does not affect the validity of the patent.

The cost of a Russian patent for five years is $300; for ten years, $600.

Sweden.

The duration of a Swedish patent is usually ten years, and the invention must be worked within two years. There is an examination as to novelty. No model is necessary. The documents required are a petition, specification and drawings.

The expense of a Swedish patent is $175.

Spain.

The duration of a Spanish patent is fifteen years, but the patent may be taken for five years and renewed. It must be worked within a year from the date of the patent. No strict examination is made; no model required. The documents necessary are a petition, specification and drawings.

The cost of a Spanish patent for five years is $250.

Other Countries.

The following countries are of lesser value to patentees in general than those before mentioned; but in some cases patents may be advantageously taken for these countries also:

COUNTRY.	ALL PAID FOR.	PRICE.	EXTENSIBLE TO.
Antigua	7 years	$250	14 years
Barbadoes	14 "	260	.....
Bolivia	20 "	275	30 "
British Guiana, and Demarara	7 "	275	21 "
Ceylon	14 "	300	28 "
Cape of Good Hope	3 "	200	14 "
Chili	10 "	300	20 "
Cuba Porto Rico and Philippines	5 "	300	10 "
Dominica	14 "	250	.....
Ecuador	20 "	250	30 "
Falkland Islands	14 "	250	.....
Grenada	14 "	250	.....
Gresce (application)	.....	200	.....
Hong-Kong	14 "	250	.....
Jamaica	14 "	250	.....
Honduras	14 "	200	.....
Japan	14 "	250	.....
Mauritius	14 "	250	21 "
Mexico	10 "	360	.....
Paraguay	5 "	250	10 "
Peru	20 "	300	30 "
Argentine Confederation	.....	280	20 "
Tobago	14 "	250	.....
Trinidad	14 "	300	21 "
Turkey (application)	10 "	300	.....
Uruguay	10 "	250	20 "
Venezuela	15 "	250	30 "

Our general circular of hints and information for inventors and patentees will be sent to any address on receipt of postage stamp. Also our special circular for the Australian Colonies and India.

DEWEY & CO.,

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OFFICE OF THE "MINING AND SCIENTIFIC PRESS" AND "PACIFIC RURAL PRESS," SAN FRANCISCO, 1878.

From A. Patentee.

SAN FRANCISCO, July 1st, 1878.

MESSRS. DEWEY & CO., PATENT SOLICITORS.—*Gentlemen:*—On the first of June I made application for Letters Patent for an improvement on a fire-resisting and non-conducting compound through your Patent Agency, and was agreeably surprised to receive official notice that the patent had been allowed on the 15th day of June, in the unprecedented short time of fifteen days from the time it left here.

This is the seventh patent which I have procured through your Agency, entire satisfaction being given in each case, and I shall take great pleasure in recommending your firm for reliability and promptness to all inventors with whom I may come in contact.

I have now two more cases ready, and shall make the application through your Agency.

Yours Truly, GEO. R. EVANS.

Another Compliment.

LOS ANGELES, May 21st, 1877.

MESSRS. DEWEY & CO., Patent Agents, S. F.—*Gentlemen:*—I have just received my letters patent on machine for opening oyster shells, and compliment you upon your success. I shall not only contribute to you my own business, but also that of friends. Thanking you, gentlemen, for your promptness and the very thorough manner in which you have prosecuted this matter, I am, yours truly. T. W. TEMPLE.

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Fig. 1

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Gould Manufacturing Co.'e Hand Pumps,
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R. H. Campbell, Superintendent Afterthought Mine, Redding, Shasta County, Cal.

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Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending June 13		Week Ending June 20		Week Ending June 27		Week Ending July 11.	
Alpha	12½	11½	13½	11c	12½	10½	10½	8½
Alta	8½	6⅝	8¼	7c	8½	7⅝	7½	6¼
Andes	50c	45c	50c	35½	40c	35c	40c	35c
Alps	10c	5c	20c	10½	1.10	45c	....	....
Argenta	45c	30c	40c	35c	40c	....	40c	....
Baltimore Con	....	....	....	....	....	....	....	....
Belcher	3	2.55	4.05	3⅜	6¼	4.20	4½	3.80
Belmont	55c	50c	60c	50c	50c	25c	50c	35c
Best & Belcher	15	13½	14½	13¼	15	13⅜	15¼	12½
Bullion	6½	4.45	5½	5¼	5¾	4.80	4.60	3⅜
Bechtel	2.40	1½	2½	1.70	2½	1⅜	1½	1½
Bodie	3.45	1½	2.25	2.10	4¼	4.10	7½	6
Benton	2.55	2	3½	3.15	2.30	2.10	2	1½
Caledonia	1.95	1.70	2.15	1½	2½	2.15	2.15	1.95
California	21	20½	19½	18	15⅜	15	14½	12½
Challenge	1	....	....	....	....	....	....	....
Chollar-Potosi	28½	27	26	25	26½	25	26	25
Confidence	4	....	4	....	4¼	4	4¼	....
Con Imperial	1	35c	95c	35c	95c	30c	70c	55c
Con Virginia	14½	14¼	14	13½	13⅜	13	10½	8¾
Crown Point	5¼	4.10	5¼	4.95	7⅛	5¼	6¼	5¼
Dayton	25c	....	....	....	....	....	....	....
DeFrees	35c	25c	35c	25c	50c	25c	25c	20c
Day	50c	40c	45c	40c	50c	40c	50c	....
Eureka Con	60	58	60	59	57	56½	57	55
Exchequer	4.05	3	3.40	3.15	3¾	2.90	2.85	2.65
Endowment	85c	80c	85c	80c	80c	75c	75c	65c
Gen Thomas	....	....	....	....	....	....	....	....
Grand Prize	5¼	4	4	3¾	4.65	3.90	3.60	3.30
Gila	80c	70c	75c	65c	85c	60c	65c	55c
Golden Chariot	35c	....	....	....	....	....	....	....
Gould & Curry	7¼	6¾	7	6⅜	6¾	6¼	7	6
Hale & Norcross	7	7	7½	7	7	7	7	7
Hussey	30c	20c	30c	25c	25c	10c	20c	....
Julia	8¼	7½	8¼	5⅜	7¼	6	6¾	5½
Justice	4	3.80	3½	3.45	4	3¼	4.60	4.05
Jackson	3¼	3¼	3	....	....	....	3¼	2½
Joe Scates	....	....	....	....	....	....	....	....
K N Con	....	....	....	....	....	....	....	....
Kentuck	3	2½	2.80	2½	3½	2.85	3.10	2½
Kossuth	....	....	....	....	....	....	....	....
Lady Wash	3	....	3	2½	....	....	....	....
Leopard	45c	30c	45c	40c	55c	40c	50c	45c
Leviathan	15c	10c	15c	....	20c	15c	50c	....
Leeds	1½	1	1½	....	1.45	1	....	....
Modoc	1.80	1½	1.65	1½	1¾	1.20	1	70c
Manhattan	6¾	6¼	6¾	6⅜	7	6½	6	....
Meadow Valley	....	....	....	....	....	....	....	....
Mexican	12½	10⅜	13½	12	14½	12½	15¼	14⅜
North Con Virginia	....	....	....	....	....	....	....	....
New York	45c	35c	40c	....	70c	55c	65c	50c
Northern Belle	8¼	7½	8¾	8⅜	11½	10½	12	11½
New Coso	1.40	90c	85c	80c	75c	40c	50c	25c
Navajo	15c	10c	20c	15c	50c	30c	40c	35c
Occidental	70c	65c	....	....	50c	....	50c	....
Ophir	52	43¾	49	46½	49¾	43¾	48¾	47
Overman	13½	12¾	13¾	12½	13¼	12	11¼	10
Panther	....	....	....	....	....	....	....	....
Raymond & Ely	4	3.80	4	3¾	4	3.85	3½	3
Rock Island	....	....	....	....	....	....	....	....
Savage	11¾	10¾	11¾	10⅝	11⅜	11	12¼	11½
Seg Belcher	21	18	20	....	20	....	20	....
Sierra Nevada	4	3½	4.30	4	5½	4.20	8¼	5½
Silver Hill	1.55	1½	1.40	1½	1.30	1.20	1.10	60c
Succor	20c	15c	15c	....	15c	10c	1.15	1
Solid Silver	2½	2½	2¾	....	2.80	2½	2.80	2½
Star	1.40	50c	....	....	1½	1.35	1½	1.20
Trojan	45c	30c	35c	30c	40c	25c	50c	45c
Union Con	5¼	4.90	5⅜	4.95	6	5	7¾	6½
Utah	9½	8	8¾	8⅜	8¾	8½	9¼	8¼
Wells-Fargo	50c	35c	40c	25c	35c	10c	15c	10c
Woodville	40c	30c	30c	....	30c	....	35c	25c
Yellow Jacket	9	8¼	8¾	8	8¾	7⅞	8¾	7¾

Sales at S. F. Stock Exchange.

Monday A. M., July 8.

300 Alta.....7¾
90 Alpha.....10@10½
110 Andes.....40c
350 Bullion.....4.45@4.60
640 Best & Belcher..12½@13¼
550 Belcher.....4.60@4.85
2245 California.....14½@14¾
1915 Con Virginia...10¼@10½
940 Crown Point.....6¾@6¾
1150 Con Imperial.....70@65c
500 Crown Point Rav.....35c
105 Caledonia.....1.15
495 Chollar.....25½@25
140 Exchequer.....2.65@2.80
265 Gould & Curry.....6¼@6
310 Hale & Nor.....7¾
435 Justice.....4.20@4.45
4250 Julia.....6¾@6¾
70 Kentuck.....3@3.10
300 Leviathan.....40@50c
1490 Mexican.....14¾@14¾
510 New York.....60@65c
100 Ophir.....48½
225 Overman.....11¾@11¾
940 Savage.....11¾@12
5195 Sierra Nevada.....5½@6
380 Silver Hill.....1.10
400 Solid Silver.....2½
500 Succor.....15c
10 Seg Belcher.....24
200 Trojan.....45c
560 Utah.....8¾@8¾
3380 Union Con.....7@7¼
1100 Ward.....1.30@1.35
200 Wells-Fargo.....15c
100 Woodville.....30c
425 Yellow Jacket.....8@7¾

AFTERNOON SESSION.

200 Alta.....7½
350 Bullion.....4.35@4.45
865 Best & Belcher....14@13¾
140 Belcher.....4½
260 Bechtel.....1.10@1.05
500 Belmont.....35c
1150 Con Virginia.....10¼@10
410 Crown Point.....6¾
570 California.....13¾@13½
65 Chollar.....26¼@25¾
2500 Coso Con.....25@30
1870 DeFrees.....25@20
70 Eureka Con.....57
200 Endowment.....75c
110 Exchequer.....2.75@2.65
550 Grand Prize...3.60@3.65
320 Gould & Curry.....6¾@6¾
500 Gila.....65c
250 Hussey.....20c
150 Hillside.....2.30@2
295 Hamburg.....2.70
105 Hale & Nor.....7¾@7¾
1715 Independent...1.66@1.55
230 Justice.....4.60
2455 Julia.....6¾@6¾
540 Jackson.....3@2½
150 Kentuck.....2.95@3
1135 Leopard.....45@50c
765 Modoc.....95c@
905 Mexican.....15@15½
60 Martin White.....4
350 Northern Belle..11¼@11¾
300 New Coso.....50c
400 Navajo.....40c
60 Ophir.....48¼
55 Overman.....11¾@11¾
190 Phœnix.....3½
50 Raymond & Ely.....3½
50 Star.....1½
4485 Sierra Nevada.....6¾@7¼
20 Seg Belcher.....2½
320 Savage.....12@12½
200 Silver Prize.....20c
300 Tiptop.....1¾@1.45
1105 Union Con.....7¼@7¾
200 Ward.....1.40
230 Yellow Jacket.....8

Tuesday A. M., July 9.

410 Alpha.....9¼@9½
1135 Alta.....7¼@7½
415 Andes.....35c@40c
325 Best & Belcher...14½@14¾
1140 Bullion.....4.30@4.40
1650 Benton.....2¼@1.90

1575 Mexican.....15@15¾
1050 New York.....05@80
410 Ophir.....48½
2030 Sierra Nevada.....7¼@7¾
440 Savage.....11¼@12
175 Solid Silver.....2.80
1075 Silver Hill.....75c@60c
2950 Trojan.....46@50c
670 Union Con.....7¼@8
270 Utah.....9¼@9¾
270 Ward.....1.35@1.40
2050 Wells-Fargo.....10c
50 Woodvil o.....25c
195 Yellow Jacket.....8@8¼

AFTERNOON SESSION.

850 Argenta.....40c
120 Alta.....6½
170 Alpha.....10¼@10¾
920 Bodie.....6@6¼
700 Bechtel.....1.30@1.25
850 Belmont.....50@45c
815 Bullion.....4¼@3.90
1655 Belcher.....4.20@4.30
60 Benton.....1¾@1.65
575 Best & Belcher..15¼@15½
180 Exchequer.....2.80
170 El Dorado S.....25c
200 Falcon.....10c
1020 Grand Prize.....3.30
650 Gila.....55@60c
845 Gould & Curry.....7¼@7½
300 Golden Terra.....1¾@2
20 Hamburg.....2¼
100 Hale & Nor.....6
890 Con Virginia.....9¼@9¾
865 California.....12¾@13¼
175 Con Imperial.....70c
30 Chollar.....28
200 Day.....50c
740 DeFrees.....20@25c
100 Endowment.....05c
325 Eureka Con.....56@55

Training Schools.

President Elliot, of Harvard University, has well said that "the welfare of the universities dopends upon the welfare of the training schools." Our State cannot yet hoast of a stalwart university. Oue manifest reason is that the schools which furnish the students for the University either do not take time enough to do their important work well or clso lack the qualifications to accomplish what they attempt.

Tho signs of the times indicate that these foundation defects in the higher education will soon be eliminated. Foremost among the agencios quictly at work solving this all-important problem ie, as it occurs to us, the Golden Gate Academy at Oakland.

This institution has just completed the seventh year of its history. Its years and its work entitle it to rank among the permanent educational forces of tho Stato. The first class of pupils prepared within its walls has just graduated from the State University of California. Next year, Yale, Amherst and Dartmouth will graduate others of its students. It claims to do foundation work in education according to most approved etandards. With equal diligence it aims to expand the character into the highest type of nohle manhood. Recognizing also the paramount importance of a sound body in order both to the highest mental development and to the best fruite of such culture in life, it has provided a woll-equipped gymnasium for daily exercise and a hrief military drill, to emphasize the method and system which ehould characterizo the true student. Its instructors are educators by profession. Its huilding is a model of comfort, convenience and architectura elegance. The founders and guardians of this academy are many of them graduates of the famous Phillips' Academy, of Andover, Mass. which has recently so worthily celebrated its centennial. It is tbeir purpose to make the Golden Gate Academy like unto this "fore most of Eastern training schools." May the completion of its centenary he as greatly honored.—*Argonaut.*

Frisco.—The Frisco reduction works etarted up with their new hoiler on the 11th ult., and up to the 28th, with some interruption, and turned out eigbt bars of silver, valued at $9,030. They are working from 10 to 15 tons of ore every 24 houre. The machinery ie working well now. The chloridizing furnaces will be completed next week, and, from the presen indications, the pioneer leachers of Utah, Messrs. Harries & Tischer, will make a success of their works bere. The Frisco emelter ba been continually running on Bonanza ore, turning out over a car-load every 24 hours, and having quite a lot of bullion on the dump. Th C. C. company's smelter bad been running up to yesterday, and has shut down for repairs and over the Fourth of July. They have als bullion on their dump. The Cave mine, owne by Godhe & Co., is looking well, and they ar boisting and shipping ore daily to the Frisc smelter. The Hedges, adjoining the Cav mine, we are informed, is to he purchased an worked by a party of capitalists. The Bonanz continues to look well and the working shaf bas been connected with some of the lowe works. They are shipping ore daily to th Frisco and company's smelter and the leachin works.—*Salt Lake Tribune.*

Buffalo Horn, the present leader of th Bannocks, ie well known in this city an throughout all the region of country embrace between the Sierra Nevadas on the west, th Missouri river on the east, the Pacific railroa on the south and the Dominion of Canada o the north. He is a balf-breed, and bas alway been friendly to the whites. Two years ag during the Black Hills campaign, be w Crook's chief scout, and in that position ou ranked even such men as Wild Bill and Ca tain Jack Crawford. He is thoroughly fami iar with the strategetical tactics of the Unite States troops, hrave to rashness, and hardy b yond even the usual run of Indians. He wi probahly not lay down his arms until absolute driven to it.—*Austin Reveille.*

The Mechanics' Institute Fair.—A mee ing of the managers of the Mechanics' fair w held on Tuesday evening, July 9th, and th date of tbe opening of the fair was fixed f August 13th. The Superintendent's repo stated that arrangements for the exhibitio were progressing satisfactorily. Two bundr and fifty applications for space had alrea been received. The enterprise will be take up with full zeal and activity on the part of th managers, and a creditable exhibition of indu trial interests will doubtless be secured. It time that all who have good things to displ should hegin at once to prepare for the fai Let them apply for space early and prepa their exhibits in attractive form.

Woodward's Gardens were never more attra ive than at present. Besidea three lions already m tioned, six monster living alligators, aeveral iguanas a a boa-constrictor have just been added. New atars a constantly engaged for the Pavilion exercises. Rates f admission as usual.

Examine the accelerative endowment plan, as originat by the Mutual Benefit Life Insurauce Co., of Newa New Jersey. Assets, $30,633,429.94. Lewis C. Grov President; L. Spencer Coble, Vice-President; Benjamin Miller, Treasurer; Edward A. Strong, Secretary; Bloo field J. Miller, Actuary. Send for circulars to Jans Mtussell, Jr., agent of insured, 224 Sansome St., in Francisco.

Model Maker and Machinist.—I. A. Heald, No Commercial St., San Francisco, (fourth floor).

METALS.

[WHOLESALE.

WEDNESDAY M., July 10, 1878.

IRON.—	
American Pig, ton,.	28 00 @30 00
Scotch Pig, ton	28 00 @30 00
White Pig, ton	28 00 @— —
Oregon Pig, ton	—@— —
Refined Bar	2½@ 3
Horse Shoes, keg	5 00 @— —
Nail Rod	—@ 7
Norway, Oval	—@ 7
COPPER.—	
Sheathing, lb	34 @ 35
Sheathing, Yellow	21 @
Sheatbing, Old Yellow	12 @
Composition Nails	24 @—
Composition Bolts	24 @—
STEEL.—	
English Cast, lb	13 @ 14
Andersou & Woods, ordinary sizes	15 @— —
Drill	15 @— —
Flat Bar	14 @ 19
Plow Steel	8½@ 12½
TIN PLATES.—	
10x14 I C charcoal	7 50 @ 8 50
Banca Tin	23 @— 24
Australian	17 @ 17½
ZINC.—	
By the Cask	9 @— —
Zinc, Sheet 7x3 ft, 7 to 10, lb	9 @— 10
7x3 ft, 11 to 14	10 @— —
8x4 ft, 8 to 10	11 @— —
8x4 ft, 11 to 10	11 @— —
NAILS.—	
Assorted sizes	3 15 @3 25
QUICKSILVER.—	
By the lb	43 @ 45

GENERAL MERCHANDISE.

[WHOLESALE.]

WEDNESDAY M., July 10, 1878.

BAGS—Jobbing.

Eng Standard Wheat	11¼@11½
Neville & Co's	
Hand Sewed, 22x36	11½@11¾
24x36	—@—
23x40	13 @13½
Machine Swd, 22x36	11¼@11½
Flour Sacks, halves	8½@10½
Quarters	5½@ 6½
Eighths	4 @ 4½
Hessian, 60 inch	15 @—
45 inch	9½@10
40 inch	9 @—
Wool Sacks,	
Hand Sewed, 3½ lb	47½@50
4 lb do	52½@—
Machine Sewed	47½@—
Standard Gunnies	14 @15
Bean Bags	7 @ 8

CANDLES.

Crystal Wax	17 @—
Eagle	12 @—
Patent Sperm	30@34

CANNED GOODS.

Assorted Pie Fruits,	
2½ lb cans	2 75 @3 00
Table do	3 75 @4 25
Jams and Jellies	4 25 @ —
Pickles, hf gal	3 50 @ —
Sardines, qr box	1 65 @1 90
Hf Boxes	3 00 @ —
Preserved Beef,	
2 lb, doz	4 00 @ —
do Beef, 4 lb, doz	6 50 @ —
Preserved Mutton,	
2 lb, doz	4 50 @ —
Beef Tongue	6 50 @ —
Preserved Ham,	
2 lb, doz	6 50 @ —
Deviled Ham, 1 lb,	
doz	5 50 @ —
do Ham, 4 lb doz	3 00 @ —

COAL—Jobbing.

Australian, ton	7 00 @ 7 25
Coos Bay	6 50 @ 7 00
Bellingham Bay	6 50 @— —
Seattle	5 50 @ 6 50
Cumberland	14 00 @— —
Mt Diablo	4 75 @ 6 00
Lehigh	22 00 @— —
Liverpool	7 00 @ 8 00
West Hartley	7 50 @ 9 00
Scotch	6 50 @ 8 00
Scranton	15 00 @16 00
Vancouver I	7 50 @— —
Charcoal, sack	75 @— —
Coke, hbl	60 @— —

COFFEE.

Sandwich Id, lb	21½@— —
Costa Rica	18 @ 18½
Guatemala	17 @ 18½
Java	22½@ 23
Manila	17½@— —
Ground, in cs	25 @— —

FISH.

Sac'to Dry Cod	5 @ 5½
do in cases	6½@ 7
Eastern Cod	7 @ 7½
Salmon, hbls	9 00 @10 00
Hf bbls	5 00 @ 5 50
1 lb cans	1 25 @1 30
Pkld Cod, hbls	22 00 @— —
Hf hhls	11 00 @— —
Mackerel, No. 1,	
Hf Bbls	9 50 @10 50
In Kits	f 85 @ 2 10
Ex Mess	3 25 @— —
Pkld Herring, bx	3 00 @ 3 50
Boston Smkd Hg	70 @— —

LIME, Etc.

Lime, Sta Cruz,	
hbl	2 00 @ 2 25
Oement, Rosendale	2 75 @ 3 50
Portland	4 76 @ 6 50
Plaster, Golden Gate Mills	3 00 @ 3 25
Land Plaster, tn	10 00 @12 50

NAILS.

Ass'ted sizes, keg	3 25 @ 4 00

OILS.

Pacific Glue Co's	
Neatsfoot, No 1	1 00 @ 90
Castor, No 1	1 10 @— —
do, No. 2	1 05 @— —
Baker's A A	1 25 @1 30
Olive, Plagniol	6 25 @5 75
Possel	4 75 @5 25
Palm, lb	9 @— —
Linseed, Raw, bbl	72 @— —
Boiled	75 @— —
Cocoanut	65 @— —
China nut, cs	82½@— —
Sperm	1 40 @— —
Coast Whales	40 @— —
Polar, refined	45 @— —
Lard	90 @1 00
Oleophine	26 @ 27
Devoe's Bril't	26 @ 28
Photolite	29 @— —
Nonpariel	35 @— 36½
Eureka	40 @ 42½
Barrel kerosene	20 @— —
Downer Ker	40 @ 42½
Elaine	42½@— —

PAINTS.

Pure White Lead	9½@ 10½
Whiting	1½@— —
Putty	4 @ 5
Chalk	1½@— —
Paris White	2½@— —
Ochre	3½@— —
Venetian Red	3½@— —
Averill Mixed Paint, gal.	
White & tints	2 00 @2 40
Green, Blue & Ch Yellow	3 00 @3 50
Light Red	3 00 @3 50
Metallic Roof	1 30 @1 60

RICE.

China Mixed, lb	6½@— —
Hawaiian	7 @— —

SALT.

Cal. Bay, ton	15 00 @22 50
Common	10 00 @12 00
Carmen Id	13 00 @22 50
Liverpool fine	20 00 @22 50

SOAP.

Castile, lb	10 @ 10½
Common brands	4½@ 6
Fancy brands	7 @ 8

SPICES.

Cloves, lb	45 @ 50
Cassia	22½@ 25
Nutmegs	85 @ 90
Pepper Grain	15 @ 17
Pimento	15 @ 16
Mustard, Cal., ¼ lb glass	1 50 @— —

SUGAR, ETC.

Cal. Cube, lb	11½@— —
Powdered	11½@— —
Fine crushed	11½@— —
Granulated	11 @— —
Golden O	9½@— —
Cal. Syrup, kgs	70 @— —
Hawaiian Mol'sses	26 @ 30

TEA.

Young Hyson, Moyune, etc	35 @ 50
Country pckd Gunpowder & Imperial	50 @ 60
Hyson	30 @ 35
Fooo-Chow O	53 @ 60
Japan, 1st quality	40 @ 60
2d quality	25 @ 35

LEATHER.

[WHOLESALE.

WEDNESDAY M., July 10, 1878.

Sole Leatber, heavy, lb	22 @ 29
Light	20 @ 24
Jodot, 3 Kil	48 00 @50 60
11 to 13 Kil	65 00 @76 00
14 to 19 Kil	80 00 @90 00
Second Choice, 11 to 16 Kil	65 00 @70 00
Cornellian, 12 to 16 Kil	57 00 @67 00
Females, 12 to 13 Kil	63 00 @67 00
14 to 16 Kil	71 00 @76 00
Simon Ullmo, Females, 12 to 13 Kil	58 00 @62 50
14 to 15 Kil	66 00 @70 00
16 to 17 Kil	72 00 @74 00
Simon, 18 Kil	61 00 @63 00
20 Kil	65 00 @67 00
24 Kil	72 00 @74 00
Robert Calf, 7 and 9 Kil	35 00 @40 00
Kips, French, lb	1 00 @ 1 35
Cal. doz	40 00 @50 00
French Sheep, all colors	8 00 @15 00
Eastern Calf for Backs, lb	1 00 @ 1 25
Sheep Roans for Topping, all colors, doz	9 00 @13 00
For Linings	5 50 @10 5
Cal. Russet Sheep Linings	1 75 @ 4 50
Boot Legs, French Calf, pair	4 00 @— —
Good French Calf	4 00 @ 4 75
Best Jodot Calf	5 00 @ 5 25
Leatber, Harness, lb	35 @ 38
Fair Bridle, doz	48 00 @72 00
Skirting, lb	33 @ 37
Welt, doz	30 00 @50 00
Buff, ft	18 @ 20
Wax Side	17 @ 18

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by Sutro & Co.]

SAN FRANCISCO, July 10, 3 P. M.

Legal Tenders in S. F., 11 A.M., 99¾@99¾. Silver, 2¾@2¾

Gold in New York, 100⅝

Gold Bars, 890@910. Silver Bars, 8@15 ⅌ cent. discount.

Exchange on New York, ½%; on London bankers, 49@49¼. Commercial, 50; Paris, five francs ⅌ dollar; Mexican dollars, 94@95.

London Consols 95⅛; Bonds, 108¼.

Quicksilver in S. F., by the flask, ⅌ lb, 42½.

Signal Service Meteorological Report.

Week Ending July 9, 1878.

HIGHEST AND LOWEST BAROMETER.

July 3	July 4	July 5	July 6	July 7	July 8	July 9
29.97	29.90	29.91	29.88	29.93	29.94	29.89
29.90	29.82	29.86	29.83	29.85	29.83	29.84

MINIMUM AND MAXIMUM THERMOMETER.

66	65	66	66	62.5	63	61
62	55	54	54	53.5	63	63

MEAN DAILY HUMIDITY.

63	65	71	71	70	78	82

PREVAILING WIND.

W	W	SW	SW	SW	SW	SW

WIND—MILES TRAVELED.

411	216	215	223	324	344	306

STATE OF WEATHER.

Clear	Clear.	Clear	Clear	Fair.	Cloudy

RAINFALL IN TWENTY-FOUR HOURS.

Total rain during the season, from July 1, 1877, —— in.

OUR AGENTS.

Our Friends can do much in aid of our paper and the cause of practical knowledge and science, by assisting Agents in their labors of canvassing, by lending their influence and encouraging favors. We intend to send none but worthy men.

J. L. Tharp—San Francisco.
B. W. Crowell—California.
A. C. Knox—Pacific Coast.
C. N. West—Santa Cruz, Montorey and San Benito counties.
A. C. Champion—Tulare, Fresno and Inyo counties.
W. D. White—San Bernardino county.
J. W. A. Wright.—Tulare, Fresno and Kern counties.
B. E. Lloyn.—Sonoma and Napa counties.
E. M. Denny,—Oregon.
H. E. Hallett.—Mendocino county.
G. W. McGrew.—Santa Clara county.
Wm. M. Brewer.—Black Hills, Dakota Territory.
Richarn Allen.—Britiah Columbia.
R. D. Nunnally.—Siskiyou County, Cal.
Dr. W. G. Alban.—Amador, Calaveras, Tuolumne and Mariposa counties.

Every new subscriber who does not receive the paper and every old subscriber not credited on the lahel witbin two weeks after payimg for this paper, sbould write personally to tbe publishers without delay, to secure proper credit. This is necessary to protect us and subscribers against the acts and mistakes of others.

To Mining Secretaries.

An amendment to Section 336 ot the California Code, taking effcct July 1st, 1874, provides tbat in addition to the regular publication, daily or weekly, of the assessment and sale notices as heretofore,

PERSONAL NOTICE

Must be served as provided in the following quotation from the law:

"The notice must be personally served upon each stockholder, or in lieu of personal service, must be sen through the mail, addressed to each stockholder at his place of residence, if known, and if not known, at the place where he principal office of the Corporation is situated."

The above refers to the ASSESSMENT NOTICE only. Advertisers in the MINING AND SCIENTIFIC PRESS will be furnished with copies of assessment notices printed on slips auitable for serving personal notice under tbis law at short notice.

DEWEY & CO., Publishers.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommed the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Gover Mining and Milling Company —

Location of principal place of business, Room No. 8, 402 Front Street, San Francisco, California. Location of mine, Amador County, near Drytown, California.

Notice —There are delinquent upon the following described stock on account of Assessment No. 36, levied on the 24th day of May, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Knox, Joseph A	567	100	$50 00
Knox, Joseph A	571	60	25 00
Knox, Joseph A	572	50	25 00
Knox, Joseph A	573	50	25 00
Knox, Joseph A	727	30	18 60
Steveus, Mrs H A	192	50	25 00

And in accordance with law and an order of the Board of Directors, made on the twenty-fourth (24th) day of May, 1878, so many shares of each parcel of such stock as may be necessary will be sold at public auction, at the office of the Gover Mining and Milling Company, Thursnay, the fiirst day of August, 1878, at the hour of one o'clock P. M. of such day, to pay delinquent assessments thereon, together with costs of advertising and expenses of sale.

W. O. WILSON, Sec'y.

Office, Room No. 8, No. 402 Front Street, San Francisco, California.

Orion Mining Company —Location of Pr n-

cipal Place of business, San Francisco, California. Location of Works, Iowa Hill, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 9th day of July, 1878, an assessment, No. 2, of 70 cents per share was levied upon the capital stock of the Corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, No. 28 Sansome Street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 9th day of August, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Saturday, the 24th day of August, 1878, to pay the delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors.

P. CONKLIN, Sec'y.

Office, No. 28 Sansome Street (up-stairs), San Francisco, Cal.

Seaton Mining Company.—Location of

principal place of business, San Francisco, Cal. Location of works, Drytown Mining District, Amador County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the twenty-sixth day of June, 1878, an assessment, (No. 11,) of seventy-five ($75) dollars per abare was levied upon the capital stock of the corporation, payable immediately in U. S gold coin, to the Secretary, at the office of the Company, Room No. 58, Nevada Block, northwest corner Pine and Montgomery Streets, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the thirtieth day of July, 1878, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the twenty-first day of August, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

JOEL F. LIGHTNER, Sec'y.

Office, Room No. 58, Nevada Block, northwest corner of Pine and Montgomery Streets, San Francisco, Cal.

Summit Mining Company —Location of

Principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, Cal.

Notice.—There are delinquent upon the following described stock, on account of assessment (No. 3,) levied on the third (3) day of May, A. D., 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Brown, M B	45	200	10 00
fngerson, H H	63	500	25 00
fngerson, H H	54	500	25 00
Knoll, M	134	100	6 00
Martin, A, trustee	90	100	6 00
Martin, A, trustee	97	100	6 00
Martin, A, trustee	105	100	6 00
Martin, Robt	20	200	10 00
Quigley, Chas	136	200	10 00
Quigley, Chas	158	200	10 00
Quigley, Cbas	169	200	10 00
Peck, E A	9	1000	60 00
Purkitt, J H	44	200	10 00
Purkitt, J H	61	500	25 00
Purkitt, J H, trustoe	55	500	25 00
Thompkins, M M	27	1200	60 00
Tardiff, Wm	60	500	25 00
Tyson, Fred'k	67	500	25 00
Tyson, Fred'k	68	500	25 00

And in accordance with law, and an order of the Board of Directors, made on the third (3) day of May, A. D., 1878, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, on Monday, the fifteenth (15) day of July, A. D., 1878, at the hour of two o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

J. W. CLARK, Sec'y.

Office, Room 6, No. 318 Pine Street, San Francisco.

Office South Comstock Gold and Silver

Mining Company. Notice.—The annual meeting of tbe stockholders of the South Comstock Gold and Silver Mining Company, for the election of Trustoea and the transaction of such other business as may be presented, will be held on Monday, the 19th day of August, 1878, at two o'clock P. M. of that day, at the office of the Company. Transfer books will be closed on Saturday, August 12th, 1878, at the hour of 12 M. of that day.

J. M. BUFFINGTON, Secretary.

Office—Rooms 3 and 4, second floor, No. 309 California street, over Aetna Insurance office.

Office of Union Consolidated Silver

Mining Company, San Francisco, June 16th, 1878.—The annual meeting of tbe stockholders of the Union Consolidated Silver Mining Co., for the election of Truatees for the ensuing year, and for the transaction of auch other business as may properly come before it, will be held at their office, 309 California Street, Rooms 3 and 4, second floor, over Aetna Insurance office, San Francisco, California, on Monday, July 15th, 1878, at two o'clock P. M. Transfer books will be closed Friday, July 5th, 1878, at three o'clock P. M.

J. M. BUFFINGTON, Sec'y.

Wide Awake Prospecting & Mining Com-

pany.—Location of principal place of business, San Francisco, Cal. Location of works, Picket-Post, Pinof County, Arizona.

Notice is hereby given that at a meeting of the Board of Directors, held on the thirteenth day of June, 1878, an assessment (No. 4,) of two (2) cents per share was levied upon tbe capital stock of the corporation, payable immediately in U. S. gold coin, to the Secretary, at the office of the company, Room 6, No. 232 Sutter Street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the thirteenth day of July, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the thirteenth day of August, 1878, to pay the delinquent assessment, together with costs of advertising and the expenses of sale. By order of the Directors.

C. QUEEN, Sec'y.

Office, Room 6, No. 232 Sutter Street, San Francisco Cal

PACIFIC MAIL STEAMSHIP CO.

The Company's Steamers will sail as follows, at 12 M.:

CITY OF PEKING.....July

For YOKOHAMA and HONGKONG.

GEORGIA.....July 19th.

For Panama and New York, calling at Acapulco, San Jose De Guatemala, La Libertad and Punta Arenas.

Tickets to and from Europe by any line for sale at the lowest rates.

ZEALANDIA.....August 5th, at 12 o'clock, noon, or on arrival of the Engliah Maila, for HONOLULU, AUCKLAND and SYDNEY.

$10 additional is charged for passage in Upper Saloou.

WILMINGTON.....on or about July 13th.

For HONOLULU.

DAKOTA.....July 10.

For Victoria, Port Townsend, Seattle, Tacoma, and Olympia, connecting at Tacoma with Northern Pacific Railroad for Portland, Oregon.

Tickets must be purchased before 11 A. M. on day of sailing, at Wbarf office.

For freight or passage apply at the office corner First and Brannan streets.

WILLIAMS, BLANCHARD & CO., Agts.

The Explorers', Miners' and Metallurgists' Companion.

Comprising a Practical Exposition of the Various Departments of Exploration, Mining, Engineering, Assaying, and Metallurgy,

Containing 672 Pages and 83 Engravings

BY J. S. PHILLIPS, M. E.,

Of California, a Practical Operator for Thirty-eight Years; Explorer, and Resident in the Pacific States and Territorics for the past Twelve Years.

PRICE—bound in cloth, $10.50; in leather, $12. Forwarded by mail for 50c. extra, at the Mining and Scientific Press Office, by DEWEY & CO.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending June 13		Week Ending June 20		Week Ending June 27		Week Ending July 11.	
Alpha	12½	11½	13½	11c	12½	10½	10½	8½
Alta	8½	6½	8½	7c	8½	7½	7½	6½
Andes	50c	45c	50c	35½	40c	35c	40c	35c
Alps	10c	8c	20c	10½	1.10	45c	....	....
Argenta	45c	30c	40c	35c	40c	....	40c	....
Baltimore Con	....	....	....	....	....	....	....	....
Belcher	3	2.55	4.05	3½	5½	4.20	4½	3.80
Belmont	55c	50c	60c	50c	50c	25c	50c	35c
Best & Belcher	15	13½	14½	13½	15	13½	15½	12½
Bullion	6½	4.45	5½	5½	5½	4.80	4.60	3½
Bechtel	2.40	1½	2½	1.70	2½	1½	1½	1½
Bodie	3.45	1½	2.25	2.10	4½	4.10	7½	6
Benton	2.55	2	3½	3.15	2.30	2.10	2	1½
Caledonia	1.95	1.70	2.15	1½	2½	2.15	2.15	1.95
California	21	20½	19½	18	18½	15	14½	12½
Challenge	1	....	....	....	....	....	....	....
Chollar-Potosi	23½	27	26	25	26½	25	26	25
Confidence	4	....	4	....	4½	4	4½	....
Con Imperial	....	1	85c	95c	85c	95c	80c	70c	55c
Con Virginia	14½	14½	14	13½	13½	13	10½	8½
Crown Point	5½	4.10	5½	4.95	7½	5½	6½	5½
Dayton	25c	....	....	....	....	....	....	....
DeFrees	35c	25c	35c	25c	50c	25c	25c	20c
Day	50c	40c	45c	40c	50c	40c	50c	....
Eureka Con	60	58	60	59	57	56½	57	55
Exchequer	4.05	3	3.40	3.15	3½	2.90	2.85	2.65
Endowment	85c	80c	85c	80c	80c	75c	75c	65c
Gen Thomas	....	....	....	....	....	....	....	....
Grand Prize	5½	4	4	3½	4.65	3.90	3.60	3.30
Gila	80c	70c	75c	65c	85c	60c	65c	55c
Golden Chariot	35c	....	....	....	....	....	....	....
Gould & Curry	7½	6½	7	6½	6½	....	7	6
Hale & Norcross	7½	7½	7	7½	7	7½	7½	7
Hussey	30c	20c	30c	25c	25c	10c	20c	....
Julia	8½	7	8½	5½	7½	6	6½	5½
Justice	4	3.80	3½	3.45	4	3½	4.60	4.05
Jackson	3½	3½	3	....	....	....	3½	2½
Joe Scates	....	....	....	....	....	....	....	....
K K Con	....	....	....	....	....	....	....	....
Kentuck	3	2½	2.80	2½	3½	2.85	3.10	2½
Kossuth	....	....	....	....	....	....	....	....
Lady Wash	3	....	3	2½	....	....	....	....
Leopard	45c	30c	45c	40c	55c	40c	50c	45c
Leviathan	15c	10c	15c	....	20c	15c	50c	....
Leds	1½	....	1½	1.15	1	....	....	....
Modoc	1.80	1½	1.65	1½	1½	1.20	1	70c
Manhattan	6½	6½	6½	6½	7	6½	6	....
Meadow Valley	....	....	....	....	....	....	....	....
Mexican	12½	10½	13½	12	14½	12½	15½	14½
North Con Virginia	....	....	....	....	....	....	....	....
New York	45c	35c	40c	....	70c	55c	65c	60c
Northern Belle	8½	7½	8½	8½	11½	10½	12	11½
New Coso	1.40	90c	85c	80c	75c	40c	50c	25c
Navajo	15c	10c	20c	15c	50c	30c	40c	35c
Occidental	75c	65c	....	....	50c	....	50c	....
Ophir	53	43½	49½	46½	49½	43½	49½	....
Overman	13½	12½	13½	12½	13½	12	11½	10
Panther	....	....	....	....	....	....	....	....
Raymond & Ely	4	3.80	4	3½	4	3.85	3½	3
Rock Island	....	....	....	....	....	....	....	....
Savage	11½	10½	11½	10½	11½	11	12½	11½
Seg Belcher	21	18	20	....	20	....	24	....
Sierra Nevada	4	3½	4.30	4	5½	4.20	8½	5½
Silver Hill	1.65	1½	1.40	1½	1.30	1.20	1.10	60c
Succor	20c	15c	15c	....	15c	10c	1.15	1
Solid Silver	2½	2½	2½	....	2.80	2½	2.80	2½
Star	1.40	50c	....	....	1½	1.35	1½	1.20
Trojan	45c	50c	35c	30c	40c	25c	50c	45c
Union Con	5½	4.90	5½	4.95	6	5	7½	6½
Utah	9½	8	8½	8½	8½	8½	9½	8½
Wells-Fargo	50c	35c	40c	25c	35c	10c	15c	10c
Woodville	40c	30c	30c	....	30c	....	35c	25c
Yellow Jacket	9	8½	8½	8	8½	7½	8½	7½

Sales at S. F. Stock Exchange.

Monday A. M., July 8.

300	Alta	7½	
90	Alpha	10@10½	
110	Andes	40c	
350	Bullion	4.45@4.60	
640	Best & Belcher	12½@13	
550	Belcher	4.40@4.15	
2245	California	14½@14½	
1915	Con Virginia	10½@10½	
990	Crown Point	5½@6½	
1150	Con Imperial	70@65c	
500	Crown Point Rav	20c	
105	Caledonia	2.15	
495	Chollar	25½@25	
140	Exchequer	2.65@2.60	
265	Gould & Curry	6½@6	
310	Hale & Nor	7½	
435	Julia	4.20@4.45	
4050	Julia	6½@6½	
70	Kentuck	.3@3.10	
800	Leviathan	.40@35c	
1490	Mexican	14½@14½	
510	New York	.60@65c	
100	Ophir	48½	
225	Overmau	11½@11½	
940	Savage	11½@12	
5935	Sierra Nevada	5½@6	
380	Silver Hill	1.10	
400	Solid Silver	2½	
503	Succor	15c	
10	Seg Belcher	2½	
200	Trojan	45c	
560	Utah	6½@6	
3980	Union Con	7@7½	
1200	Ward	1.30@1.35	
200	Wells-Fargo	15c	
100	Woodville	30c	
425	Yellow Jacket	8@7½	

AFTERNOON SESSION.

200	Alta	7½	
350	Bodie	6½@6	
580	Bullion	4.35@4.45	
865	Best & Belcher	14@13½	
140	Belcher	4½	
260	Bechtel	1½@1½	
500	Belmont	50c	
1250	Con Virginia	10½@11	
410	Crown Point	6	
570	California	13½@13½	
65	Chollar	26½@2..	
2500	Coso Con	25@30	
1870	DeFrees	25@20	
70	Eureka Con	5½	
200	Endowment	75c	
110	Exchequer	2½@2.6.	
550	Grand Prize	3.60@3.6	
320	Gould & Curry	6½@6½	
500	Gila	65c	
250	Hussey	20c	
150	Hillside	2.30@2	
295	Hamburg	2.7.	
105	Hale & Nor	7½@7½	
1715	Independent	1.86@1.8.	
230	Justice	4.6.	
2155	Julia	6½@6½	
510	Jackson	3@2½	
150	Kentuck	2.95@3	
1135	Leopard	45@50c	
765	Modoc	25c@	
965	Mexican	15@15½	
50	Martin White	4	
360	Northern Belle	11½@11½	
300	New Coso	50c	
400	Navajo	35c	
60	Ophir	48½	
55	Overman	11½@11	
110	Phenix	3½	
60	Raymond & Ely	3½	
50	Star	1½	
4435	Sierra Nevada	6½@6½	
20	Seg Belcher	2½	
320	Savage	12@12½	
200	Silver Prize	20c	
300	Tiptop	1½@1.45	
1135	Union Con	7½@7½	
200	Ward	1.40	
220	Yellow Jacket	.8	

Tuesday A. M., July 9.

415	Alpha	9@8½	
1135	Alta	7½@7½	
415	Andes	35@40c	
325	Best & Belcher	14½@14½	
1140	Belcher	3@3.65	
1230	Bullion	4.30@4.40	
1650	Benton	2@1.90	
1050	New York	65@60c	
410	Ophir	47½	
2030	Sierra Nevada	7½@7½	
440	Savage	11½@12	
175	Solid Silver	2.80	
1075	Silver Hill	75@60c	
2950	Trojan	45@50c	
670	Union Con	7½@8	
270	Utah	9½@9½	
270	Ward	1.35@1.40	
2050	Wells-Fargo	10c	
50	Woodvil e	25c	
195	Yellow Jacket	8½@8½	

AFTERNOON SESSION.

850	Argenta	40c	
120	Alta	6½	
170	Alpha	10½@10½	
920	Bodie	6@6½	
1025	Bechtel	1.30@1	
850	Belmont	50@45c	
815	Bullion	4½@3.90	
1655	Belcher	4.20@4.30	
60	Benton	1½@1.65	
575	Best & Belcher	15½@15½	
140	Crown Point	6	
890	Con Virginia	9½@9½	
865	California	12½@13½	
175	Con Imperial	70c	
30	Chollar	26	
1020	Grand Prize	3.30	
650	Gila	55@60c	
845	Gould & Curry	7½@7½	
300	Golden Terra	1½@2	
20	Hamburg	2½	
100	Hillside	2½	
490	Independent	1.60	
1310	Julia	5½	
60	Jackson	3½@3	
500	Leviathan	50c	
1260	Leopard	50@	
20	Manhattan	6	
10	M White	4	
1600	Modoc	75@70c	
1265	Mexican	14½@14½	
400	New Coso	40@25c	
100	Northern Belle	11½@11½	
600	Navajo	40@35c	
390	Ophir	47½@48½	
20	Raymond & Ely	3	
410	Savage	11½@11½	
2040	Sierra Nevada	7½@6½	
10	Star	1.20	
2150	Silver Prize	20@25c	
300	Tiptop	1.40	
1265	Union Con	6½@6½	
200	Ward	1.40	
110	Yello Jacket	8½@8½	

Thursday A.M., June 27.

110	Alpha	10½	
210	Alta	6½	
130	Andes	35c	
235	B & B	15@14½	
1180	Bullion	4.20@4.15	
670	Belcher	4.30@4.50	
250	Benton	1.85	
105	Chollar	26@25	
940	Con Virginia	9½@9½	
895	California	12½	
660	Caledonia	2@1.95	
1080	Crown Point	6½@6½	
250	Con Imperial	70c	
490	Exchequer	2.80@2.85	
425	Gould & Curry	6½@6½	
440	Hale & Nor	7@7½	
300	Justice	4.05@4.10	
980	Julia	5½@5½	
685	Savage	11½@11½	
965	Silver Hill	60@75c	
50	Trojan	45c	
275	Union Con	6½	
100	Utah	9½@9½	
900	Wells Fargo	10c	
100	Woodville	30@35c	
10	Ward	135	
485	Yellow Jacket	8½@8½	

AFTERNOON SESSION.

350	Argenta	40c	
50	Benton	2.55	
435	Belmont	45@50c	
300	Bechtel	1½@1.20	
235	Best & Belcher	15@15½	
425	Belcher	4.30@4.35	
805	Con Virginia	9½@9½	
50	Chollar	26	
285	Crown Point	6½	
200	Coso Con	25c	
445	California	13@13½	
800	DeFrees	20@25c	
100	Day	50c	
60	Eureka Con	55½@55½	
1050	Endowment	65@70c	
320	Grand Prize	3.20@3½	
755	Gila	55c	
100	Golden Chariot	35c	
285	Gould & Curry	6½@6½	
400	Independent	1.60	
1360	Julia	5½@5½	
190	Justice	4.20@4.30	
1650	Leopard	80@85c	
4430	Modoc	50@70c	
65	Manhattan	6	
365	Mexican	14½@14½	
250	New Coso	45@50c	
200	Northern Belle	10½@11	
1450	Navajo	35@40c	
100	Phenix	2½	
50	Raymond & Ely	2½	
1106	Silver Prize	20c	
125	Savage	11½@11½	
480	Star	1.10@1	
845	Sierra Nevada	6½@6½	
100	Silver King	15@14½	
355	Tiptop	1½	
500	Union Con	6½@6½	
200	Yellow Jacket	8½	

Pacific Board—Latest Sales.

Wed'sday A.M., July 10.

70	Alpha	10@10½	
130	Alta	6½@6.	
25	Best & Belcher	12½	
550	Bullion	3.85@3.90	
70	Belcher	4.20@4½	
100	Benton	1.70	
270	California	12½@13	
260	Crown Point	6@6½	
315	Caledonia	2.05	
1915	Con Imperial	69@70c	
310	Con Virginia	9@9½	
170	Exchequer	2.70	
940	Gould & Curry	6½@7	
110	Hale & Norcross	7½@7½	
570	Julia	5½@6	
60	Justice	4.10	
150	Leviathan	50c	
395	Mexican	14½@15	
170	Ophir	48½	
20	Overman	10½	
150	Savage	12½	
740	Sierra Nevada	7½@7½	
220	Union Con	7½	
300	Ward	1.40	
110	Yellow Jacket	8½	

AFTERNOON SESSION.

20	Alpha	9½	
100	Argenta	37½c	
1800	Bullion	3.90@4½	
40	Best & Belcher	15½@16	
40	Belcher	4½@4.20	
10	California	12½	
10	Con Virginia	9½	
80	Crown Point	6½@6	
430	Con Imperial	72c	
350	Caledonia	2	
100	Exchequer	2.70	
100	Gila	65c	
220	Gould & Curry	7½@7½	
170	Grand Prize	3.15@3½	
100	Julia	5½	
400	Leopard	48@47c	
200	Leviathan	50c	
260	Mexican	14½@14½	
470	Modoc	75c	
10	Ophir	48½	
10	Overman	10½	
30	Savage	11½	
565	Sierra Nevada	6½@7	
200	Union Con	7.15@6½	
10	Utah	9½	
100	Ward	1.40	
50	Wells-Fargo	10c	

California Board—Latest Sales.

Wed'sday A.M., July 10.

20	Alta	7	
30	Alpha	9@8½	
50	Bullion	4½@4.30	
50	Belcher	3.90	
10	Best & Belcher	15½	
110	California	12½@12.	
130	Caledonia	2.05	
30	Chollar	26	
90	Con Virginia	9@8½	
320	Con Imperial	69@65c	
60	Crown Point	5½@6	
50	Exchequer	2.90@2.9.	
50	Gould & Curry	6½@7	
20	Hale & Nor	7½	
30	Justice	4½	
30	Julia	5½	
40	Mexican	14½@14½	
900	North Carson	3@4c	
40	Ophir	48½	
30	Sierra Nevada	7½@7½	
30	Savage	11½	
500	Trojan	49@48c	
50	Union	7½@7½	
40	Utah	9½	
110	Ward	1.40	
30	Yellow Jacket	8	

AFTERNOON SESSION.

40	Alpha	10½	
30	Alta	6½@6½	
280	Alexander	5½@6½	
50	Andes	40c	
60	Best & Belcher	16½@16½	
60	Belcher	4½@4.30	
130	Bullion	3.80@3½	
40	Con Virginia	9½@9½	
50	Crown Point	6½@6.35	
80	Caledonia	2@2.05	
60	California	12½@13	
200	Con Imperial	73c	
400	Coso Con	30@29c	
30	Exchequer	2.80@2.85	
100	Endowment	70c	
50	Gould & Curry	7½	
50	Hale & Norcross	7½@7½	
30	Justice	4½	
50	Julia	5½@6	
50	Mexican	15@15½	
60	Ophir	48½@48½	
40	Overman	10	
160	Sierra Nevada	7½@7½	
40	Savage	11½@12	
440	Trojan	47½@48c	
30	Union Con	7½	
70	Utah	9½@9½	
100	Ward	1.35	
40	Yellow Jacket	8½	

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's office at San Francisco:

NEVADA AND ARIZONA MINING AND TRANSPORTATION COMPANY.—July 2d. Capital stock, $10,000,000. Directors—A. B. Hunt, W. A. Roberts, I. N. E. Wilson, C. A. Loomis and A. F. Carmody.

BLACK JACK M. Co.—July 2d. Directors—Martin Jones, C. H. Johnson, J. P. Couch, A. S. Baker and A. H. Mories. Capital stock, $10,000,000.

PRICE & DAVIS M. Co.—July 3d. Capital stock, $10,000,000. Directors—Geo. W. Hopkins, J. H. H. Williams, Clinton Gurnee, E. F. Stone aud N. G. Andrews.

REVENUE M. Co.—July 3d. Capital stock, $10,000,000. Directors—G. H. Twichell, A. J. Bunner, E. O. Wiener, Jeremiah Miller and F. V. D. Hoya.

FRANKLIN CON. M. Co.—July 5th. Capitsl stock, $10,000,000. Directors — Henry M. Franklin, W. L. Cbandler, J. L. Babe, G. W. Hall and S. E. Holcombe.

MINING SHAREHOLDERS' DIRECTORY.

Compilsd every Thursday from Advsrtisements in Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS—STOCKS ON THE LISTS OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business
Alps S M Co	Nevada	13	1 00	May 21	June 25	O D Sanire	331 Montgomery st
Caledonia S M Co	Washoe	28	50	May 20	June 24	J Wegener	414 California st
Crown Point G & S M Co	Washoe	34	1 00	June 5	July 10	James Newlands	419 California st
Emigrant S M Co	California	2	60	May 28	July 1	B W Mudge	309 Montgomery st
Grand Prize M Co	Nevada	1	1 00	July 9	Aug 15	Sept 5	R H Brown	327 Pine st
Hussey Con G & S M Co	Nevada	5	15	June 21	July 24	Aug 14	R H Brown	327 Pine st
Justice M Co	Washoe	25	1 00	June 4	July 13	Aug 3	R E Kelly	419 California st
Leviathan M Co	Washoe	7	15	May 28	July 2	July 23	F E Luty	507 Montgomery st
Leopard M Co	Nevada	7	30	June 10	July 15	Aug 5	R H Brown	327 Pine st
McCracken Con M Co	Arizona	1	50	July 10	Aug 24	Sept 28	H Aug Whiting	211 Sansome st
Minnietta Belle S M Co	California	2	50	April 3	May 27	July 26	J T McGeoghegan	318 Pine st
Navajo M Co	Nevada	4	25	May 21	June 24	July 15	R H Brown	327 Pine st
Ophir S M Co	Washoe	32	1 00	June 12	July 18	Aug 6	O L McCoy	419 California st
Silver Prize G & S M Co	Nevada	2	15	May 28	July 5	July 22	Chas K Clark	111½ Leidesdorff st
Succor M & M Co	Washoe	18	1 00	May 29	July 9	July 25	W H Watson	302 Montgomery st
Savage M Co	Washoe	34	1 00	June 7	July 10	July 30	E B Holmes	305 Montgomery st
Trojan M Co	Washoe	8	25	June 4	July 8	July 29	David Wilder	328 Montgomery st
Utah S M Co	Washoe	25	1 00	June 12	July 15	Aug 2	G O Pratt	309 Montgomery st
Young America M Co	Nevada	10	20	June 27	Aug 1	Aug 21	R H Brown	327 Pine st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Black Hawk G M Co	California	2	25	June 4	July 8	July 29	B S Kellogg	240 Montgomery st
Combination M Co	Nevada	2	10	May 18	June 20	July 16	J G Rily	234 Montgomery st
Comanche M & M Co	California	2	50	May 23	July 9	July 30	W W Traylor	309 Montgomery st
Comstock Con S M Co	Lower California	5	6	May 29	July 13	Aug 3	W H Chickering	320 Pine st
Eagle S M & M Co	California	7	15	June 24	July 9	Aug 19	R H Brown	327 Pine st
Father De Smet G M Co	Dakota	1	1 00	June 17	July 22	Aug 19	J A Quinan	404 Montgomery st
Gover M & M Co	California	36	50	May 24	July 10	Aug 1	W O Wilson	402 Front st
Gold Mountain M Co	California	6	1 00	June 22	July 24	Aug 15	Charles Dore	410 Pine st
Henrietta G M Co	California	3	10	June 7	July 12	Aug 1	F Klosterman	309 California st
Kimberly Coal Co	Alaska	1	1 00	May 29	July 1	July 22	W H Hooke	Flint & Stewart st
King M & S Co	Nevada	1	25	June 24	July 29	Aug 20	Chas K Clark	111½ Leidesdorff st
Moore's Flat B G M Co	California	7	25	June 14	July 19	Aug 12	J M Buffington	309 California st
Morgan M Co	California	4	50	June 1	July 8	July 29	John J Raphael	533 Kearny st
Murchie G & S M Co	California	1	20	July 2	Aug 7	Sept 6	S D Rogers	Merchants' Exchange
Nevada Gravel M Co	California	2	10	July 8	Aug 10	Aug 28	J Pentecost	511 California st
Orroville G M Co	California	1	10	June 14	July 18	Aug 13	Ph D Ash	417 California st
Orion M Co	California	2	70	July 9	Aug 9	Aug 24	P Conklin	28 Sansome st
Pittshurg G M Co	California	2	6	May 20	Juue 27	July 18	F Wegener	414 California st
Panther M Co	Nevada	1	8	June 21	July 27	Aug 19	J W Pew	310 Pine st
Real Del Monte M Co	California	2	30	May 22	June 26	July 15	A Baird	304 California st
Summit M Co	California	3	5	May 3	June 18	July 15	J W Mark	318 Pine st
S F Sulphur M Co	Nevada	3	5	June 14	July 18	Aug 13	P M McLaren	310 Pine st
Wm Penn M Co	Nevada	3	2	May 14	June 17	July 17	T B Wingard	328 Montgomery st
Watt B G M Co	California	2	10	June 10	July 16	Aug 6	R Wegener	414 California st

MEETINGS TO BE HELD.

Name of Company.	Location.	Secretary.	Office in S. F.	Meetino.	Date.
Newark G & S M Co	Nevada	W H Allen	419 California st	Annual	July 15
North Con Virginia M Co	Washoe	W M Helman	309 California st	Special	July 22
Rock Island G & S M Co	Washoe	J W Clark	318 Pine st	Annual	July 16
South Comstock G & S M Co	Washoe	J M Buffington	309 California st	Annual	July 19
Yellow Jacket S M Co	Washoe	Thomas G Taylor	Gold Hill	Annual	July 15
Union Con S M Co	Washoe	J M Buffington	309 California st	Annual	July 15

LATEST DIVIDENDS—WITHIN THREE MONTHS

Name of Company.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
California M Co	Washoe	C P Gordon	Nevada Block	1 00	July 15
Con Virginia M Co	Washoe	A W Havens	Nevada Block	1 00	June 15
Eureka G M Co	California	R Wegener	414 California st	25	April 26
Excelsior W & M Co	California	Geo F Thurston	315 California st	50	July 15
Eureka Con M Co	Nev	W W Traylor	309 Montgomery st	3 00	June 20
Empire M Co	California	David A Jennings	401 California st	25	June 15
Georgia S M Co	Washoe	R Wegener	414 California st	3	April 16
Independence M Co	Nevada	R H Brown		26	June 20
McMillen S M Co	Arizona	A O McMeans	Safe Deposit Bldg	50	June 20
Silver King M Co	Arizona	Wm H Boothe	320 California st	50	May 30
Standard G M Co	Cal	W Willis	309 Montgomery st	1 00	July 12

Mining Share Market.

In mining circles the most notable incident of the week has been the final connection of the Sutro Tunnel with the Comstock lode, an event that occurred on the 8tb inst., when the great adit broke into the soutb drift of the Savage on the 1640-foot level. Upon connection being made a strong current of air set in from the tunnel passing through the underground works of the Savage, perceptibly reducing the temperature and improving tbe ventilation of that mine, affecting also in some degree tbe air in tbe Hale & Norcross and the Gould & Curry adjoining. That the lower chambers of these and perbaps other mines near the inner extremity of the tunnel would be thus benefited was a result to be inferred, but that the advantages would be so marked and immediate was hardly expected. The next tbing in order will be to render tbis deep lying adit available for purposes of drainage, an end that can be easily reached by the several companies mentioned, but which in the case of those further removed from its terminus will require considerable time and a corresponding expenditure of money to open drifts or otber communications for the passage of the water. In fact, lateral tunnels, such as are called for by Mr. Sutro's contract with the mining companies, will have to be run for this purpose, these being necessary also for tbe removal of ore, the introduction of timber and such other underground supplies as may be required by the various companies located along the line of the mother lode. These all form a part of the work undertaken to be constructed by Mr. Sutro, and must be brought to completion before he can exact of the mining companies the two dollars per ton royalty stipulated to be paid by them in consideration of the benefits to be derived from the use of the tunnel. Moreover, these companies will be likely to call upon Mr. Sutro to complete the tunnel according to the dimensions originally agreed upon before complying with their part of the contract. Without this bow can the tunuel be used for introducing timber or taking out ore, one of the objects contemplated by its construction and provided for in the contract between these parties.

As yet only a "header" or small tunnel has been advanced to the Comstock, tbe most of the main structure, 10 feet by 12, remaining to be built. As this tunnel would never be used for these purposes even if finisbed, after the above proportions, it is probahle that it will remain incomplete, the owners thereof abating something of their demand for royalty, while the mining companies agree to reasonably compensate them for its uses for ventilation and drainage.

In the mining share market little has transpired of interest, the street being without life, sales limited and prices tending downward.

Semi-Annual Bullion Receipts.

Wells, Fargo & Co. bave furnished the press with their usual quartsrly statement of the movements of treasure through their various express agencies on this coast. The receipts at San Francisco from January 1st to June 30th, 1878, were as follows:

Dore Silver Bars—	
Interior	$21,505,500
Mexico	438,600
Total silver bullion	$21,944,100—$21,944,100
Gold Bars and Dust—	
Interior	$ 7,003,300
Coastwise	361,800
Mexico	69,000
Total gold bullion	$ 7,434,100— 7,434,100
Total bullion	$29,378,200

The above amount sbows an increase of $3,684,000 over the receipts for the same time in 1877, and $4,000,000 in excess of 1876. In fact, the amount is the largest ever reported during tbe first half of any year.

It is now pretty evident that the total bullion product for this coast will be larger this year than for any preceding year. and that it will exceed the estimates made by the Director of the Mint by fifteen or sixteen million dollars, that official having fixed the entire product of gold in the United States at $45,000,000, and of silver at $38,950,000, being $83,950,000 for both metals, whereas the yield of this coast alone will probably exceed $100,000,000.

The Fair Season.

The following is a partial list of the coming fairs. We shall be pleased to add to it if readers will send us the dates and locations of their respective exhibitions:

San Francisco Mechanics' Institute, San Francisco, August 13th to September 14th.

California State Agricultural Society, September 16th to 21st, inclusive.

Oregon State fair, at Salem, October 8th to 18th, inclusive.

Nevada State Agricultural, Mining and Mechanical fair, at Reno, October 7th to 12th, inclusive.

Montana Agricultural, Mineral and Mechanical fair, at Helena, September 23d to 29th, inclusive.

Sonoma and Marin district fair, at Petaluma, September 23d to 28th, inclusive.

San Joaquin valley district fair, at Stockton, September 24th to 28th, inclusive.

Northern district fair, at Marysville, September 23d to 28th, inclusive.

Golden Gate district fair, at Oakland, September 9th to 16th, inclusive.

Napa and Solano district fair, at Vallejo, September 3d.

Monterey county district fair, at Saliuas City, October 15th to 19th inclusive.

Siskiyou county fair, at Yreka, October 2d to 5th, inclusive.

El Dorado county fair, at Placerville, September 13th to 15th, inclusive.

Santa Clara valley fair, at San Jose, September 30th to October 5th, inclusive.

Stanislaus County Stock Orowers Fair, at Modesto, October 9th to 11 h inclusive.

Southern California Horticultural Fair, at Los Angeles, October 14th to October 19th, inclusive.

Southern California Agricultural Society's Fair, at Los Angeles, October 14th to October 19th, inclusive.

Training Schools.

President Elliot, of Harvard University, has well said that "the welfare of the universities depends upon the welfare of the training schools." Our State cannot yet boast of a stalwart university. One manifest reason is that the schools which furnish the students for the University either do not take time enough to do their important work well or else lack the qualifications to accomplish what they attempt.

The signs of the times indicate that these foundation defects in the higher education will soon be eliminated. Foremost among the agencies quietly at work solving this all-important problem is, as it occurs to us, the Golden Gate Academy at Oakland.

This institution has just completed the seventh year of its history. Its years and its work entitle it to rank among the permanent educational forces of the State. The first class of pupils prepared within its walls has just graduated from the State University of California. Next year, Yalo, Amherst and Dartmouth will graduate others of its students. It claims to do foundation work in education according to most approved standards. With equal diligence it aims to expand the character into the highest type of noble manhood. Recognizing also the paramount importance of a sound body in order both to the highest mental development and to the best fruits of such culture in life, it has provided a well-equipped gymnasium for daily exercise and a brief military drill, to emphasize the method and system which should characterize the true student. Its instructors are educators hy profession. Its building is a model of comfort, convenience and architectural eleganco. The founders and guardians of this acadomy are many of them graduates of the famous Phillips' Academy, of Andover, Mass., which has recently so worthily celebrated its centennial. It is their purpose to make the Golden Gate Academy like unto this "foremost of Eastern training schools." May the completion of its centenary he as greatly honored.—*Argonaut.*

FRISCO.—The Frisco reduction works started up with their new boiler on the 11th ult., and up to the 28th, with some interruption, and turned out eight hars of silver, valued at $9,030. They are working from 10 to 15 tons of ore every 24 hours. The machinery is working well now. The chloridizing furnaces will he completed next week, and, from the present indications, the pioneer leachers of Utah, Messrs. Harries & Tischer, will make a success of their works here. The Frisco smelter has been continually running on Bonanza ore, turning out over a car-load every 24 hours, and having quite a lot of hullion on the dump. The C. C. company's smelter had heen running up to yesterday, and has shut down for repairs, and over the Fourth of July. They have also hullion on their dump. The Cave mine, owned hy Godhe & Co., is looking well, and they are hoisting and shipping ore daily to the Frisco smelter. The Hedges, adjoining the Cave mine, we are informed, is to be purchased and worked hy a party of capitalists. The Bonanza continues to look well and the working shaft has been connected with some of the lower works. They are shipping ore daily to the Frisco and company's smelter and the leaching works.—*Salt Lake Tribune.*

BUFFALO HORN, the present leader of the Bannocks, is well known in this city and throughout all the region of country embraced between the Sierra Nevadas on the west, the Missouri river on the east, the Pacific railroad on the south and the Dominion of Canada on the north. He is a half-breed, and has always heen friendly to the whites. Two years ago, during the Black Hills campaign, he was Crook's chief scout, and in that position outranked even such men as Wild Bill and Captain Jack Crawford. He is thoroughly familiar with the strategetical tactics of the United States troops, brave to rashness, and hardy heyond even the usual run of Indians. He will prohably not lay down his arms until absolutely driven to it.—*Austin Reveille.*

THE MECHANICS' INSTITUTE FAIR.—A meeting of the managers of the Mechanics' fair was held on Tuesday evening, July 9th, and the date of the opening of the fair was fixed for August 13th. The Superintendent's report stated that arrangements for the exhibition were progressing satisfactorily. Two hundred and fifty applications for space had already been received. The enterprise will he taken up with full zeal and activity on the part of the managers, and a creditable exhibition of industrial interests will douhtless he secured. It is time that all who have good things to display should begin at once to prepare for the fair. Let them apply for space early and prepare their exhibits in attractive form.

Woodward's Gardene wers never more attractive thau at present. Besides three lione already mentioned, six monster living alligatora, eeveral iguanas and a boa-constrictor have just been added. New etare are conetantly engaged for the Pavilion exercices. Rates of admission as ueual.

EXAMINE the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assete, $30,533,420.94. Lewie C. Grover, President; L. Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulare to James Munsell, Jr., ageut of insured, 224 Sansome St., San Francisco.

MODEL MAKER AND MACHINIST.—I. A. Heald, No 514 Commercial St., San Francisco, (fourth floor).

METALS.

[WHOLESALE.

WEDNESDAY M., July 10, 1878.

IRON.—	
American Plg. ton	28 00 @30 00
Scotch Pig, ton	28 00 @30 00
White Pig, ton	23 00 @— —
Oregon Pig, ton	—@— —
Refined Bar	2½@ 3
Horse Shoes, keg	5 00 @— —
Nail Rod	—@ 7
Norway, Oval	—@ 7
COPPER.—	
Sheathing, lb	34 @ 35
Sheathing, Yellow	21 @
Sheathing, Old Yellow	12 @
Composition Nails	24 @—
Composition Bolts	24 @—
STEEL.—	
English Cast, lb	13 @ 14
Anderson & Woods, ordinary sizes	15 @— —
Drill	15 @— —
Flat Bar	14 @ 19
Plow Steel	8½@ 12½
TIN PLATES.—	
10x14 I C Charcoal	7 50 @ 8 50
Banca Tin	23 @— 24
Australian	17 @ 17½
ZINC.—	
By the Cask	9 @— —
Zinc, Sheet 7x3 ft, 7 to 10, lb	9 @— 10
7x3 ft, 11 to 14	10 @— —
8x4 ft, 8 to 10	11 @— —
8x4 ft, 11 to 10	11 @— —
NAILS.—	
Assorted sizes	3 15 @3 25
QUICKSILVER.—	
By the lb	43 @ 45

GENERAL MERCHANDISE.

[WHOLESALE.]

WEDNESDAY M., July 10, 1878.

BAGS—Jobbing.

Eng Standard Wheat..11½@11½	
Neville & Co's	
Hand Sewed, 22x36..11½@11½	
24x36	@—
23x40	13 @13½
Machine Swd, 22x36..11½@11½	
Flour Sacks, halves	8½@10
Quarters	6½@ 6½
Eighths	4 @ 4½
Hessian, 60 inch	16 @—
45 inch	9½@10
40 inch	9 @—
Wool Sacks,	
Hand Sewed, 3½ lb..47½@50	
4 lb do	52½@—
Machine Sewed	47½@—
Standard Gunnies	14 @15
Bean Bags	7 @ 8

CANDLES.

Crystal Wax	17 @—
Eagle	12 @—
Patent Sperm	30@34

CANNED GOODS.

Assorted Pie Fruits,	
2½ lb cans	2 75 @3 00
Table do	3 75 @4 25
Jams and Jellies	4 25 @ —
Pickles, hf gal	3 50 @ —
Sardines, oil, box	1 65 @1 90
Hf Boxes	3 00 @ —
Preserved Beef,	
2 lb, doz	4 00 @ —
do Beef, 4 lb, doz	6 50 @ —
Preserved Mutton,	
2 lb. doz	4 00 @ —
Beef Tongue	6 50 @ —
Preserved Ham,	
2 lb, doz	6 50 @ —
Deviled Hsm, 1 lb, doz	5 50 @ —
do Ham, ½lb, doz	3 00 @ —

COAL—Jobbing.

Australian, ton	7 00 @ 7 25
Coos Bay	6 50 @ 7 00
Bellingham Bay	6 50 @—
Seattle	6 50 @ 6 50
Cumberland	14 00 @— —
Mt Diablo	4 75 @ 6 00
Lehigh	22 00 @— —
Liverpool	7 00 @ 8 00
West Hartley	7 50 @ 9 00
Scotch	8 50 @ 8 00
Scranton	13 00 @16 00
Vancouver Id	7 50 @— —
Charcoal, sack	75 @— —
Coke, hbl	60 @— —

COFFEE.

Sandwich Id, lb	21½@— —
Costa Rica	@ 18½
Guatemala	17 @ 16½
Java	22½@ 23
Manila	17½@— —
Oround, in cs	25 @— —

FISH.

Sac'to Dry Cod	5 @ 6½
do in cases	6½@ 7
Eastern Cod	7@— 7½
Salmon, hhls	9 00 @10 00
Hf hhls	5 00 @ 5 50
1 lb cans	1 25 @1 30
Pkld Cod, hhls	22 00 @— —
Hf hhls	11 00 @— —
Mackerel, No. 1,	
Hf Bbls	9 50 @10 50
In Kits	1 85 @ 2 10
Ex Mess	3 25 @— —
Pkld Herring, hf	3 00 @ 3 50
Soston Smkd Hg	70 @— —

LIME, Etc.

Lime, Sta Cruz, bbl	2 00 @ 2 25
Cement, Rosendale	2 76 @ 3 60
Portland	4 75 @ 5 50
Plaster, Golden Gate Mills	3 00 @ 3 25
Land Plaster, tn	10 00 @12 50

NAILS.

Ass'ted sizes, keg	3 25 @ 4 00

OILS.

Pacific Glue Co's	
Neatsfoot, No 1	1 00 @ 90
Castor, No 1	1 10 @ —
do, No. 2	1 05 @ —
Baker's A A	1 25 @1 30
Olive, Flagniol	6 25 @5 75
Possel	4 75 @5 25
Palm, lb	9 @ —
Linseed, Raw, bbl	72 @ —
Boiled	75 @ —
Cocoanut	65 @ —
Chins nut, cs	82½@ —
Sperm	40 @ —
Coast Whales	40 @ —
Polar, refined	45 @ —
Lard	90 @1 00
Oleophine	26 @ 27
Devoe's Bril't	25 @ 28
Photoline	29 @ —
Nonparlel	35 @ 36½
Eureka	40 @ 42½
Barrel kerosene	20 @ —
Downer Kor	40 @ 42½
Elaine	42½@ —

PAINTS.

Pure White Lead	9½@ 10½
Whiting	1½@ —
Putty	4 @ 6
Chalk	1½@ —
Paris White	2½@ —
Ochre	3½@ —
Venetian Red	3½@ —
Averill Mixed Paint, gal.	2 00 @2 40
White & tints	
Green, Blue & Ch Yellow	3 00 @3 50
Light Red	3 00 @3 50
Metallic Roof	1 30 @1 60

RICE.

China Mixed, lb	6½@ —
Hawaiian	7 @ —

SALT.

Oal. Bay, ton	15 00 @22 50
Common	10 00 @12 00
Carmen Id	13 00 @22 50
Liverpool fine	20 00 @22 50

SOAP.

Castile, lb	10 @ 10½
Common brands	4½@ 6
Fancy brands	7 @ 8

SPICES.

Cloves, lb	45 @ 50
Cassia	22½@ 25
Nutmegs	85 @ 90
Pepper Grain	15 @ 17
Pimento	15 @ 16
Mustard, Cal., ½ lb glase	1 50 @ —

SUGAR, ETC.

Cal. Cube, lb	11½@ —
Powdered	11½@ —
Fine crushed	11½@ —
Granulated	11 @ —
Golden C	9½@ —
Cal. Syrup, kgs	70 @ —
Hawaiian Mol'sses	26 @ 30

TEA.

Young Hyson, Moyune, etc	35 @ 50
Country pckd Gunpowder & Imperial	50 @ 60
Hyson	30 @ 35
Fooo-Chow O	53 @ 60
Japan, 1st quality	40 @ 60
2d quality	25 @ 35

LEATHER.

[WHOLESALE.]

WEDNESDAY M., July 10, 1878.

Sole Leather, heavy, lb	22 @ 29
Light	20 @ 24
Jodot, 8 Kil., doz	48 00 @50 60
11 to 13 Kil	65 00 @76 00
14 to 19 Kil	80 00 @90 00
Second Choice, 11 to 16 Kil	55 00 @70 00
Cornellian, 12 to 16 Kil	57 00 @67 00
Females, 12 to 13 Kil	63 00 @67 00
14 to 16 Kil	71 00 @76 00
Simon Ullmo, Females, 12 to 13 Kil	58 00 @62 50
14 to 15 Kil	66 00 @70 00
16 to 17 Kil	72 00 @74 00
Simon, 13 Kil	61 00 @63 00
20 Kil	65 00 @67 00
24 Kil	72 00 @74 00
Robert Calf, 7 and 9 Kil	35 00 @40 00
Kips, French, lb	1 00 @ 1 35
Cal. doz	40 00 @60 00
French Sheep, all colors	8 00 @15 00
Eastern Calf for Backs, lb	1 00 @ 1 25
Sheep Roans for Topping, all colors, doz	9 00 @13 00
For Linings	5 50 @10 5
Cal. Russet Sheep Linings	1 75 @ 4 50
Boot Legs, French Calf, pair	4 00 @— —
Good French Calf	4 00 @ 4 75
Best Jodot Calf	5 00 @ 5 25
Leather, Harness, lb	35 @ 38
Fair Bridle, doz	48 00 @72 00
Skirting, lb	33 @ 37
Welt, doz	30 00 @50 00
Buff, ft	18 @ 20
Wax Side	17 @ 18

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & Co.]

SAN FRANCISCO, July 10, 3 P. M.

LEGAL TENDERS in S. F., 11 A.M., 99½@99¾. SILVER, 2¾@2½

GOLD in New York, 100¾.

GOLD BARS, 890@910. SILVER BARS, 8@15 ℔ cent. discount.

EXCHANGE on New York, ½%; on London bankers, 49@49½. Commercial, 50; Paris, five francs ℔ dollar; Mexican dollars, 94@95.

LONDON Consols 95⅝; Bonds, 108¼.

QUICKSILVER in S. F., by the flask, ℔ lb, 42½.

Signal Service Meteorological Report.

Week Ending July 9, 1878.

HIGHEST AND LOWEST BAROMETER.

July 3	July 4	July 5	July 6	July 7	July 8	July 9
29.97	29.90	29.91	29.88	29.93	29.94	29.80
29.90	29.82	29.86	29.83	29.85	29.83	29.84

MINIMUM AND MAXIMUM THERMOMETER.

66	65	66	66	62.5	63	61
62	55	64	64	53.6	63	53

MEAN DAILY HUMIDITY.

63	65	71	71	79	78	82

PREVAILING WIND.

W	W	SW	SW	SW	SW	SW

WIND—MILES TRAVELED.

411	216	215	223	324	344	306

STATE OF WEATHER.

Clear	Clear.	Clear.	Clear	Fair.	Fair.	Cloudy

RAINFALL IN TWENTY-FOUR HOURS.

Total rain during the season, from July 1, 1877, —— in.

OUR AGENTS.

OUR FRIENDS can do much in aid of our paper and the cause of practical knowledge and science, by assisting Agents in their labors of canvassing, by lending their influence and encouraging favors. We intend to send none but worthy men.

J. L. THARP—San Francisco.
B. W. CROWELL—California.
A. C. KNOX—Pacific Coast.
C. N. WEST—Santa Cruz, Monterey and San Benito counties.
A. C. CHAMPION—Tulare, Fresno and Inyo counties.
W. D. WHITE—San Bernardino county.
J. W. A. WRIGHT.—Tulare, Fresno and Kern counties.
B. E. LLOYD.—Sonoma and Napa counties.
E. M. DENNY.—Oregon.
H. E. HALLETT.—Mendocino county.
O. W. MCGREW.—Santa Clara county.
WM. M. BREWER.—Black Hills, Dakota Territory.
RICHARD ALLEN.—British Columbia.
R. D. NUNNALLY.—Siskiyou County, Cal.
DR. W. G. ALBAN.—Amador, Calaveras, Tuolumne and Mariposa counties.

EVERY new subscriber who does not receive the paper and every old subscriber not credited on the label within two weeks after payimg for this paper, should write personally to the publishers without delay, to secure proper credit. This is necessary to protect us and subscribers against the acts and mistakes of others.

To Mining Secretaries.

An smendment to Section 336 of the California Code, taking effect July 1et, 1874, provides that in addition to the regular publication, daily or weekly, of the seceesment and sale notices as herctofore.

PERSONAL NOTICE

Must be served as provided in the following quotation from the law:

"The notice must be personally served upon each stockholder, or in lieu of personal service, must be sen through the mail, addressed to each stockholder at his place of residence, if known, and if not known, at the place where he principal office of the Corporation is situated."

The above refere to the ASSESSMENT NOTICE only. Advertieere in the MINING AND SCIENTIFIC PRESS will be furnished with copies of assesement noticce printed on slips suitable for serving personal notico under this law at short notice.

DEWEY & CO., Publishers.

Mining and Other Companies.

Persons interested in incorporated eharee will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the eame.

Gover Mining and Milling Company —

Location of principal place of businece, Room No. 8, 402 Front Street, San Francisco, California. Location of mine, Amador County, near Drytown, California.

Notice —There are delinquent upon the following described stock on account of Assessment No. 36, levied on the 24th day of May, 1878, the eeveral amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Knox, Joseph A	507	100	$50 00
Knox, Joseph A	571	50	25 00
Knox, Joseph A	572	50	25 00
Knox, Joseph A	573	50	25 00
Knox, Joseph A	727	30	18 60
Stevens, Mre H A	192	50	25 00

And in accordance with law and an order of the Board of Directors, made on the twenty-fourth (24th) day of May, 1878, eo many shares of each parcel of such stock as may be neceeeary will be eold at public auction, at the office of the Gover Mining and Milling Company, Thursnay, the fiirst day of August, 1878, at the hour of one o'clock P. M. of such day, to pay delinquent assessments thereon, together with costs of advertising and expeneee of eale.

W. O. WILSON, Sec'y.

Office, Room No. 8, No. 402 Front Street, San Francisco, California.

Orion Mining Company —Location of Principal Place of business, San Francisco, California.

Location of Works, Iowa Hill, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 9th day of July, 1878, an assessment, No. 2, of 70 cents per share was levied upon the capital stock of the Corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, No. 28 Sansome Street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 9th day of August, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be eold on Saturday, the 24th day of August, 1878, to pay the delinquent assessment, together with cost of advertising and expenses of eale. By order of the Board of Directors.

P. CONKLIN, Sec'y.

Office, No. 28 Sansomo Street (up-stairs), San Francisco, Cal.

Seaton Mining Company.—Location of

principal place of business, San Francisco, Cal. Location of works, Drytown Mining District, Amador County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the twenty-sixth day of June, 1878, an assessment, (No. 11,) of seventy-five ($75) dollars per share was levied upon the capital stock of the corporation, payable immediately in U. S gold coin, to the Secretary, at the office of the Company, Room No. 58, Nevada Block, northwest corner Pine and Montgomery Streets, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the thirtieth day of July, 1878, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the twenty-first day of August, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

JOEL F. LIGHTNER, Sec'y.

Office, Room No. 58, Nevada Block, northwest corner of Pine and Montgomery Streets, San Francisco, Cal.

Summit Mining Company —Location of

Principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 3,) levied on the third (3) day of May, A. D., 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Brown, M S	45	200	10 00
Ingerson, H H	53	500	25 00
Ingerson, H H	54	500	25 00
Knoll, M	134	100	5 00
Martin, A, trustee	00	100	6 00
Martin, A, trustee	97	100	5 00
Martin, A, trustee	105	100	6 00
Martin, Roht	29	200	10 00
Quigley, Chas	136	200	10 00
Quigley, Chas	168	200	10 00
Quigley, Chas	159	200	10 00
Peck, E A	9	1000	60 00
Purkitt, J H	44	200	10 00
Purkitt, J H	61	500	25 00
Purkitt, J H, trustee	56	500	25 00
Thompkins, M M	27	1200	60 00
Tardiff, Wm	50	500	25 00
Tyson, Fred'k	07	500	25 00
Tyson, Fred'k	08	500	25 00

And in accordance with law, and an order of the Board of Directors, made on the third (3) day of May, A. D., 1878, eo many sharee of each parcel of euch stock as may be neceesary, will be eold at public auction, at the office of said company, on Monday, the fifteenth (16) day of July, A. D., 1878, at the hour of two o'clock P. M., of said day, to pay eaid delinquent assessment thereon, together with costs of advertising and expenses of the sale.

J. W. CLARK, Sec'y.

Office, Room 6, No. 318 Pine Street, San Francieco.

Office South Comstock Gold and Silver

Mining Company. Notice.—The annual meeting of the stockholdere of the South Comstock Gold and Silver Mining Company, for the election of Truetees and the transaction of euch other business as may be presented, will bs held on Monday, the 10th day of Auguet, 1878, at two o'clock P. M. of that day, at the office of the Company. Transfer books will be cloeed on Saturday, August 12th, 1878, at the hour of 12 M. of that day.

J. M. BUFFINGTON, Secretary.

Office—Roome 3 and 4, second floor, No. 309 California etreet, over Aetna Ineurance office.

Office of Union Consolidated Silver

Mining Company, Sau Francisco, June 15th, 1878.—The annual meeting of the stockholdera of the Union Consolidated Silver Mining Co., for the election of Truetees for the ensuing year, and for the transection of such other business as may properly come before it, will be held at their office, 309 California Street, Rooms 3 and 4, second floor, over Aetna Ineurance office, San Francieco, California, on Monday, July 15th, 1878, at two o'clock P. M. Transfer booke will be cloeed Friday, July 6th, 1878, at three o'clock P. M.

J. M. BUFFINGTON, Sec'y.

Wide Awake Prospecting & Mining Company.

—Location of principal place of business, San Francisco, Cal. Location of works, Picket-Post, Pinol County, Arizona.

Notice is hereby given that at a meeting of the Board of Directors, held on the thirteenth day of June, 1878, an assessment (No. 4,) of two (2) cents per share was levied upon the capital stock of the corporation, payable immediately in U. S. gold coin, to the Secretary, at the office of the company, Room 6, No. 232 Sutter Street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpeid on the thirteenth day of July, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the thirteenth day of August, 1878, to pay the delinquent assessment, together with costs of advertising and the expenses of sale. By order of the Directors.

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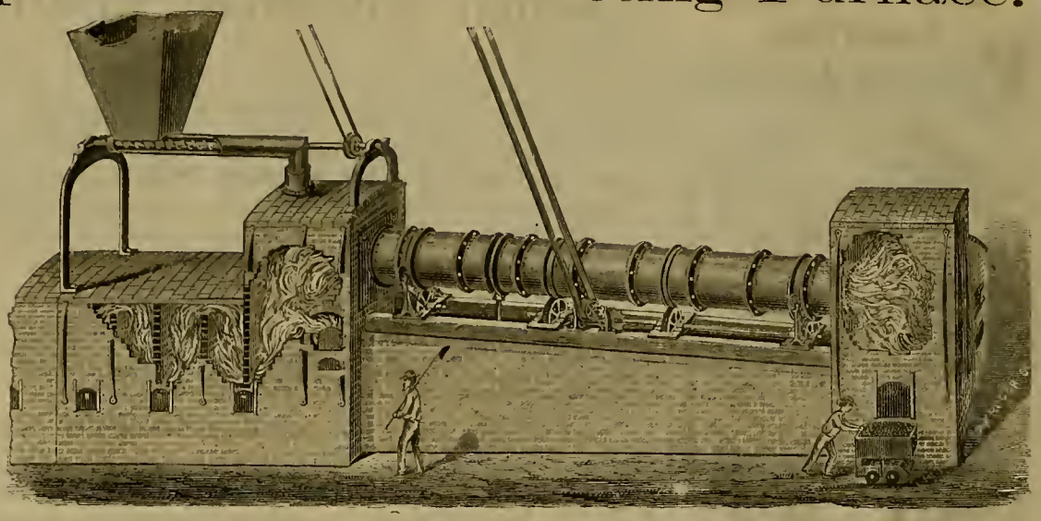

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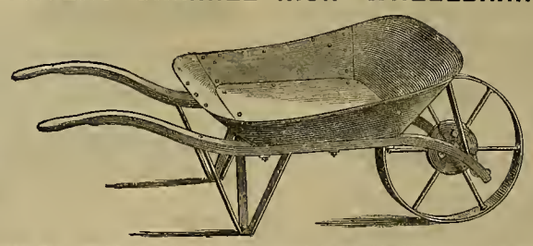

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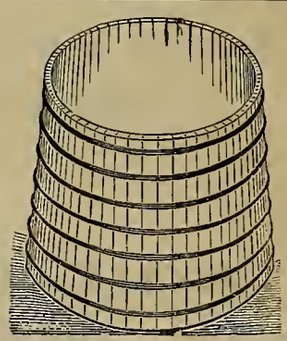

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, JULY 20, 1878.

VOLUME XXXVII Number 3.

The Leaching of Silver Ores at Baranca, Mexico.

The wet processes are proving daily to be more and more applicable to the cheap extraction of metals from their ores, and we are glad to find that our German engineers and metallurgists are introducing them upon our coast. We are indebted to Mr. Weherling for a description of the process used at Baranca, in the State of Sonora, Mexico, where there is situated one of the foremost reduction works of this kind.

The ore worked is a fahl-ore, with zinchlende, galena and iron and copper pyrites. The gangue is quartz and the ore averages $150 silver, with only a trace of gold. It was crushed dry formerly by a 10-stamp battery and now by the Bruckner ore pulverizer, described in our issue of July 6th, 1878.

It is then roasted to drive off the sulphur, antimony and arsenic, and to change the silver into a chloride, for which purpose 5% to 7% of salt is added. A Bruckner roasting cylinder is in process of erection, but the roasting is accomplished at present by three reverberating roasting furnaces, with four hearths, arranged in the form of steps, the ore being introduced near the flue, and being moved downwards along the successive hearths, till it reaches the hottest part of the fire, where it is discharged. The fire is carefully regulated, so that the ore does not sinter, and it may be discharged as porous and fine as possible. Each of these reverheratory furnaces roasts four tons in 24 hours.

The roasted and chloridized ore now consists essentially of oxide of iron and quartz, chloride of copper and zinc, chloride of lead and chloride of silver, with a trace of gold, which is too small to be worked for. This ore is transferred to the leaching tanks, which are 10 feet in diameter, three feet high and hold eight to 10 tons of ore. The tanks are, of course, provided with false bottoms, covered with common white sheeting, and with a cock to draw off the liquors. The tanks are then filled with *cold* water. This is for the purpose of removing the salts of copper. Some of the chloride of lead is also removed, but not all. But the soluble copper and zinc are entirely removed, and from the solution the copper is precipitated by means of iron. In some reduction works, leaching with hot water is preferred, as it more perfectly removes lead chloride, but the experience at Baranca is that the salts of lead which remain are not injurious, but rather beneficial at a further stage of the operation, as will be seen presently.

After all salts soluble in cold water have been removed, the residue consists essentially of the quartz and iron oxide, chloride and sulphate of lead and chloride of silver. A cold dilute solution of hyposulphite of sodium is then poured upon the ore and left until all the silver is in solution. A small amount of chloride of lead goes into solution also.

The solution is then run into a tank placed beneath the leaching tank, and a solution of polysulphide of calcium is added until no further precipitate forms. This precipitate, which is essentially sulphide of silver with a little lead, is filtered off and, after drying, roasted in a small reverberatory furnace, until the sulphur is all removed in this way as silver bullion of 650 to 700 fine is produced. This is mixed with lead and litharge and cupelled in a Mexican cupelling furnace to a bullion 998 fine. For this reason the lead which is thrown down with the silver as sulphide is rather beneficial than otherwise, as it assists in the cupelling operation. The Mexican cupel furnace is very similar in its construction to the German cupel furnace, but smaller. Its hearth is fixed and is about three and a half to four feet in diameter. Wood ashes are used instead of marl, and it is said to work satisfactorily.

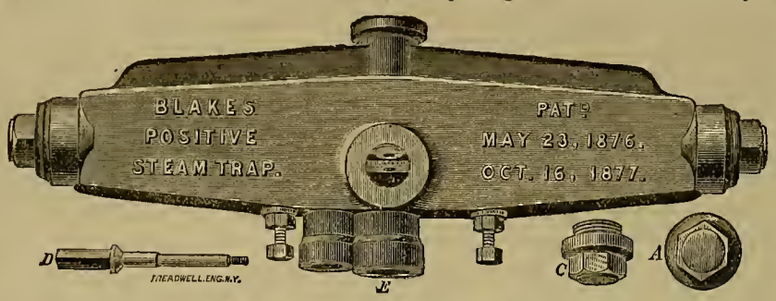
It will be seen that the addition of calcium polysulphide each time to the mother liquor slowly changes it into hyposulphite of calcium, when seems to work quite as well as the corresponding sodium salt, and as long as the solution is kept in use, constantly regenerates itself by the polysulphide of calcium added.

From all that we can learn, Mexico seems to be no field for a person who is dependent upon his own labor for his support. Labor brings a very small sum in that country. A man with a capital of $10,000, or a party of three or four with that sum who understand the practical working of silver ores, might find it profitable. But, at the same time, one should be pretty sure of a good return for his time and money who is compelled to take the risks and inconveniences of life in such a country.

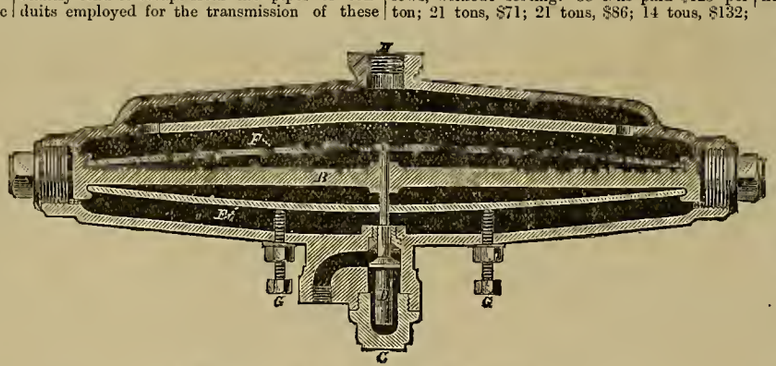
Non-Conductors of Heat.

It now appears probable that before many years shall elapse, most buildings requiring to be artificially warmed will, in all considerable towns and cities, be heated by hot air, steam or water, conducted through pipes from some general source of supply. This plan of furnishing warmth has already been introduced in several places with such gratifying results as warrant the belief that it will rapidly come into general use. Steam for motive power will also come in like manner to be distributed from a great center of generation to points where required for use. As the heat will constantly tend to escape from the pipes or conduits employed for the transmission of these elements, the obtaining of the cheapest and most perfect non-conducting material practicable will become a desideratum. Recourse to various substances has already been had and doubtless others will come to be employed for this purpose. Not long since Messrs. Hopper & Evans patented, through the MINING AND SCIENTIFIC PRESS Patent Agency, a new improvement in fire-resisting and non-conducting compounds, which, though especially intended for the lining of safes and fire-proof vaults, would probably be found well adapted to the service above alluded to. As evidence of its non-conducting properties it has been subjected to some very crucial tests of its powers in this respect, papers having remained in a safe lined with this compound for several days while under a white heat without injury. As a covering for boilers and steam pipes this material has been found to largely check the radiation of heat, and in this direction the patentees expect a wide field will open for the employment of their invention. It is, in fact, here that they count upon its becoming of the greatest utility. The benefits to small manufacturers, machinists and all others requiring the aid of a limited but cheap and ever ready motive power being wholly incalculable, as the transmission of such power to distant points with the least possible loss becomes a matter of the first importance. The inventors who may be able to largely contribute toward that end can hardly fail to reap a bountiful reward. As Messrs. Hopper & Evans have attained that object, their compensation is assured.

THE BANNER MINE.—We have been shown some very fine rock from the Banner mine, Mosquito gulch, Calaveras county, owned by J. P. Spaulding & Co., and which will start up again in a short time. There has been some $9,000 laid out on the mine, it having fine new hoisting works, with 25-horse power capacity. There is also a 10-horse power engine and Cornish pump, large enough to handle all the water to the 500 level. They have another No. 3 steam pump and 300 feet of five-inch pipe. There is also a first-class kit of blacksmith tools of every description for use about the mine. A track has been laid and cars supplied to deliver ore. Over $14,000 has already been taken out of the mine, the ore working as follows, without sorting: 38 tons paid $125 per ton; 21 tons, $71; 21 tons, $86; 14 tons, $132; 12 tons, $125; 39 tons, $53. Since this ore was milled the mine has been closed on account of an unfortunate disagreement and a mortgage. The difficulties will soon be removed, however, and the mine will soon start up again. We hope to see this valuable mining property running shortly to full capacity.



PARTS OF BLAKE'S POSITIVE STEAM TRAP.



SECTIONAL VIEW OF BLAKE'S STEAM TRAP.

RETURNED. — We announce to interested friends that Messrs. Dewey and Ewer, publishers and proprietors of the PRESS, have returned from their Yosemite excursion, and are at their posts of duty again. They are refreshed by the respite from business and by the outdoor life which they have led. They desire us to return thanks to all the friends who showed them kindness during their sojourn in the country. As the trip was one for recreation, we do not expect our travelers will do much, at present, in the way of descriptive articles, but the information which they secured during the journey will doubtless work to the advantage of the PRESS in many ways.

The Blake Steam Trap.

We give herewith illustrations showing the construction of "Blake's Positive Steam Trap," made by the Augell & Blake Manufacturing Company, 202 Greene street, N. Y. These steam traps are largely used in manufacturing sections and have proved very satisfactory. In this steam trap there are duplicate leaf huckling springs which are carried at their ends by a loose intermediate metal bar or holder, having an inferior expansive action to the spring, and are combined, for operation or control of the valve, with an inlet arranged to connect with opposite ends of the trap. It also consists in a combination, with the duplicate leaf huckling springs and their bar or holder, of adjusting and supporting screws on which one of said springs rests, and the valve of the trap having its stem connected with the other of said springs. In a trap constructed in this manner, the valve is closed by the huckling of the spring, and opened by the straightening of them, the distribution of the steam over the whole length of the spring is insured, every facility is afforded for cleaning and repair, and a perfect and sensitive action generally is obtained.

Fig. 1 of the engraving shows the parts to be removed for cleaning, should sediment collect in sufficient quantities to require it. *C* is the cap which must be first removed. *E* is the valve box from which the cap is removed, and *D* is the valve stem which must be next removed. The valve seat and the stem *D* should then be thoroughly cleaned, and the stem *D* replaced. In replacing the stem it should be screwed up to a shoulder on end of the stem, and the cap *C* then replaced. *A* is the plug which covers the side of the trap, and is not always removed in cleaning, unless a large amount of sediment should collect in the trap.

Fig. 2 shows sectional view of trap. *F F* are the two brass leaves or buckling springs; the expansion and contraction causing the trap to operate. *B* is the casting for holding the springs; *C* is the valve cap; *D* is the valve stem; *G G* are the set screws for adjusting trap when being put together; *H* is the inlet.

Among the advantages claimed for this trap are that it has a much larger opening than a float trap, since it does not open against the pressure of steam. It will drain a larger amount than ordinary traps. It is adjusted when made and all parts are made in duplicate. The device is always ready for operation, working equally well under high or low pressure. It will be perceived from examination of the engravings that it is positive in operation, a particularly desirable feature. Trap No. 1 is 14 inches long, six inches high and two and a half inches wide; cost $7.50. No. 2 is two feet long, nine and a half inches high and three inches wide, costing $10. For further particulars the manufacturers may be addressed as above.

MESSRS. PARKE & LACY advertise in another column a large list of articles which may be seen at their mining machinery depot. They keep on hand air compressors, rock drills, steam and hand pumps of various kinds, machinists' tools, fire engines, chemical engines and other articles too numerous to mention. The Burleigh rock drills, for which they are agents, are in extensive use on this coast and in other parts of the world, some of them having been used by Henry Meiggs in his railroad engineering works in Peru. The machinery depot of Parke & Lacy is well worth a visit from all who are interested in mechanical devices.

TERRIFIC cloud bursts are common in the Black hills, where one recently inundated a large tract of farming country, sweeping away ox teams and drowning one man. They have also done much damage to the track of the Union Pacific railroad.

COL. MACKENZIE'S invasion of Mexican soil has caused considerable excitement, the people believing that Mackenzie acted under a wide construction of his orders, and that the object was to raise a border war for annexation purposes.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—EDS.

Ore Reduction in Arizona.

[Correspondence of the PRESS.]

Ores Adapted to Concentration.

At Picket Post, Pinal county, are situated the concentration works of the Silver King company, this being the nearest point to their mine, at which water in sufficient quantities for the use of the works could be obtained. Owing to the success that has attended the working of the ores of the Silver King mine by the Frue concentration process, after failurs to treat them hy amalgamation, concentration has come to he looked upon as the only method by which the ores of this district generally can be successfully worked. This method of handling ores has the merit of being cheap, simple and expeditious, the objections to its employment being that it is incomplete and applicable only to certain varieties of ore. It is used with great advantage to separate, by meaus of specific gravity, all ores having a crystalline structure, from their gangue being especially well adapted to the concentration of sulphurets. The Silver King ores contain large quantities of sulphurets of silver, lead, antimony and copper, with a sprinkling of carbonate of the latter, about 20% of the silver existiug as chloride or "dry chloride," as distinguished from horn silver. These sulphurets are crystalline and readily break from the gangue under the stamps. Thus they are practically all saved, hut the dry chloride being light and exceedingly friable is, at the same time, carried over with the tailings and lost unless rescued hy another process. Were the metal all contained in the sulphurets not more than 3% or 4% would he lost. With mines occurring in the limestone formation, however, entirely different conditions are presented. There is a large group of this class of lodes hordering Queen creek on the north, the ores of which are characterized hy the presenee of gray carbonate of lead in considerable quantities. This mineral carries the silver which blackens it, hut does not otherwise alter its appearance or fracture. It is amorphous or entirely homogeneous in structure, and therefore cannot he concentrated, because no matter how fine it be pulverized, each grain still possesses the same specific gravity, and the only result of concentration will be a separation of the coarse from the fine particles. It is proposed, hy parties interested in these mines, to employ this process in the treatment of this ore, hut experience will, I fear, demonstrate to them, as it has to the writer, the folly of the undertaking. How this ore really should be handled remains to he determined. It is not to he presumed that it will amalgamate, and, though it carries a fair proportion of lend, it is not rich enough in silver to pay for smelting where wood and iron (its requisite flux) are so far distant. Still there it may he and is even prohahle that the carhonate of lead will run into galena as soon as eonsiderahle depth is reached in these mines, when concentration ean he practiced upon the advantages.

Another Formation and a Different Ore.

Further south across Queen creek, which cuts through the silver-hearing helt, the proportion of lead contained in the ore is so small that this metal no longer interferes with amalgamation. Here the prevailing ore is horn silver, in itself not well adapted to concentration, while the admixture of tbe dry chloride is too great to admit of a profitable application of this process. Continuing south we find the carhonate of lead decreases, while that of copper increases, until this latter heeomes the predominant metal. A certain percentage of copper has always heen considered advautageous in amalgamation, and even when present in such ahundance as to depreciate the quality of the bullion this is not a serious trouhle. These argentiferous copper ores will in fact very likely be found useful to mix with other ores iu preparing them for amalgamatiou, which will surely be the process employed for their reduction until the mines reach considerahle depths, when the ores may change and other means for treating them will come into use. The opponents of this process point to several unsuccessful attempts wbich have heen made at employing it, hut to this it may be replied that the ores experimented on were, with one exception, taken from mines lying in the eastern or gneiss formation, all highly sulphureted and carryiug lead, antimony and arsenic in such quantities tbat no skillful metallurgist would undertake their treatment without roasting. The result of tne other trials have never been made puhlic, though it was hinted hy one who ought to know, that a very high percentage of the silver was saved, and that the work was discontinued because the quality of the ore did not come up to the owner's expectations—a reasonahle solution, inasmuch as it rarely happens that a miuer estimates his ore at less than twice its value. Experiments made with a hand mortar on many of the ores south of Queen creek have shown that they amalgamate as high as 88% of the fire assay, and as this is hoth simple and conclusive, it is suggested that interested parties make trial of it.

Picket Post, Pinal Co., Arizona, July 8, 1878.

One Hundred Million Dollars.

A Splendid Triumph of Mining.

On Tuesday last there was a shipment of hullion from the Bonauza mines which completed the mighty aggregate of $100,000,000 shipped from those mines. The exact figures were, from the California $40,517,552.20, and from the Con. Virginia $59,493,532.85—a total of $100,011,085.05. From this sum the California has paid 26 dividends, aggregating $28,080,000, and the Con. Virginia has paid 46 dividends, aggregating $41,040,000, making a total of $69,-140,000. There have heen, since the last dividend was declared, shipments amountiug to $670,655.98, which will swell the dividends $440,000, leaviug the full amount of dividends $69,580,000, or within a fraction of 70% of the whole gross product of the miues. These are tremendous figures, and are altogether unprecedeuted in mining. Turn them about, or analyze them in any way, and the result is magnificent. The yield is equal to one-sixteenth of the interest-bearing portion of the national debt; it is equal to the value of the property of all kiuds in an average city of 125,000 inhahitants; it is more than the value of all the real and personal property of this State, and the comparisons might he extended indefinitely. This amount has heen taken from a little spot of ground less than 800 feet in length, and from 60 to 300 feet in width. Aud the marvelous deposit is still yielding priucely sums. As one looks upon the figures, he finds himself wondering why there are any poor in this world, and why so loug as gold and silver will purchase any luxury and all reasonahle service, there are so many who are in pecuniary distress. The thought is cured, bowever, by reflecting that in all the mining of the world no other such success was ever won before. For five years, from 1867 to 1872, a eompany worked the ground all the time, expending $161,340.41 upon the property without realizing one eent in return. At last it was forced to give way, and on the 11th of January, 1872, the property fell to the present management. These men expended $277,150.12 on the property before realizing one dollar from it. It was a stuhhorn fight against the heat aud the barren porphyry—a steady pouring out of gold on a hope, which continued altogether eight years, and which would have been ahandoned in any other eountry but this, and hy any other class of men in the world except Nevada miners. Call it judgment, sagacity, faitb, luck, or what you will; it is a faculty, or rather a combination of faculties which exists nowhere else ou earth. The old stock (only 108,000 shares for each mine) was worth hut $2 per share, and some who per force accepted it for services rendered, hewailed their hard fortune. Since then it has made them richer than they ever dreamed of being, and tbeir word is held in great estimation hecause of their shrewdness in purehasing honanza stocks when they were low.

At last in a drift which was run from the Gould & Curry shaft through the Best & Belcher miue into tho Consolidated Virginia, the crest of the honanza was cut, explorations followed, and the more work that was done the more ore was exposed, until at length in the summer of 1874 it was fully revealed that an ore deposit had been discovered that exceeded in extent and richness auything ever before found in a mine. Ou Octoher 18th, 1873, the first shipmeut of hullion from the Consolidated Virginia was made. That was three months less than five years ago, and now tho product as we have shown has exceeded $100,000,000, almost seven-tenths of which have heen in profits. Of the whole amount ahout 45% has heen gold and 55% silver. The yield of these two mines bas drawn the eyes of the whole world to Nevada. It has shown as was never before shown the possihilities which lie within the grasp of lahor, pluck and judgment in our country. It has lifted up the credit of the United States among the nations of the earth; it has revealed the possible time when the world's commercial capital may he removed from the Eastern to the Western hemisphere. Its sudden mingliug with the world's money arteries gave them for a time an unnatural hent. It made the few dwellers on the Pacific coast appear as greater producers than ten times their number of people anywhere else in the world round, and the addition was not in an article which the world competes in raising or manufacturing, but in that material which the world accepts as the perfect representative of values. While this has been going on, thousands here have found profitahle employment; thousands in Californ.a have heen furnished work and profit in forging machinery and providing supplies, and still the work is progressing, and still the stuhhorn rocks are giving up their treasures. Better still, tbis uuearthing of treasure at depths so profound has given others faith and courage, and the result, we helieve, is that other bonanzas, perhaps larger than the one we have heen considering, are about to he revealed. Many have tried, many have succeeded, and many after tremendous struggles have nobly failed. Foremost among the suceessful stand two men who are entitled to most praise. They came here years ago. They brought nothing but clear heads, stout hearts and strong arms. They went to work as common laborers, and to-day they justly stand the foremost miners of the world. They are entitled to their position, for they earned it fairly, keeping all their contracts in the meantime. Their names make a fitting close to this article. They are John W. Mackay and James G. Fair.—*Virginia Enterprise.*

Overman Mining Company.

The annual meeting of the Overman silver mining company was held on the 11th inst. at the office of the corporation in this city. There were 30,436 shares of stock represented. The following officers were elected: Geo. W. Beaver, President; R. Wegener, Vice-President; R. F. Morrow, Jos. Clark and Sol. Heydeufelt, Trustees; Geo. D. Edwards, Secretary; Charles Forman, Superintendent.

Mr. Heydenfelt is the only new man on the Board, the others having served during the past year. The annexed financial statement was submitted:

Receipts and disbursements of the Overman silver mining company for the fiscal year ending July 11, 1878.

DISBURSEMENTS.

Overdraft of July 12, 1877	$117,950 90
Bills payable	70,000 00
Advertising assessments, less amount received from delinquents	166 00
Interest on overdrafts	13,694 41
Labor	124,635 10
Wood	61,649 87
Timber	9,546 60
Supplies	66,632 85
Ore crushing	3,394 20
Bullion discount	540 32
Office expenses	5,929 20
Expenses, less discount on silver coin	11,462 60
Suspense account	867 37
Bills receivable	12,000 00
Cash in hands of Superintendent	405 86
Total	$498,925 48

RECEIPTS.

Balance July 9, 1877, since paid	$ 634 43
Assessments	441,838 60
Bullion production	7,452 66
Ore sales	3,127 75
Real estate	15 00
Pumping machinery sold	12,000 00
Suspense account	50 45
Cash account overdrawn July 11, 1878	33,756 59
Total	$498,925 48

GEORGE D. EDWARDS, Secretary,
San Francisco, July 11, 1878.

The new engine which was paid for during the last fiscal year, cost $159,000 in this city, and a sum nearly equal to that was expended to put it in position at the mine. The officers report that the payment last year for this machinery, aeeount for the overdrafts in the foregoing statement. At the annual meeting in 1877 the indebtedness of the company was $190,000.

ICE IN THE COMSTOCK MINES.—Tbe miners engaged in re-timbering the Consolidated Virginia shaft are only able to work a few minutes at a time, and in order to do this are obliged to use immense quantities of ice. They not only swallow ice water by the gallon, but also pour it over each other hy hucketsful. Without iee nothing could he done in the lower levels of our mines. When work was first commeuced on the Comstock ice was the last thing any one would have thought of as an article necessary to be used in miuing. When it first hegan to be used not a few looked upou the furnishing of ice water to miners as a bit of high-toned extravagance. Many stockholders thought it was a luxury that might be withheld without much inconvenience to any one. It was thought to he next thing to furnishing the men ice-cream. But as the heat increased, it soou became apparent to all who knew anything at all ahout the matter that ice was an article of prime necessity. Now the heat is so great in many places that men cannot remain in them without ice. Without ice the drinking water would soon attain a temperature equal to that of the air—from 110° to 130°—and men eannot he expected to swallow water that is almost hoiling hot. Since the opening of the Comstock mines ice enough bas been cousumed in them to make an iceberg as big as Mount Davidson.—*Territorial Enterprise.*

EUREKA, NEVADA.—The *Leader* gives the yield of tbe mines and furnaces for the month of June and for the present year in this district as follows: During the month of June, crude hullion was shipped from Eureka district, valued at $731,000. In the same period the Richmond company forwarded fine dore hars valued at $226,623.62. The value of lead sent forward was estimated at $175,000, and the ore and flue dust shipments will add $70,000 more, making a grand total of $1,202,123.62. This is ahout the same yield as during the month of May, or, to he eorrect, about $40,000 less—a fact accounted for by its heing a short month. From the first of January to date, a period of six months, the total yield will aggregate $7,000,000—a sum largely in excess of last year's total yield. This is a good showiug, and places us secoud on the list of silver-producing districts.

UTILIZING THE GREAT CATARACT.—Some of the water of Niagara Falls is to he carried in pipes to Buffalo, and there used instead of steam power for driving various kinds of machinery. A company has heen formed with a capital of $1,000,000, and the work has been commenced. The plain is to divert a sufficient amount of the water in such a way that it will fall into upright iron pipes, compressing the air in them with tremendous force. This compressed air will he directed into strong pipes running to Buffalo, where it will be utilized as a motive power. It is said that experiments have proved the feasibility of the enterprise.

Mining for the Precious Metals in Mexico.

The larger eities of Mexico in the high regions of country were located hecause of their contiguity to mines, at a very early date. The Spanish no sooner found a gold or silver mine than a town arose and became a permanent site. Such towns are now the capitals of flourishing States, and among them are Zacatecas, Guanajuato, Durango, San Luis Potosi, Tresnillo and Tialpujahua. In short, the towns of Mexico are settled on the plan of those of Gold Hill and Virginia City. At the outhreak of our civil war mining alone in Mexico was a progressive industry, and yielded nearly $35,000,-000 a year, or about $7,000,000 more annually than undcr the Spanish in the hest years. Spain repressed all other forms of developments, as wine, wax and oil, designing to make her colony take her own products of that character. For 13 years during the war of independence in Mexico, which was in Madison's, Mouroe's and J. Q. Adams's administrations, the mines were almost neglected. After 1832 Eurcpean companies with large capital entered the country. At Zacatecas, in a harren region 7,978 feet ahove the level of the sea, are 35,000 people, and the outworks of the miues look like feudal castles. Millions of dollars were spent on the mining property of Valenciane, to let the mules walk 500 feet deep in the solid rock, although the product was only $1,000,000 a year. The shaft of the Royer mine is octangular, 1,200 feet deep, 40 feet in diameter, aud blasted as clean as a tunnel. Many of the Mexican mining shafts are faced with hewn stone, and their huildings are palaces.

The Aztecs understood the art of amalgamating the metals with the native mercury, and the Italian sculptor, Benvuento Collini, pronounced an Aztec fish he saw a great work of art, hecause its gold scales on a silver body had heen cast in one mold. In 1557 a Spaniard applied amalgamation to very extensive mining, or two centuries hefore the Freihurg people discovered it in 1786. At Tresnillo, Mexieo, in A. D. 1800, two millions of hundred weight of ore were amalgamated; Spain supplied the quicksilver from her Almaden mine, or 20,000 hundred weight annually. After Mexican independence, England got the quieksilver trade, and ahout 1847 the Rothschilds got it and ran quicksilver up on mankind, cornering the markets of the world. This was stopped for awhile by opening mines of quicksilver in California. Mules and horses at the Mexican mines supply the want of water for power. The Indian lahorers at the mines sometimes carry up 500 weight of ore, climbing up an inclined tree, nicked for steps.

There are four mints in Mexieo; Government takes three per cent. Thousands of mines mines are peddled for sale, aud in many instances common lahorers strike a honanza and grow rich. Mexican recklessness is largely dependent on the mining lottery. In the town of Tasco an Indian and a small foundry proprietor worked $3,000,000 out of an old mine. The white man turned gamhler, and the Indian sbod his horse with silver. The common miners of Mexico are full of Romish superstitions; the agriculturists are quiet and responsihle.

The mining wealth of Mexico is undouhtedly very great. In sulphur it is immense—found in the volcanoes. It produces ruhies, topazes, emeralds, opals, earbuncles, in 20 specified localities. Iu Puehlo State, hetween Mexico and Vera Cruz, mountaius of marhle, porphyry, slate, alahaster, gypsum and litharge are common. It has petroleum, naphtha and coal oil. Coal is found near Vera Cruz and in the State of Pueblo, but it is not plentiful nor good. There are many mines of lead, ziuc, hismuth and copper, eight mines of quicksilver and several of iron. Gold and silver are worked in a majority of the States.

MANAGEMENT AND PROFITS OF THE RICHMOND MINE.—This mine, situated at Eureka, Nev., is owned in England. Not long since the shareholders sent out a committee to examine into its affairs and report thercon, a service which they performed with great thoroughness, their report being very lengthy, and going into the past history and conduct of the property with much minuteness. While admitting that the administration of the mine had, as a whole, proved a success, they still found fault with tbe manner in which the superintendent, Mr. Robert, had managed some portious of the business. Iu replying to this part of the report one of tbe shareholders, Mr. W. Gahhott, takes occasion to point out some of the results that have attended Mr. Rrohert's management, remarking that the mine has already returned £4 11s. 6d. dividends upon each £5 share, or 18s. 3½d. in 1£ upon the eutire capital invested, the mine heing at the present time in good condition. This is more than can he said of any other Anglo-American mine, except Sierra Buttes, which has returned 19s. in £1. No other mine of this class has returned more than a few shillings—really 2s., or 3s. in £1, if they have entered the dividend list at all, and the shareholders should he cautious not to "improve" the management so effectually as to deprivo themselves of future dividends altogether. It would not be the first time that such a result has been achieved. Moreover it should not be forgotten that the mine did not yield profits previously to Mr. Prohert takiug control; that the dividends have been fairly regular ever since, and that the mine is now earning (takiug the last six months' working to estimate upon) over £210,000 a year, or about 78% per annum profit upon the entire capital of the concern.

MECHANICAL PROGRESS.

Proving Chain Cables.

Commander L. A. Beardslee, U. S. N., writes a communication to the *Iron Age* upon the proof strain of chain cables. There are few articles in the whole range of mechanical construction upon which more implicit dependence must be placed, and upon the perfection of which human life and property is so largely risked. Tables showing the amount of strain which good cables ought to be able to bear were made, but unfortunately these tables are incorrect, and in some cases worse than useless, since they impose strains which are greater than the elastic limit of the metal, and which, in chain of the larger sizes, do serious and permanent injury. Up to the time when the United States Board undertook the investigation of the subject, the only information obtainable was that derived from the British Admiralty proof tables and the less known United States tables. Commander Beardslee points out very clearly the fact that the former are incorrect, and that even the latter are not wholly accurate, although the strains imposed are not above the limit of elasticity of the metal. He says the United States Board appointed to test iron, steel, etc., has thought it advisable to prepare from the data collected a new proof table, in the construction of which full consideration has been given to the strength and elastic limit, and to the variation in strength, due to variations in the reduction by the rolls.

And it is considered that by the adoption of this table, cables can be proved to such extent that the presence of defective links may be discovered, and not to such an extent that the very proof shall produce defects which may not be discovered in time.

Working Power of Belts.

Mr. Robert Briggs writes to the *Polytechnic Review* concerning estimates of the working power of belts under different conditions. He says: In their best condition, all belts are worked under the least strain which will transmit the desired power with steadiness. An irregularity of motion is the first indication of the slipping of the belt from inability to transmit under a given tension, and the skilled workman will give it no more tightness than just enough to drive by. It has been found by the experiments of Mr. H. R. Towne and the writer, that under such conditions, any and all leather belts in good working order exert a frictional hold on their pulleys of about 58% of the pressure of the belt upon the surface of pulley at any given place, for a maximum, or about 42% of this pressure in good practice under the ordinary conditions of atmospheric temperature and moisture.

The strain on a single belt can then be taken at 66⅔ pounds per inch of width; or, rather, an ordinary lacing of the lacing holes may be assumed to be durable in service when this strain per inch of width on the tight side of the belt is not exceeded. These figures, derived from experiment, have been corroborated by numerous tests of belts in use, with indicated or measured power, made and compared since the publication of the experiments.

The new unit of value, which I propose, is that derived by the multiplication of the diameter of a pulley in inches by its width in inches, and the result by the number of revolutions per minute. Diameter × width × revolutions.

THE ART OF MOLDING.—At a meeting of the King's College Engineering Society, Mr. E. W. Anderson read a paper on this subject. He gave the following general rules to guide the molder in the running-in of the metal in molding, which are not altogether novel but will bear repeating: 1. Choose, if possible, the thickest part of the casting for the runner. 2. If the casting is deep, run in the metal at the bottom. 3. Where the casting has a flange in the form of a pipe it is generally preferred to run the metal in at the flange; but this case is subject to rule 6. 4. When the casting is thin, and has many branches, or when it is of great length, it is advisable to run in the metal in the center. 5. Care should be taken to choose a place in the mold so that the metal will have no tendency to wash any part away in its first rush. 6. (This rule may be called a continuation of No. 5.) The metal should not be allowed to fall from any hight upon a weak part of the mold, or it will be liable to break down portions thereof.

AMERICAN WORKMANSHIP.—In the course of a description of a visit to the French war vessel, the *Richelieu*, a foreign correspondent remarks that it seems impossible for one to go anywhere without some specimen of American ingenuity cropping up; accordingly, on the quarter deck of the *Richelieu* was a Gatling gun beside a mitrailleuse. It is astonishing, the correspondent adds, how tasteful Americans are in everything relating to machinery. The Gatling, beside the dull, heavy, somber French piece, looked like a piece of jewelry, its steel and brass flashing like gold and silver in the bright sunlight of the Mediterranean. And this is the more noteworthy because the French have a decided bent toward decoration and generally make things look as well as possible.

French and English Locomotives.

According to Paris correspondence, the exposition gives a good opportunity to contrast the French and English styles of locomotive building. An English authority sees it in this light: To allow a rough comparison, it may be said that the English locomotive is the stout, sleek horse, well groomed, with smooth flanks, while the French is the lean, shaggy donkey, its sides overhung by a couple of panniers. The comparison, inapt as it may be, perhaps, is no exaggeration whatever. One of the aims of designers of French locomotives, as here exhibited, seems to be to turn a great part of the inside out—to disembowel them, so to speak. They have outside cylinders and an overhanging valve gear, which gives them a very "uncanny" look to eyes accustomed to the sight of the round, full-bodied English engines. However, leaving alone their outward appearance, all these locomotives appear to be beautifully finished, in a style not at all inferior to that of the best English makers. Notably is this the case with the locomotives exhibited by the Eastern and by the Southern of France railway companies. There is one engine, sent by the Eastern, of such extraordinary aspect, as well as size, that it cannot fail to attract general attention. It has four coupled driving wheels of no less than seven feet and ten inches in diameter, and between the wheels is a flat-topped fire-box of prodigious size, which gives the whole an uncouth appearance, increased by a long connecting rod, attached to the outward cylinders. The valve chests are on the top of the cylinders, and the valves themselves are worked by outside eccentrics, while there is reversing gear running in the shape of a dome over the huge fire-box. It is difficult to give, without long detail or pictorial illustration, a clear description of the ungainly shape of this engine, but some idea of its size may be formed by stating that its width, from one side to the other near the driving wheels, is about 10 feet. To one acquainted with English work, the locomotive of the Eastern of France looks extremely old fashioned; but an examination of it shows that it is a very recent produce of French engineering skill. It is most beautifully finished; every bolt and screw is a piece of admirable workmanship; and it almost seems as if the whole construction is more the turn-out of makers of chronometers than of the rougher artisans who build up steam engines.

Registering Founders' Patterns.

At the last meeting of the Eastern Stove Founders' Association, decided action was taken in favor of registering patterns in the Patent Office in Washington, so that the manufacturers of these patterns shall have exclusive benefit of their designs. A bill to this effect has been already introduced in Congress, which provides: First, by placing upon such patterns and castings the word "registered," together with the date of such registration. Second, by causing to be recorded in the Patent Office a statement specifying the names of the parties desiring the protection, their residence and place of business, together with a general description of the pattern to be registered, and duplicate photographs or drawings of such patterns. Third, by making payment of the fee of $20, in the same manner and for the same purpose as the fee required for patents. Fourth, by complying with such regulations as may be prescribed by the Commissioner of Patents. The Stove Founders' Association ask that the certificate of registration as above prescribed shall remain in force for 17 years from the date of such registration. Such certificate, during the period that it remains in force, shall entitle the person, firm, or corporation registering the pattern to the exclusive use thereof, to this extent, that no other person shall lawfully use castings made from said patterns as patterns for the production of other castings. The proposed law also prescribes penalties for infringement.

HAND AND MACHINE STOKING.—At an adjourned meeting of the Manchester (Eng.) scientific and mechanical society held recently, a discussion took place on the subject of mechanical stoking, dealt with in a paper read at a previous meeting by Mr. Bowes. The general opinion was that hand-firing, if properly and intelligently carried out, was more efficient than mechanical stoking, so far as it has at present been developed, and some complaints were raised that the latter process often results in injury to the boilers. It was, however, admitted that mechanical stoking might be made the means of effecting considerable improvement in the prevention of smoke, and in the more economical use of coal.

DIRT-BURNING LOCOMOTIVES.—The first one of the new coal dirt-burning locomotives was recently placed upon the Pennsylvania and Reading railroad after a few days' satisfactory trial. The other three are waiting for their boilers, which are being made. Coal dirt-burner No. 408, which was built about a year ago, was taken back into the shop a few days ago, and will be supplied with a new and smaller boiler. The present boiler will be used for raising steam in heating one of the shops of the company. Trial on the road has shown that it is not necessary to have such a large boiler for locomotives using the smallest kind of coal.

SCIENTIFIC PROGRESS.

Gun-Powder as a Fog Signal.

Prof. Tyndall is continuing his study of the subject of fog signaling, and the *Popular Science Monthly* gives the account of his latest conclusions. The following is concerning the use of gun-powder: The more rapid the shock imparted to the air, the greater is the fractional part of the energy of the shock converted into wave motion. And, as different kinds of gunpowder vary considerably in their rapidity of combustion, it may be expected that they will also vary as producers of sound. This theoretic inference is completely verified by experiment. In a series of preliminary trials conducted at Woolwich, on the 4th of June, 1875, the sound-producing powers of four different kinds of powder were determined. In the order of size of grain they bear the names respectively of fine-grain (F. G.), large-grain (L. G.), rifle large-grain (R. L. G.), and pebble-powder (P.) The charge in each case amounted to four and a half pounds, four 24 pound howitzers being employed to fire the respective charges. There were 11 observers, all of whom, without a single dissentment, pronounced the sound of the fine-grain powder loudest of all. In the opinion of seven of the 11, the large-grain powder came next; seven also of the 11 placed the rifle large-grain third on the list; while they were again unanimous in pronouncing the pebble-powder the worst sound-producer. These differences are entirely due to differences in the rapidity of combustion. All who have witnessed the performance of the 80-ton gun at Woolwich, must have been surprised at the mildness of its thunder. To avoid the strain resulting from quick combustion, the powder employed is composed of lumps far larger than those of the pebble powder above referred to. In the long tube of the gun, these lumps of solid matter gradually resolve themselves into gas, which, on issuing from the muzzle, imparts a kind of push to the air, instead of the sharp shock necessary to form the condensation of an intensely sonorous wave.

ANOTHER FRANKLIN EXPEDITION.—An event worthy of record is the sailing on the 19th of June, from the port of New York, of the schooner *Eothen* to search for the relics of the Franklin expedition. Accounts in the New York papers, after marking out the northward course of the vessel, state that the party will go up to the Gulf of Boothia, and traverse a great deal of country which has not hitherto been explored. It is believed that an island will be found in the Gulf of Boothia which is not upon any chart, and which was described by the Esquimaux who visited Capt. Barry in 1872 and 1876, and gave him spoons marked with Sir John Franklin's crest. The cairn from which they obtained them, and which, they said, contained many other things, including books, is supposed to be upon this island. The search party cannot set out on their journey until there is plenty of snow to make good sledging. On reaching their destination, they must wait for the snow to melt before making their investigations, as it would be impossible to dig through the immense masses of frozen snow in an Arctic winter. After the work of exploration is completed, snow must be waited for again in order to return to the vessel, and then open water must be waited for before the latter can start on its homeward journey. The *Eothen* is only 87 feet in length, 23 feet breadth of beam, and eight and one-half feet depth of hold. Her hull has been overlaid to the chain-plates with oak planking an inch and a half thick, and her stem has been greatly strengthened to prepare her for the encounter with the ice.

THE SAGACITY OF ANTS.—Prof. Leidy, in a recent article, quoted by the *Journal of Chemistry*, states that, in order to ascertain whether a house be had just entered was (as he suspected) seriously infested with red ants, he placed a piece of sweet cake in every room. At noon every piece was found covered with ants. A cup of turpentine oil being provided, each piece was picked up with forceps, and the ants tapped into the oil. The cake was replaced, and in the evening was again found covered with ants. The same process was gone through the following two days, morning, noon and night. The third day the number of ants had greatly diminished, and on the fourth there were none. He at first supposed the ants had all been destroyed, but in the attic he observed a few feasting on some dead house-flies, which led him to suspect that the remaining ants had become suspicious of the sweet cake. He accordingly distributed through the house pieces of bacon, which were afterwards found swarming with ants. This was repeated with the same result for several days, when, in like manner with the cake, the ants ceased to visit the bacon. Pieces of cheese were next tried with the same result, but with an undoubted thinning in the number of ants. When the cheese proved no longer attractive, dead grasshoppers were supplied from the garden. These again proved too much for the ants, but after a few days' trial neither grasshoppers nor anything else attracted them; nor has the house been infested with them since.

ETHNOLOGY.—We read that some changes have been recently made in the arrangement of the specimens of the relics and varieties in the American Museum of Natural History. In the second story the greatest changes have been made with a view to devote the gallery entirely to ethnology and archæology, and all except four cases there are now occupied with specimens illustrating that branch of research. It is intended that each case containing ethnological material shall also have a map of the region occupied by the tribe or nation to which it refers, and photographs of the present appearance of localities where the specimens were found. In carrying out the plan for a map of each region once occupied by ancient tribes that have left relics, are now inhabited by people whose implements are quaint and curious, Prof. Bickmore, the superintendent of the museum, has been led towards the construction of a large map of this country, colored to represent its former occupation by distinct races of Indians. This work has compelled great research, but the results are sufficiently striking to repay the labor. Some curious facts have already been elicited in the course of this inquiry. Thus it is found that mound-building survived as a custom to a date fully within the historic period. The collection of implements and ornaments from various tribes, and the relics from their graves, will prove of service in tracing their history. But this museum offers the additional advantage of representing in adjoining cases the handiwork and tools of the natives of remote countries and uncivilized islands. The opportunity is thus given for comparing the work of uncultured people on either side of the globe.

SCHOOL FOR SILK CULTURE.—Samuel Chamberlain writes to the *Polytechnic Review*, concerning a plan of a silk school, farm and village about 30 miles from Philadelphia. He believes that the failure to introduce silk culture in 1840 was chiefly due to the want of perseverance. The three years of actual trial (for the rest was only speculation in trees) were not sufficient to carry it on to success. Business, like machinery, must be carried over the dead-points. A school, farm and village, whose continuance will be maintained for some 16 to 20 years, will secure a permanent source of knowledge, example and instruction from which the culture will extend year by year. It will not be overthrown, as formerly, by causes outside of the silk business. It will keep the subject before the public through advertisements. It will at all times provide eggs, trees, hooks, etc. The educational advantages will be very great. We are now endeavoring to introduce the industrial schools of Europe for instruction in the mechanical arts. But they have possessed silk schools for nearly 100 years; through them have obtained and retained till now the silk business of the world! It is more than strange that such schools, urged by M. D'Homergne in 1835, should not have been long since established in this country. The present effort ought to have the immediate support of every intelligent and far-sighted capitalist; for through it we shall draw the silk business of the Western World to ourselves.

THE DREAMING OF PLANTS AND ANIMALS.—Mr. Francis Darwin, lecturing at the London Institution on the analogies of plant and animal life, said: There is one, but only a fanciful resemblance, between the sleeping plants and animals, namely, that both have the power of dreaming. I have been sitting quietly in the hot-house at night, waiting to make an observation at a given hour, when suddenly the leaf of a sensitive plant has been seen to drop rapidly to its fullest extent and slowly rise to its old position. Now, in this action the plant is behaving exactly as if it had been touched on its sensitive joint; thus some internal process produces the same impression on the plant as a real external stimulus. In the same way, a dog dreaming by the fire will yelp and move his legs as if he were hunting a real instead of an imaginary rabbit.

INSECTIVEROUS FIG LEAVES.—Prof. Mechan, in the New York *Independent*, says: Mr. Darwin has the Drosera. The difficulty of obtaining leaves for experimental observation is now removed, for it has been discovered that the common fig leaves have just the same decomposing tendencies. The fig leaf has long been considered rather rough as an article of underclothing on our first parents; and, now that its power of cooking flesh is discovered, it will, no doubt, receive renewed attention from scientists of the John Jasper type.

PURE ZINC.—The *Polytechnic Review* notes that pure zinc, for laboratory use, is of great importance in the reduction of ferric to ferrous salts in volumetric estimations of iron with chameleon. Here it is indispensable that the zinc should be free from iron and carbon. Bohannon suggests the preparation of pure chloride of zinc by the wet process, from metallic zinc, and the precipitation of its iron by ammonia. The chloride thus obtained is to be reduced by means of metallic sodium in a porcelain crucible.

GOVERNMENT SURVEYING.—There are at present four Government surveys in progress. Two under the direction of the Engineers' Department, one commanded by Lieut Wheeler, and the other by Lieut. Clarence King; the other two under the auspices of the Department of the Interior, and commanded by Prof. Hayden, and the last by Mr. Powell.

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

California.

AMADOR.

PLYMOUTH.—*Ledger*, July 13: The Empire, formerly the Phenix, still runs to its full capacity, and the rock now being crushed is very rich and of the best quality. A very large reservoir is to be constructed above in Pi-Pi valley, which will give employment to several hundred men. This work will be commenced in a few days. Hayward, it is rumored, intends opening a new mine south of the old Phenix. Nothing of importance is being done in the old Hite mine. The Oneida is working up some excellent rock that was taken from the 600 level. The tunnel in the 900 level is being retimbered, and when this is accomplished it will be run north until the ledge they are in quest of is struck. Everything about this institution evidences thrift and good management.

MONTERICHARD CLEAN-UP.—This mine had a clean-up this week, after a 19 days' run. The result was very flattering, the yield being nearly one-fourth more than any former product—being the effect of richer rock in the lower level.

THE PENNSYLVANIA is running full blast, and the outlook favors the idea that it will continue to run as long as there is a hope of its paying. From the character of the ore now passing through the mill, sanguine expectations are founded of a permaneut and paying mine. There is plenty of ore in sight.

THE CROWN POINT mine and mill at Orytown are idle. The last run paid, it is said, over $3 per ton, which leaves a small margin for profit, after paying expenses. Parties are talking of leasing the works, confident that with a yield of $3 per ton they con realize a handsome thing by the speculation.

OTHER MINES.—In the stretch of country along the mother lode, lying between the Gover and Bunker Hill mines, the Hazard claim is located. No work has been done upou it worth mentioning, although mining experts regard it as among the most promising location on the mineral belt. It belongs to A. Hayward, and rumor has it that it is to be started up forthwith. The Seaton mine has come to a standstill, in consequence of litigation caused hy a party of jumpers. Messrs. Manon and Pharis are still running the creek mining claim with good results. Gage's chlorination works are running on full time witb good results.

CALAVERAS.

COMPLETED.—*Chronicle*, July 13: Sliter & Hoey's mill, recently put on their claim in Old Woman's gulch, is completed. The pipe to convery water for motive power is also laid and everything in readiness for beginning operations on next Monday. The battery is composed of five stamps. The new incline is also finished to tbe gravel, so there is notbing to hinder taking out the "precious" as fast as they want to. Tbere is every indication that the Sliter & Hoey will prove a permanently profitable piece of property.

CLEAN-UP.—Moser & Co., proprietors of the Big Bonanza hydraulic, on Tunnel ridge, opposite Sport hill, cleaned up lately. We did not learn tbe exact figures of the yield, but hear it was large—way up in tbe tbousands. Judging from all accounts the mine is paying handsomely.

FRESNO.

ORO FINO MINES—*Republican*, July 13: It has long heen known tbat good mines exist in the mountains nortb of tbe San Joaquin river, and on the heads of Fresno, Fine, Coarse Gold, and other streams tbat lose themselves on the plains before reacbing a larger stream, but, for some reason, very little has ever been done in the way of practical development. During the past year, under the stimulus of new ownership and a little capital, a lively interest has sprung up in tbis region; new mines have been discovered, old ones reopened, and active operations begun in those being worked. The Fresno company have opeued the Buena Vista mine and crushed not less than 350 tons of ore since the middle of February whicb yielded an average of $40 per ton. The company own five separate leads, and the Oro Fino mine is yielding $300 to the ton. The Hanover mining company, of San Francisco, are receiving and putting up a five-stamp mill on Long gulch, six miles below the Oro Fino mines. Some Spaniards are working a mine within one-half mile of tbe Fresno company's mill and have crusbed 10 tons of ore in an arastra within tbe past 60 days, and took out over $1,000. New ledges are being discovered every day and fine prospects obtained. Placer mines are being worked, yielding from $2.50 to $5 per day to the man.

INYO.

EMIGRANT MINE. — *News*, July 13: Tbe owners of this property continue making improvements. Last week Peter Taylor, Superintendent, went to Independence to complete the purcbase of the old Cerro Gordo water works, consisting of pipes, tanks, steam pumps, etc., wbicb will he used in bringing water to his company's mines. An assessment of 50 cents per share now dne is pretty well paid up. This assessment will amount to $25,000. With it the company can accomplish its undertakings, of moving the mill and increasing it to 10 stamps and bringing in the water.

UNION CON.—This mine has made millionaires of two or three men, working only in a crude way near the surface. It is now determined to work more systematically and develop the miues to a very great depth. To do that requires an increase of machinery and power; hence the present assessment. It is the true way to develop a mining property, as then the burden falls upon all the shareholders alike. There will be renewed life in old Cerro Gordo when this money is collected, and we wish our neighbors up there god-speed.

MONO.

BODIE DISTRICT.—*Standard*, July 18: During the past week there are few important changes to note, although work progresses steadily. Not alone the principal mines, hut many of the smaller ones have prospects that bid fair to eclipse anything yet developed. For a long time the public have waited for depth to be attained in the Standard, Bodie, Red Cloud, McClinton and Black Hawk, and are now satisfied that these are not mere surface croppings and extend only 200 or 300 feet down, but really permanent dividend-paying ones. Not only have they sunk their main shafts from 300 to 600 feet, hut cross-cuts and drifts have been run in every direction, until in some of them the amount of ore now in sight is enormons. Instead of extracting ore, large forces of men have been kept at work opening up and prospecting for other ledges, and, in almost every instance, their efforts have been crowned witb extraordinary success. In the Standard alone, there is ore enough in sight to run their mill for two years, and the rich samples from the Red Cloud show that tbe mine is even richer than ever. The strikes in the Bodie would astouish the most sanguine; and still the developments go on. The Booker, too, comes in for its share of praise, for the recent developments in this mine show conclnsively that the vein is improving in richness as the shaft is driven down. With the 65 stamps which will soon be in active operation, there can he no reasonable doubt but Bodie will be the liveliest camp on the coast. Since the public have become confident of the permanence of the older mines, considerable more prospecting is perceptible, and claims not worked for months are resuming active operations, or forniug corporations for the purpose of developing them. The result of all tbis work must be bullion, and lots of it, even though it simply paid a small per cent.

NEVADA.

MINING ON THE RIDGE.—*Transcript*, July 17: At French Corral the Milton company is washing and running full headed, and handed, and surfacing the debris into the South Yuba river, and reaping the rewards of the cost of their tunnel, $175,000. At these claims will be found all the modern machinery and appliances, with drops, nnderconrrents aud secondaries arranged in the most improved style. The round grizzly hars are here used in place of the flat iron bars. One of the great advantages claimed for which is that they can he easily turned, and by that means loosen any rock that may catch hetween, and also hy turning the bars tbey will wear longer. These bars are three inches in diameter, with either end squared, so tbat a wrencb can be easily placed on to change the distance between them.

ROCKY BAR MINE.—Everythiug is going along smoothly at the Rocky Bar mine. The drifts from the bottom of the incline, which is 280 feet deep, are being driven steadily ahead in both the east and the west ground, and the work of stoping above tbe level has commenced. The ledge shows well in size and quality in both the level and stopes. An air chute is also being raised from the level to tbe surface. In the tribute ground, on tbe first level, the rock continues to look excellent, sbowing free gold plentifully. The yield from the next crushing is expected to show an improvement over tbe last, which went $50 per ton.

PLUMAS.

THE BELL MINE.—*National*, July 13: Since the strike mentioned a couple of weeks since, the company have been steadily at work and new developments have been made every day. An incline has been sunk at the point where the richest rock was found, and also a shaft raised, and botb of these works show the best indications. We saw a candle box full of specimens taken from the upper shaft, and every piece showed an ahundance of free gold. We are more aud more satisfied that the company have one of the hest mines in the State. The mill is now running steadily, and a clean-up made this week from a four days' run gave tbe neat little amouut of 96½ ounces after heing retorted.

THE GREEN MOUNTAIN MINE.—There are two mills on tbis property, one 20-stamps and the other 12, run by hurdy-gurdy water wheels. The whole 32-stamps are run with about 85 inches of water, at a cost not exceeding $10 per day. Every convenience to be had is found in the mills, the entire cost of extracting the ore, conveying it to the mill, aud crushing, not exceeding $2.50 per ton. The rock is brougbt from the mine to the mill on a covered tramway, horses heing employed to draw the cars up to the mine, from which they descend again by their own weight. The mine is being worked botb above and below tbe level of the tunnel. An incline has been sunk, which already has explored the mine to a deptb of 1,100 feet from the surface. At the mouth of the incline, and in the depths of the mountain, an engine is being placed in position, to be used in pumping and hoisting. A tunnel is being driveu from a point on a level with the mill, whicb will tap the mine at great depth. In the meantime the engine will be used. At the bottom of the incline they have a well developed ledge over 30 feet wide, all of whicb is good paying quartz.

SANTA CRUZ.

PLACER MINING AT APTOS.—*Courier*, July 13: Gold mining on the Aptos beach is still prosecuted to a considerable extent. We were this week shown about $10 in gold dust, washed from a ton of black sand at that place last Saturday, by O. P. Wilson and Mr. German. Yesterday morning Dave Rice, of Aptos, came to town, and as we met him he whipped ont a buckskin bag and showed $70 of beautiful bright gold dust, whicb he and two others had washed out on the Aptos beach in six days—averaging nearly $4 a day each. They were able to save only about one-half of the dust, and hence have made arrangements for an apparatus which saves it all. The water is also short, and to remedy this, a steam pump will be brought into requisition to obtain the very necessary material from the creek near by.

SIERRA.

BROKE DOWN.—*Mountain Messenger*, July 13: The Pilocene mine met with a break down last week. The wire rope used to drive the large pump suddenly broke. The small pump was not of sufficient capacity to keep the shaft clear and it filled to within about 60 feet of the top. A new rope was sent up from below, arriving on Saturday last, so that the company have probably been at work several days. The water increases rapidly as they go down.

WORKED OUT.—The Empire mine at Howland Flat is about worked out. We get our information from J. Denoon, Supt.

SISKIYOU.

LINDSEY MINE.—Yreka *Journal*, July 13: This mine contains a good strong vein of fine looking quartz. The wall rock is slate, witb the regular clay streak on hoth walls. The third has been run nearly 200 feet, and in the tunnel the water drips quite freely. The work performed has been executed in the most substantial manner. The quartz taken out of this level and the stopes above paid $45 on the ton. On the 100 aud 200 levels, the rock did not pay more thau $25 to the ton. On the 400 level, developments look very well. This mine was discovered about four years ago, and was worked by the discoverers, Lindsey & Norman for 18 months. Their developments were such by that time that the moneyed men stepped forward and bought an iuterest. At the present time quartz enough is being sent to Johnson's mill for crushing to pay all current expenses, and the balance is piled on the dump.

A FAIR PROSPECT.—Mr. Allen Davis, of Trinity valley, has hauled over a ton of quartz rock, from a ledge which he is engaged in working in his neighborhood. The rock milled is said to have yielded satisfactorily. The ledge from which the rock was taken is about six feet wide, and pays evenly. We hope that it may pay handsoinely, and reward Mr. Davis for his efforts, and indnce others to engage in prospecting and developing tbe many rich quartz veins which we helieve to exist in the mountains of northern California.

TRINITY.

A GOOD YEAR.—*Journal*, July 13: Gold dust is coming in at a lively rate, iudicating a large yield throughout the county. Trinity should this season yield double the amount of the precious metal taken out last year. Miners in the Basin are engaged in cleaning up. The side ditches are looking well.

QUICKSILVER.—The Altoona mine is now turning out a large quantity of quicksilver. The ore here is exceedingly rich, and as it can be mined at little expeuse, quicksilver is produced here at less cost probably than at any otber mine in tbe State.

Nevada.

WASHOE DISTRICT.

CON. VIRGINIA.—Gold Hill *News*, July 17: Daily yield, 250 tons of ore. Sinking the C & C sbaft is making steady progress. It is now down 65 feet below the 1950 level, the bottom still in bard blasting rock and the flow of water strong. The south lateral drift on the 1950 level is being pushed vigorously forward, the face in hard porphyry. It is now in 202 feet. The joint Best & Belcher east drift on the 1900 level is being pushed steadily ahead to reach the east wall of the vein, when a winze will then be sunk downward to the 2050 level, where it will connect with tbe soutb drift on that level from the C & C sbaft. The north drift on the same level from No. 2 winze still continues in low-grade ore. It is now in a distance of 100 feet. The new winze in tbe western ore body, helow the 1650 level, continues in low-grade ore.

CALIFORNIA.—Daily yield, 250 tons of ore. The south lateral drift from the joint winze on the soutb line of the Ophir on the 1900 level, is in a distance of 79 feet, the face still in vein matter. A drift has heen started on the 1650 level from the main northwest drift to connect with the ore stopes, which will greatly aid the extraction of ore at that point. Sinking the C & C shaft is advancing at the rate of 10 feet per day, the bottom in hard blasting rock and the flow of water strong. It is now down 65 feet helow tbe 1950 level.

HALE & NORCROSS.—Much trouble has been experienced. A portion of the air current from the Sutro tunnel was turned through the mine the first part of the week, which greatly increased the heat, and necessitated the putting in of air pipes. The current of air, which was a downcast before, will after this he upcast.

OPHIR.—The great point of interest in the Ophir mine at the present time is east crosscut No. 2 on the 2000 level. Sinking the main incline is making good progress, and opening the 2100 station will be commenced in a very few days more. Repairing the main shaft above the 1465 level is making good progress.

JUSTICE.—The north drift on the 1300 level has reached the Lady Washington line, at which point crosscuts both east and west will he started to-morrow. The ore formation going southward on the 1376 level continues to show a strong improvement. A small amonnt of ore is still being extracted from the old 400 level.

SIERRA NEVADA.—The north drift on the 2000 level is being pushed vigorously forward, the face in favorable vein matter.

OVERMAN.—The east drift from the 1600 station of the maiu incline and the west drift from the bottom of the winze will soon complete a connection which will greatly assist the veutilation on that level. Tbe main south drift from the bottom of the winze on the 1600 level is making steady and favorable progress.

SAVAGE.—The air connection with the Sutro tunnel continues to furuish a strong current of air, the temperature of which is gradually decreasing. The face of the west crosscut on the 2100 level is showing some favorable quartz.

CHOLLAR-COMBINATION SHAFT.—Preparations are heing made for putting in the large pumps. It is likely that these pumps will be put in only up to the 1600 level, and that a connection will be made at that point with the Sutro tunnel, which will save a large amount of the power required to hoist the water to surface.

BELCHER.—Sinking the winze helow the 1900 level is making good headway. The prospecting drifts on both the 2160 and 2360 levels are being advanced as usual.

UNION CON.—The north drift on the 1600 level is now in a distauce of 511 feet, the face still in porphyry and clay. The erection of the blower is completed, and the fan ruuning and is helping greatly the prosecution of the work in all the drifts.

CON. IMPERIAL.—The main north drift in the Alta ground is making steady progress, the face in quartz and vein matter, affording low assays.

BEST & BELCHER.—The south drift on the 1900 level from tbe winze is going steadily forward, the heat in the face being intense.

MEXICAN.—The joint east drift on the Ophir north line is making good progress. The joint Union Consolidated east drift on the north line is also making fair progress.

CROWN POINT.—Retimbering and enlarging the maiu south drift connecting with tbe Belcher mine on the 2300 level is making good progress. The south drifts on both the 500 and 600 level are being pushed steadily ahead.

WARD.—The flow of water gives some little trouble, but is kept down by a steady use of the tanks.

LEVIATHAN.—On the 750 level the soutb drift has run iuto vein matter and is now pushing ahead following the foot-wall of the ore vein. The north drift is following the foot-wall of the vein to the nortbward.

YELLOW JACKET.—On the 2400 level tbe south drift is in 30 feet from the north winze station; face in porphyry and quartz.

UTAH.—The northeast drift on the 1150 level is steadily advancing, the face in vein material. It is now in a distance of 295 feet.

NEW YORK.—The east prospecting drifts on the 1150 level are showing some very favorable quartz and vein matter.

GOULD & CURRY.—The pumps are in place and the connections are being made at the 1900 station level. The large air pipes are now beiug carried down, and it will not be loug before everything will he in complete order.

LADY WASHINGTON.—The north drift on the 1160 level is steadily advancing. The maiu north drift on the 1300 level of the Justice has reached the south line of the Lady Washington, and surveys are being made to-day to locate and start hotb east and west crosscuts on the south line of the mine.

ALTA.—The face of the north drift on the 1250 level continues in a very favorable character of quartz and vein material. Tne north drift on the 1350 level is also making good progress, the face in quartz and low-grade ore. The flow of water in the bottom is strong, but is easily handled by tbe pumps.

BULLION.—Sinking the main incline below the 1840 level is making the best of progress, the bottom still in very favorable vein material. The north drift on the 2000 level is steadily advancing, tbe face in vein matter of a very encouraging character.

TROJAN.—The ore stopes on both the tbird and fourth station levels continue to yield ore of a good quality and look well. There is now on hand at the Vivian mill on the Carson river, for reduction, about 400 tons. The bullion returns from the ore crushed last montb was $15,600.

SILVER HILL.—The north drift on the 900 level is making steady headway, tbe face in quartz carrying spots of ore. The nortb drift on the 800 level is making steady progress, almost tbe entire face in quartz and low-grade ore. The face of crosscut No. 3 from this drift is also nearly all in ore.

JULIA.—An unfortunate breakage of the pump-rod has prevented the progress expected in getting the water out of the 2000 level. Everything is, however, again in good running order. As soon as the level is drained the east

crosscut and the main south drift will be again started up.

SUTRO TUNNEL.—Since completing connection with the Savage workings, the air in the tunnel has vastly improved and cooled off considerably. The header is being steadily advanced toward the Savage shaft, and will be continued not only to the west wall of the great lode, but farther into that wall than any of the mining companies have yet penetrated.

BELMONT DISTRICT.

BELMONT AND EL DORADO SOUTH.—*Courier*, July 13: The work of exploration is being steadily pushed ahead on both these mines, which have now been opened systematically to a depth of over 600 feet. The machinery is all in good order, and the prospect of soon opening up permanent bodies of pay ore is steadily improving.

THE GILA MINE.—The presence of foul air is retarding operations here somewhat. In a short time connection will be made with the canyon tunnel, when a good circulation of air will be had and a better headway can be looked for. The vein in drift continues to look very well, being, as it has been since first struck, about two feet wide of good ore. Assays from the lower and richer portion of it gave $567.36 and $510.60 per ton. No prospecting has yet been done upon the vein either below or above the drift in the shape of winzes or raises, and none can be done till better ventilation is secured. They are at present using a blower which furnishes but a scant supply of air, barely sufficient to run the drift. The stopes in the south drift continue to yield considerable ore, but not in quite as large quantity as for some time past. The mill has been stopped several times in the past five days to make necessary repairs upon machinery, but it is now in good running order again. Bullion product for June, $26,204.25.

JEFFERSON.—Letter of June 22d says: We are making excellent progress in getting the mine free from water; expect to get the 600 level dry to-morrow or next day. To drain the 700 level will be a short job in comparison to the 600 level. If everything continues to work as well as at present, we shall be down in about five days.

REESE RIVER DISTRICT.

MANHATTAN MINES.—*Reveille*, July 13: During the week ending yesterday morning the mill reduced 138 tons of ore of the assay value of $21,368.76. The 675-stope of the Curtis shaft is producing the usual amount of ore, but of a much better quality. The 517-stope carries an extremely large ledge, but of lower grade; the rich ore being in hunches. The 675 east drift is in good ore, which shows that the chimney does not diminish in width as we gain in depth. There is no change in the 670-stope of the Frost shaft, the ore continuing of the same high grade. There is good ore still in the face of the 670 west drift. Timbering winze No. 2 at the 770, and cutting out a station at the 570, is being pushed ahead as rapidly as possible.

PARADISE ORE.—Yesterday we were shown some specimens of fine ore from the Little Humboldt mine at Paradise valley. There were also surprisingly rich specimens from the Red Deer and Big Prize mines in the same district. These samples are full of native silver, sulphuret, horn silver and stedefeltite, and will assay away up in the hundreds. The ledges from which the specimens were taken have been recently opened, and the ore was obtained at a depth of from five to 15 feet from the surface.

GRANTSVILLE.—The Alexander mine continues to show and yield rich ore. Although closed to visitors the ore body is said to be marvelous, and continues as progress is made in the lower level. The work of extraction is being pushed and shipped to the mill for reduction. The site for the new mill, at the mine, has been completed, and the foundation is now in the course of construction. A large portion of the machinery has been shipped from San Francisco, and the balance will soon be on the road. The mill, as we understood while in San Francisco recently, is to start with 20 stamps, with a capacity for 20 more. Quite a little town has sprung up at Grantsville, and although business is not very brisk there at present, if the mine continues to be as good as has been generally represented, a large population will ultimately gather into the new El Dorado.

WHITE PINE DISTRICT.

THE TUNNEL.—*News*, July 13: An entire change has taken place in the Eberhardt tunnel within the past two weeks. The formation is now a soft, decomposed substance, resembling soap-stone, but in reality lime-stone, acted on by some of the chemical forces of nature's laboratory. They are driving 70 feet per week, and are now parallel with the old Eberhardt ground, and about 150 from its end line.

SHUT DOWN.—The King furnace shut down last evening, after a 27 days' run, the result of which, we learn, is highly satisfactory to the parties concerned.

STARTED UP.—The Eberhardt company's mill was started up last Thursday and will make a run, on company ore, of about 60 days.

Arizona.

FROM SILVER BELT.—*Citizen*, July 12: The Isabella mine is yielding for each miner employed $100 per day. The Turk mine ore assayed 546.65 ounces per ton—owned by Wm. A. Holmes. Six men are at work on the Miami, which with that force yields four tons of $200 ore per day. The Hannibal silver mining company are vigorously at work sinking their 400-foot shaft. Shipped 2,104 ounces 950 fine silver from Julius mine.

THE MCMILLEN MINE—A RICH STRIKE.—Since the sale of this property by McMillen and Harris to its present owners, the working of the mine has been confined principally to the rich stratum on the east side of the main ledge. The company seemed satisfied with extracting pure silver from the stratum, and until recently have manifested no disposition to determine the mineral value of the main ledge. Lately a shaft has been sunk on the west side of the main ledge to a depth of 130 feet. A drift from the bottom of this has cut into solid ore eight feet without passing through it. This ore will average nearly $150 per ton. The future of that section of the district depends almost entirely upon the value of this main ledge, and a strike in a large body of rich ore is of course hailed with joy everywhere. The rich stratum yielded large profits to the company, but was of comparatively small benefit to the country. The discovery of a large body of low grade ore in the main ledge would necessitate the building of a mill or two, and the employment of a large force of miners, and the benefits would be largely felt throughout the district. But the McMillen company is always very cautious in its movements, especially where any great outlay of funds is necessary, so if they commence a mill we may be sure they have use for it, and mean to run it.

OTHER MINES.—The Tiptop mill will start up next week. Its owners have abundance of ore and water. Hackberry mill pounding out a great deal of silver bullion. Also the Peck.

TOMBSTONE DISTRICT.—Much of the rock here is immensely rich, going from $300 up into the thousands. Veins are of varying breadth, some as wide as 20 feet. The district is attracting great attention and many are coming in from San Francisco. One mine which had been sunk on only 10 feet, was sold for $10,000 cash, and a number of others had found purchasers at from $1,000 to $5,000 cash. Weather exceedingly hot.

TONTO BASIN.—*Enterprise*, July 13: Recent mineral discoveries in this section of Arizona are of a nature to force the conviction, always entertained, that it is second to no other section of our Territory. Besides its rich and extensive deposits of gold, silver, copper and lead ores, kaolin, a variety of clay used for making porcelain, lining furnaces, etc., was recently discovered, and will, ere long, be tested. Should it prove to be of the right sort, it will be of move value than a rich gold or silver mine. Coal, too, exists in Tonto Basin, and we have the word of F. X. Aubrey for the existence there of rich placer mines. He, while passing through the Basin, in 1853, traded with an Indian for a lump of gold that weighed nearly a pound. He also saw Indians using gold for bullets. Of course, this statement will be taken with due allowance, but it is a well-known fact that the streams of the Sierra Pinta, the Sombrera and other mountains around the Basin contain gold.

Colorado.

THE OURAY MINERAL FARM.—San Juan *Sentinel*, July 11: This property has been sold to New York parties. The original owners received $85,000 for it from Edward Innis, who afterwards received $250,000 for five-eighths of it. The present owners will put up reduction works in this vicinity, which will be a valuable improvement to this portion of San Juan. The property has the finest reputation as an ore producer, of any mine in the southwest. It has been opened in a great number of places, all showing the best of ore. But little of the ore has been reduced, still the mill runs of from 280 to 312 ounces have established its great value. The supply so far seems to be immense, and, as far as proven, has shown this to be the largest body of ore on the surface of any in the State.

Idaho.

LATE DISCOVERIES.—*Avalanche*, July 13: The ore find lately met with on the Florida mountain has infused new life into this district, and will revive business here generally, however the Indian troubles may result. The ore opened up in the Black Jack yields at the rate of $200 per ton, and the lode is steadily improving. The Ellmore mill is turning out crude bullion at the rate of $3,000 per day, and if the rock continues to improve as it has for the past week the daily bullion yield will soon reach $4,000. We have seen times here during the past year when a bar of bullion was a refreshing and novel sight; now we see these bars by the dozen, and ranging in value from $2,000 to $4,000 each. The Florida mountain bonanza surpasses the Poorman and Golden Chariot in their most palmy days. The owners of the Adelma, Messrs. Regan & Crutcher, had a crushing of rock this week at the Ellmore from their new mine, located near the Poorman. The average yield was $125 to the ton, and there is plenty more like it and much better in the immediate vicinity. The Potosi mine is looking first-rate. Dillinger & Upham are working a promising lode in the vicinity of Florida mountain, and all the mines which are being operated in the vicinity are yielding well.

ATLANTA.—The new hoisting works for the Buffalo are on the way from Kelton, and will be erected and in operation before the first of September. The shaft will then be sunk a further depth of 200 feet. At present there are about a dozen men employed at the mine. There is a considerable quantity of rock ont now awaiting crushing. The mill started up last Saturday on Monarch rock. Some 17 men are at work in the Monarch mine, which steadily continues its yield of good rock, and is under judicious management. A new mine is being worked by Messrs. Davis and Peddler, and is reported to have splendid prospects. Geo. Dawes and Stephen Hooker have discovered a new mine about six miles north of Atlanta, and if all reports are correct they have an immense bonanza.

CANONVILLE.—*World*, July 12: The water has fallen terribly during the past two weeks, and the placer mines around here will soon be compelled to stop for the season. In fact Hon. Ben Willson has already shut down several of his claims. Report says they paid him big, and no doubt they did. Stevenson & Noble are still running their claim, but will be forced to stop soon for want of water. Messrs. Sifers & Hallett are working on the Blackbird mine in Charlotte gulch, near Grimes' Pass. John Madden has been at work representing a silver mine up Grimes' creek for the past two weeks. Other men are at work on quartz mines around here, and you may expect to hear of rich discoveries some day. Willson & Whitney will start their mill on Summit Flat as soon as the shoes and dies arrive from the railroad.

News in Brief.

A CHAIN-GANG is to be organized in Santa Rosa.

COL. FAIR, of Bonanza fame, is rusticating at Santa Cruz.

THE army worm is destroying vegetation in Trinity county.

GRASSHOPPERS are devouring every green thing around Reno.

LAST week there were, in New York city, 732 births and 672 deaths.

THE Stockton Insane Asylum has all the patients it can accommodate.

PIPES are being laid in Russia from the petrolenm wells to the Black sea.

A SOAP mine has been struck in Richmond district, near Tuscarora, Nev.

TRAMPS are becoming troublesome in Iowa, and other sections of the northwest.

FROSTS did great damage to garden stuff on the ranches of Alpine county last week.

"THE squirrels must go," is the burden of the farmers' cry in southern California.

BY the recent strike the Lancashire mill owners saved over $3,000,000 in wages.

THERE was an earthquake shock at Santa Monica on Wednesday night of last week.

THE outlook for hop growing about St. Helena is better this season than for several years past.

A DISPATCH from Calcutta reports that 4,700 houses have been destroyed by fire in Mandalay.

A MOVEMENT is on foot to organize a Society for the Prevention of Cruelty to Animals in Sacramento.

JOSEPH E. LAWRENCE, a California pioneer and journalist, died at Flushing, Long Island, July 15th.

THE Assessor of Los Angeles county reports an increase of half a million dollars in taxable property for 1878.

SIXTY female employees of the Patent Office have been discharged because of the reduction in the appropriations.

NEARLY 5,700,000 immigrants have arrived in this country since 1847, 4,000,000 of them being Germans and Irish.

THE heat has become fearful in St. Louis, Mo. On the 15th inst. 150 persons were prostrated by sunstroke, between 40 and 50 of these cases proving fatal. Like casualties have happened in many other Eastern cities.

EDWARD SPENCER, the founder and chief proprietor of the *Western Morning News* in England, and his two sons, were drowned recently while bathing near Plymouth.

THERE were 2,470 failures in the United States during the last three months, with $48,753,000 liabilities, against 3,355, with $82,078,000 liabilities during the first three months of the year.

A NEW vein of coal has been struck in the Carmelo mine, Monterey, which averages seven and a half feet in thickness, and the deeper they go the more the quality of the coal improves.

THE *Dandolo*, one of the most powerful ironclads in the world, was successfully launched at Spezzia, Italy. She will be armed with 100-ton Armstrong guns, carrying projectiles of 2,500 pounds weight.

IT is probable that the maximum amount of standard silver dollars authorized to be coined by the silver bill, $4,000,000 per month, will be turned out at the mints for the next four months.

MRS. CALIFORNIA CORNWELL, the mother of five children and the wife of James F. Cornwell, a prominent sheep raiser on the San Benito, committed suicide at her residence Saturday morning, while in a state of temporary insanity.

THE value of the exports from the United States last year exceeded the imports to the amount of $251,000,000. During the last four years we have exported nearly $600,000,000 worth of merchandise more than we have imported.

STATEN island is a picture of desolation, the contrast between the present aspect and that of last year being most marked. Only a few persons are cultivating any portion of the island, potatoes being the only crop cultivated at all. The levees have been repaired, and are believed to be stronger than ever before.

OUTPUT of coal in Great Britain and Ireland, last year, 132,000,000 tons.

CASES of drowning seem to be very numerous in the East the present summer.

THE first carload of Bartlett pears from California have arrived in New York.

THE funeral of Isaac Friedlander was very numerously attended last Sunday.

A VALUABLE diamond has been washed from the gravel, at Myrtle creek, Oregon.

FOUR hundred and sixty Mormons have arrived in New York from Europe.

THREE men were killed by the explosion of a boiler at Queen City, Texas.

THE amount coined at the U. S. Mints during the year ending June 30th, was $81,118,921.50,

THE assessment roll of Santa Clara county foots up $57,280,730, that of Sonoma $15,460,754.

SEVERAL deaths in the Eastern States have been reported daily from lightning during the past week.

THE great four-mile washout on the Colorado desert has been repaired and trains commenced moving again.

HOEDEL the attempted assassin of Emperor William is to be beheaded. He was insolent and defiant.

A FAMINE is reported in the State of Sonora and Sinaloa, Mexico. At Mazatlan there is no flour, and people are emigrating.

A GREAT conspiracy against the Sultan is reported discovered in Stamboul, and over 50 persons have been arrested.

PRINCE PETER, of Aldenburg, condemns universal military service as the cause of socialism and general discontent in Germany.

W. C. RHINELANDER, late of New York, gives, by his will, $49,975,000 to his four children and $25,000 to five orphan asylums.

THE whipping-post has been re-established in Delaware and Virginia; stripes to be inflicted for petit larceny and other minor offenses.

LATEST advices received from Brazil are that, in the provinces of Ceara in that Empire, the number of deaths from famine exceed daily 100.

THE exact cost of the construction of the Paris exhibition buildings and grounds is now estimated at 45,300,000 francs, or $9,060,000.

JOSEPH MAZZIO, a native of Switzerland, died near Sacramento last week from sunstroke, the thermometer standing at the time at 115° in the shade.

CONTINUED rains with wind and sultry weather create fears of damage, both from lodging and rust, to the wheat crop of Minnesota.

IN the city of New York last week Dr. Carver shot and broke 5,000 glass balls in 500 minutes, but came near losing his eyesight by the feat.

THE recent storm at Pittsburg and vicinity was the most disastrous one, in loss of life and property, which has visited that locality for years.

WILLIAM SUTCLIFFE of New Orleans, who a few weeks ago defeated Frank Pointze in a 24-mile swim, was drowned in the Mississippi river since.

THE British government has cancelled an order for 40,000,000 cartridges, and various other indications point to a stoppage of war preparations.

THE body of Guy Stewart, the boy who was reported missing from Dayton, Nev., about three weeks ago, has been found in the Carson river.

SEVERAL Sutter county farmers, who have threshed their crops, find that the yield per acre is much less than estimated, it averaging from 10 to 12 bushels to the acre.

A RECENTLY stolen safe, with its contents, valued at $270,000, belonging to Michael Richard, or Rathrockville, Pa., has been recovered, with everything intact.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's office at San Francisco:

MAGNOLIA G. M. Co.—July 15. Capital stock, $5,000,000. Directors—John H. Floto, John Persbacker, Thomas A. White, S. H. Raymond and I. J. Harvey.

LADY BRYAN S. M. Co.—July 16. Capital stock, $10,000,000. Directors — Charles F. Smyth, I. F. Thompson, W. S. Wood, Thomas C. Grant and George W. Hazleton.

CON. BLUE GRAVEL M. Co.—July 16. Capital stock, $10,000,000. Directors—E. P. Hutchins, T. H. Wells, J. S. Fields, C. B. Kendell and George W. Osborn.

BOX ELDER CON. G. & S. M. Co.—July 17. Capital stock, $10,000,000. Trustees—R. F. Knox, D. A. McKinley, T. B. Lewis, J. H. Weed and T. H. Johnson.

CRESCENT G. & S. M. Co.—July 17. Capital stock, $5,000,000. Trustees—E. Merrigeld, E. M. Hull, E. B. Marsh, E. L. Montgomery and J. H. Crossman.

BULLION SHIPMENTS.—Since our last issue shipments of bullion from the prominent mines have been as follows: Northern Belle, July 8th, $6,500.80; Hillside, 5th, $4,860; Tyho Con., 8th, $4,571.43; Raymond & Ely, 8th, $4,283; Manhattan, 12th, $12,100; Tybo Con., 10th, $4,457.40; Justice, 15th, $15,900; Con. Virginia, 12th, $129,488; California, 15th, $158,035.71; Tyho Con., 12th, $4,564.38; Gila, 16th, $9,639; Hackherry, 17th, $14,000; Independence, 15th, $12,000; Alexander, 18th, $3,799.13.

After the Mines are Exhausted, What?

A worked-out hydraulic mine is naturally a scene of desolation. The desert of Sahara is not more barren. It is a series of sand mounds and rocky ridges. It is the home of the lizard, the rattlesnake and the horned toad. The glorious forests of pine, cedar and white oak, which crowned the original surface, has disappeared, and a sheet of white sand and quartz boulders dazzles the eye that looks on it. It is very natural to ask, "After the mines are exhausted, what?" Nature quietly answers. Ashamed of the desecration accomplished by the hand of man she sets promptly to work to repair the damage. Gentle zephyrs carry on their wings the seeds of forest trees, of wild shrubs and flowers, dropping them on the bare and parched ground. They find a foot-hold with the first rains, and scarcely observed spring up in every nook and corner. Trailing vines stretch their arms forward and throw out their sheltering leaves over the nude earth, and the work of rehabilitation is completed in almost as brief a period as the work of denudation was accomplished. Everywhere in the wake of the hydraulic miner the coming forest is crowding upward. When the hydraulic mines are worked out the ground will be ready again for the horticulturist. For that matter, the miner is gradually preparing himself and his offspring for a new avocation. The hydraulic miner lives now under the shade of his own vine and fig tree. A fruitful orchard is gradually growing in dimensions around him, and before his first occupation will have departed, the new one of fruit-growing will have taken its place. Some of the settlements on "The Ridge" are already notable for the character of the fruit raised in them. And there is no section of the State better fitted for fruit culture and vinticulture than "The Ridge" and its adjacent foothills. It is to this industry it will be devoted after hydraulic mining has ceased.—*S. F. Bulletin.*

A Good Beginning.—The editor of the Pioche *Record* has visited the Hillside mine at Bristol, eastern Nevada, and says of it: "We found the furnace in full blast, running splendidly, and keeping three shifts of workmen attending to it. Hillside ore is found to be just the kind to run through nicely; the only addition that is requisite to make it work is quartz. Each shift of workmen turn out about 60 bars, making 180 bars in 24 hours' run. These bars weigh over 75 pounds each, and the average assay of the bullion is $455 per ton. Up to the time we were there the furnace had been running successfully eight days, averaging from $2,500 to $3,000 per day. Mr. McGee, the manager, stated to us that if he could keep the furnace running for five or six days longer the company would be enabled to pay for everything, including the money advanced by him to purchase the National mine and furnace." Further on the mine is described as looking splendidly, with an abundance of high-grade ore opened.

Largest Shaft on the Comstock.—Experience in mining on the Comstock, says the Gold Hill *News*, has demonstrated the great utility of larger shafts. The extra cost of sinking is comparatively trivial, while the conveniences are much greater. The shaft is the thoroughfare of the mine, and like the principal street of a city, should be of ample dimensions. The largest shaft on the Comstock is the new one of the Yellow Jacket. Its three working compartments are each five feet by six and one-half, and the pump compartment six and one-half by seven and one-half feet. It has been carried down to the depth of 1,560 feet, is vertical as a plumb line and well timbered. It is being constructed for business and to stay. The entire cost of the shaft, machinery, building, etc., up to the present time, amounts to $672,858.08. The company owes on the machinery $65,000, which it has the coin on hand to pay. In convenience of arrangement the works are second to none on the lode.

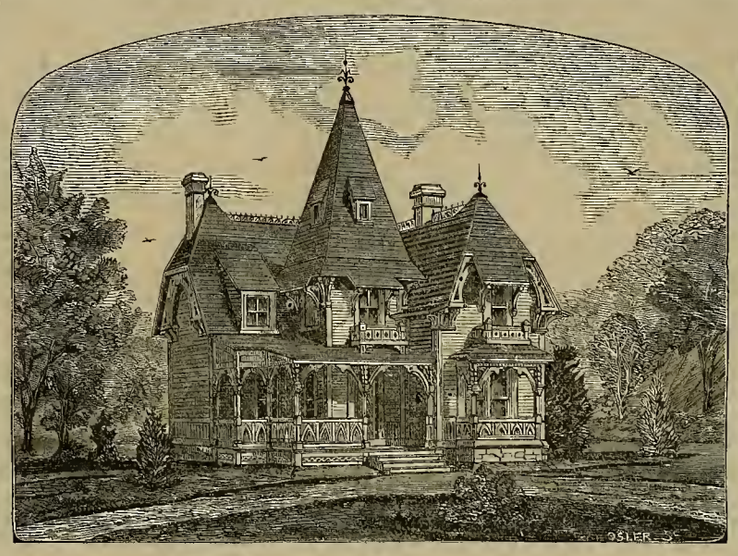
The Idaho mine has been a regular dividend payer for over nine years—its last monthly dividend, the 107th, of $23,250, being paid on the 1st inst. The total of dividends paid to this date is $2,433,000. Of late the company have been making extensive improvements to facilitate the working of the mine. On account of the pay chute tending to the eastward from the main shaft, and to save working through barren ground, a working shaft is being put down from the 10th level 300 feet east of the main shaft. This shaft, 14 by six feet in size, with two compartments for cars and one for ladder and pumpway, is now down 40 feet feet on the ledge, which shows an average of four feet in size. The additional 15 stamps of the mill, making 50 in all, will be ready for work about the first of next month.—*Foothill Tidings.*

Refining Sulphur.—According to the *Silver State*, Henry Sewell, a resident of Winnemucca, Nevada, has been granted a patent for a new process for refining sulphur without fuel or water or iron retorts. He says 250 tons of crude sulphur can be treated at one charge. The furnaces are made of common stone and mortar and cost about $200 each. When running they require but very little attention, and one man can manage two or three of them, as the only work to be done after charging, is to tap them once every six hours. The heat required in running the furnaces is produced by sulphur, from 12% to 15% of which is consumed in refining.

Design for Gothic Cottage.

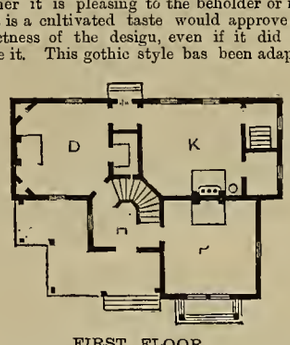
There is now great demand among house builders for departures from the old log cabin or parallelogram model of a dwelling, and features are borrowed from the architecture of all times and lands to secure the coveted diversity. Although the result secured is often very tasteful and beautiful, there are many instances in which the builder has made a jumbled mess of his design and his work offends all correct tastes. We have seen linkings together of different styles of architecture which are almost as out of place as would be a sawed bracket on the Parthenon. We have seen dwellings made up of a mixture of light and heavy orders; as ridiculous as light basket wagons hitched to an elephant.

It is commendable to diversify our styles of buildings, but it should always be done with due regard for two things, first the symmetry of the design, or the harmony of all parts with each other; second, the concord of the whole structure with the surroundings. A picturesque site calls for a building which shall be in sympathy with our character. An ornamental cottage on a rocky promontory would be no more out of place than a light-house on a pretty, flower-laden slope. Let each one consider these things as well as the contents of his purse when he gives the builders orders for his new habitation.

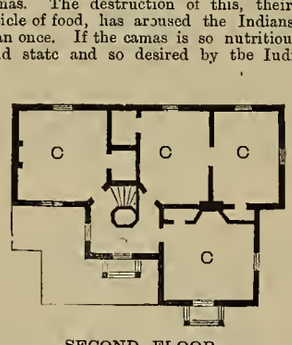


DESIGN FOR COTTAGE IN GOTHIC STYLE.

The gothic cottage, of which we give an engraving on this page, was designed by Isaac H. Hobbs & Sons, architects, of Philadelphia, to meet a demand for something a little out of the common line of cottage designs. It is graceful and picturesque, and is a harmonious design throughout. Of course it is a matter of taste whether it is pleasing to the beholder or not, but it is a cultivated taste would approve the correctness of the design, even if it did not choose it. This gothic style has been adapted to cottage designs in several different ways by Messrs. Hobbs & Sons, and in the hands of skillful designers it gives opportunity mould and modify according to the demands of individual needs, and still retain its truth.



FIRST FLOOR.



SECOND FLOOR.

The cottage shown in the engraving is frame and the roof is of slate or shingles as desired. The estimated cost is in the neighborhood of $3,500. The following explains the lettering on the floor plans and gives the dimensions of the rooms:

First floor—H. hall, 10 by 10 feet; P. parlor, 14 by 14 feet; D. dining room, 14 by 14 feet; K. kitchen, 14 by 15 feet. Pantries and closets are also shown on the diagram.

Second floor—C. chamber over parlor, 12 by 14 feet; C. chamber over dining room, 14 by 14 feet; C. C. chambers over kitchen, 10 by 14 feet. Closets are also shown.

A Big Lot of Quicksilver.—The Virginia *Enterprise* says that 11 carloads of quicksilver has arrived for the bonanza mines. Nine carloads, or 2,050 flasks, were brought to Virginia City, and four carloads, or 450 flasks, were left at mills on the Carson river. The purchase of 2,500 flasks of quicksilver looks like business.

The Camas.

The Sacramento *Record-Union* of recent date contains the following remarks upon the uses and growth of this esculent root. The word is of Indian origin, and should be accented on the last syllable: We have received a specimen of the "camas," the food upon which the Indians of Idaho largely subsist, and which gives the name to Big Camas prairie in Idaho. It is a bulbous plant, throwing up a stalk not larger nor stronger than a wheat straw. This rises, in a wild state, to a hight of two or three feet, and is thick set with small, thin, loose, bell-shaped flowers, which, as we have them, are dried, and contain the seed of the plant. The nutritious part is the bulb, out of which each straw grows. It varies in size from one to two inches in diameter, and in appearance closely resembles the onion, but is free from odor. It is a dry bulb, starchy in quality, and considerably gelatinous. When dry it can be easily pulverized, and, with pulverized grasshoppers, is again dried, and the flour thus made, worked into bread, is said to be highly nutritious. July is the digging season. The bulb grows about four or five inches below the surface of the earth; the digging of the bulb is the only cultivation the ground receives; and the flowers being dried and open when the bulb is dry, the seeds fall out, and the new crop is usually sown by the act of harvesting. We have a few of the bulbs and a quantity of the seed, and if gardeners desire to see what can be done with the plant by cultivation, we will furnish samples on application at this office. Our readers will remember that the camas is the direct cause of the Indian war. The Camas prairies was the great harvest field of the Indians. Settlers plowed up the ground and turned in cattle and hogs—the latter being especially partial to camas. The destruction of this, their chief article of food, has aroused the Indians more than once. If the camas is so nutritious in a wild state and so desired by the Indian, it would seem that the Government might on a thousand or so acres of land cultivate enough to satisfy the demands of the redskins of the plains.

Reworking Tailings.—The Success mill, says the Gold Hill *News*, erected at Washoe to work the 200,000 tons of tailings and slums at that place will start up the last of this week. Messrs. Partridge & Baldwin expect to work these tailings for $1 or $1.25 per ton. As they average about $12 per ton there will be several millions of dollars in the enterprise. The mill will be run by a small turbine wheel. These tailings are the tailings of early days, when millmen did not understand to pursue the nimble sulphuret and refractory pyrite so closely as at the present time. The only wonder is that this mound of pulverized wealth has so long been allowed to rest in quiet.

Suit for Miners' Wages.—The Michigan Supreme Court has just decided a $25,000 suit, in which Mr. Tilden is interested, against him. It was brought by the laborers in some Lake Superior mines, in which he is a large owner, who want to get some wages due them.

A New Superintendent for the Bonanzas.

At a meeting of the Board of Trustees of the Consolidated Virginia and California mines, held in this city on the 8th inst., James G. Fair, for many years past the able and successful Superintendent of the California and Consolidated Virginia mines, tendered his resignation, which was accepted.

Mr. W. H. Patton, Mr. Fair's assistant, was then appointed to fill the vacancy. Mr. Fair's ill health is given as the principal cause of his resignation, although few men with his wealth and circumstances would have retained so laborious and taxing a position as long as he has done. According to the Gold Hill *News*, Col. Fair does not part with the Comstock yet, as he still holds the superintendency of the Ophir, Mexican and Union Consolidated mines. As a superintendent and manager of mines, Mr. Fair has no superior on the Pacific coast. A man of great experience, good judgment, watchful and careful of every detail of his business, energetic and faithful to the interests of his company, his is indeed a place that it will take more than an ordinary man to fill. It looks, however, as if his mantle could not have fallen on one more fitted for executing his arduous duties than Mr. Patton, who is not only one of the ablest engineers of the State, but has for years past been engaged in milling and mining in all its different phases, aside from having for many months past filled the position of assistant to Mr. Fair, so that in taking charge of these mines he starts in, not as a new hand but perfectly familiar with every detail of the work. As long as a change must take place, it certainly could not have fallen into better hands.

Owyhee Mines.

From Mr. David Adams, of Silver City, we learn that the excitement attending the recent Indian raids had so far subsided as not to interfere materially with mining operations, which are being carried on much more extensively and with better prospects than for years past. The families who had left their farms on the creeks between Silver City and the Bruneau are still in town, but the men have returned to look after the crops and the stock. Property of all kinds is looking up, and business generally is improving.

Two discoveries of rich ledges on the War Eagle mountain, near the Poorman have been made recently. One of them is a very rich ledge discovered by James R. Crutcher, the ore from which assays as high as $3,000 per ton. Another near the same locality, located by Hill & Douglas has produced ore worth $2,000 per ton.

Very rich ore has been struck in the Black Jack mine, where a force of 30 men are employed. The mine is well opened and in good condition. Large quantities of good ore are being extracted from this mine and crushed at the Elmore mill, which will be kept running on ore from the Black Jack during the entire season.

Extensive operations are going forward on the Potosi, which is improving regularly. Other smaller enterprises are being pushed ahead with good prospects. Altogether, the outlook is much more favorable than for a long time past, and miners and business men are greatly elated at the improved condition of the camp and the brightening prospects.—*Idaho Statesman.*

Don't go to Washoe.—The Virginia *Enterprise*, having before advised men in search of employment to avoid seeking it in the Comstock mines, repeats the warning in this wise: Again we say that it is useless for miners or workingmen of any kind to come to this city or any place along the Comstock expecting to find employment. We have hundreds and hundreds of men here now who can find nothing to do; not miners alone, but men of all trades. Hundreds of first-class miners—men inured to the beat of the lower levels and men who have a perfect knowledge of timbering, pump work and work in rock of every kind—who are begging for work.

Contracting for Convict Labor.—H. G. Livermore, contractor for the employment of 350 convicts at the branch State prison, near Folsom, for five years, paying therefore at the rate of 50 cents per man, has filed in the office of the Secretary of State his bond in the sum of $250,000, with Horatio P. Livermore as surety. The contract provides that the prison building must be completed before the contract goes into effect. Within 30 days after the completion of the building 100 of the 350 prisoners are to be received by the contractor; within two months, 100 more; and within three months, 150 more.

First Foundry in Arizona.—The McCracken foundry was fired up June 9th for the first time, running about two hours and turning out 2,500 pounds of shoes and dies for the battery and wheels for the ore cars. It was a perfect success from the start. G. W. Edgerton made the patterns, and the castings show that he made them well. The next run will be on tappets and more shoes and dies. The foundry will be of immense convenience to the local mills and to those at Hackberry and Mineral Park. Anything broken can be replaced by new castings without sending to San Francisco. *Yuma Sentinel.*

The Big Camas Prairie.

The Omaha *Herald* of June 21st represents Gensral Crook as saying in the interview with a reporter of that paper, that the Big Camas prairie is a mere swamp, covered with water from April tn June or July, and representing it as ouly fit for the production of the camas plant, which constitutes, as is said, the main source of food supply for the Indians. The right nf the Indians to this valley and the injustice nf the whites in occupying it is pretty plainly intimated, as well as its worthlessness for any othsr purpose than that of contributing to the sustsnance of savages.

It is difficult to believe that General Crook would say what is attributed to him; certainly he never would if he had seen the section in question, or was acquainted with its topography and relation to the adjoining settlements and thoroughfares.

The Big Camas prairie is not a swamp, as is represented, but a beautiful and fertile valley, from 25 to 30 miles in length, with an average width of at least 10 miles. Within these bounds there is every variety of surface, nearly all of which ie susceptible of cultivation. There is no portion of it which could not be easily drained and converted into grain fields if needed. It has all been surveyed iuto sections at the expeuse of the tax-payers of the natiou, and should be now open and ready for settlement. It lies contiguous to the Overland stage road, leading from Boise City to Kelton, and also to the stage road connecting the Overland road with the mines iu Alturas county. Its exclusive occupation by Indiaus merely for the purpose of hunting and diggiug roots is impracticable in the preseut condition of the country, and would prove a source of constant trouble and danger. The settlers have thus far used it ouly for grazing purposes during the summer months, but the advaucing settlements will soon make it desirable aud necessary for the site of permanent homes. The Indians covet it, not because it preduces the camas plant, hut because it is contiguous to the roads and settlements. Were it isolated from these, they would never make it a summer resort as they dn. As to the destruction of the camas by the hngs, this has merely heen used as a pretext for begging and levying contributions upon the whites, as all the hogs that have ever been on the prairie have never diminished in any perceptible degree the yield of the camas root. This year there were no hogs on the prairie, or next to none, while the cattle men and stock raisers were disposed, as heretofore, to share with the Indians whenever they killed a heef, or had other provisions to spare. The Indians were asked to say what their iutentions and wishes were with regard to the stock remaining upon the prairie, and whether they wished them removed, when they said no; the stock might remain on the prairie. But from pure "cussedness" the Indians had determined to go upon the war path this summer; and had the prairie with all the etock upon it been abandoned to them at the start they would have gone to war all the same.

Whatsver settlement may he made with the Indians, the Big Camas prairie can never be given up to their sole occupancy as it is a part of the surveyed puhlic domain, which is needed for the use of civilized beings. As to a joint occupancy with the whites, that is equally impracticahle, unless the Indian is willing to ahandon his trihal peculiarities and become a farmer, stock raiser and citizen, and of this there is not even a remote prohahility. If it is camas that the Indians want and must have, there are hroad areas in many parts of Idaho where it grows and decays without ever heing disturbed by them. Let them dig it where it is easily found in abundance, and where there would he no conflict with settlers. It is wrong to represent and treat the Indian as a heing who must live upon wild roots, or be fed at the expense of the toiling taxpayer, whom he kills and rohs for his summer amusement.—*Idaho Statesman.*

Populating the Valley of the Yellowstone.—The rapid manner in which this valley has heen settled shows how war becomes the pioucer and promoter of immigration. At the point on Tongue river, where General Miles encamped in 1876, there is now a town with a population of 1,000. The battle fields of Custer and his men are occupied by farmers, and the country from which Sitting Bull was driven is in the peaceful possession of the pioneers of civilization.

Canadian Pacific.—The track of the Canadian Pacific is now laid, and engines running from Winnipeg to Selkirk, a distance of 21½ miles, and from Selkirk eastward, on section 14 of the main line, 50 miles. This gives 71½ miles, all told, in working order within Manitoha. At the eastern end of the line, Messrs. Purcell & Ryan have pushed their work to a very advanced point, and they expect to have the road huilt 113 miles westward from Thunder bay this autumn.

Gorham Blake, of Boston, who made a fortune in California mines, has lately beught a great tract of land in Georgia, and after prospecting it for gold, paid $40,000 cash for it. The property is undeveloped, but the purchaser proposes to open it up and work it on an extenaive scale.

Useful Information.

Formulas for Bronze Alloys.

Edward Kirke, iu writing nn the founding of alloys for the *Iron Age*, gives the following formnlas:

A bronze in imitation of gold may be made of 45.5 parts copper, 3.5 parts tiu and 1 part ziuc—50 parts.

Bronze metals are generally cast of an alloy of 50 parts copper and 2.8 parts tin. This alloy is very hard.

A softer bronze for medals than the above is composed of 46 parts copper and 4 parts tin.

Ancient bronze nails were made of 40 parts copper to 1 part tin, and were very flexible.

Soft brouzo is composed of 18 pounds copper to 2 pounds tin.

Hard bronze is composed of 20 pounds copper to 5 pounds tin.

The ancient brouze mirrors are said to have contained 16 parte copper to from 7 to 8 parts tiu.

At the time of Louis XIV of France, a period wheu the art of casting statues was much cultivated in France, statues were cast of an alloy of 30.6 parts copper, 0.11 parts tin, 2 parts zinc and 0.6 parts lead.

The statue of Louis XV is cast of 82.4 parts copper, 10.3 parts zinc, 4 parts tin and 3.2 parte lead.

The bronze of the ancient Greeks consisted chiefly of copper and tin, but was frequently alloyed with arsenic, zinc, gold, eilver aud lead. All their ehields and weapons of war were made of bronze, as well as coin, nails, kitchen utensils, etc.

All the ancient nations seem to have understood the art of tempering hronze and copper, and the Mexicans understood the art of converting hronze into edged instruments in a high degree, but the art of tempering and hardening bronze and copper has heen lost to modern nations; hut as we understand the working of iron hetter than the ancients, and have steel, an alloy of iron and carhon, which the ancieuts did not have, we do not miss thie art much.

Patent Flour.—Almost everybody knows of the flour, says an exchange, but not every one uuderstands what it is. Stripped of technicalities, this is perhaps the etory of its manufacture. The hest flour used to he made of winter wheat. Spring wheat yielded either much less in quantity, or else so much of the hran got into the flour in its maufacture that its color was intolerahly dark. The wheat would be ground and then holted. In the refuss—the hran aud middlings—would he included a large portion of the weight of the spring wheat, and this would sell more particularly for feed for horses. Now the hest of flour, and the most expensive, is made of this very refuse of the old-fashioned process. It all came out of the discovery of a way to draw out the bran. Under the new process the wheat is ground about as before. The first result is an ordinary flour sold for exportation. Then the remainder is taken and put upon great horizontal sieves, and, while agitation is going on there, an ingenious system of draft rushing up through carries off the hran. What is left is the glutinous portion of the wheat, the most nutritious and most productive, and out of this, purified now hy the drawing off of the bran, we get our new-process flour. The result of the discovery of the precess has been to make the poor epring wheat of Minnesota and upper Wisconsin the most valuable kind of grain, and to make the fortunes of the inventors of the method.

A Substitute for Tower Clocks.—Reiniger, of Stuttgart, proposes an ingenious substitute for illuminated tower clocks. It is no more or less than the use of a magic lantern, sometimes employed for etreet advertising in this country. A small lantern could he so arranged as to throw the picture of a common watch or chronometer upen a suitable white screen in places much frequented at night. The movements of the hands would he quite as distinct as those of a real clock with a transparent face and strong light behind it; while it would have the advantage over many of these that the axis to which the hands are attached would not throw a shadow often mistaken for one of the hands themselves. The project recommends itself to smaller cities unable to bear the expense of a costly tower clock with illuminated face.

Cement.—In stopping holes in castings, or for covering scars; a cement may be made of equal parts of gum arabic, plaster of paris and iron filings, and if a little finely pulverized white glass he added to the mixture, it will make it still harder. This mixture forms a very hard cement that will resist the action of fire and water. It should be kept in its dry state and mixed with a little water when wanted for use. A cement for making joints in water and steamp pipe, or in any work where two pieces of metal are joined together and it is desirable to make a perfectly tight joint, may he used, made of iron filings or turnings mixed with sal-ammonia. The proportions of sal-ammonia is very small; only about a half pound is used to 50 pounds of filings. This cement is mixed when wanted for use, and is driven into the joint with a cold chisel or other tool.

Anti-Fungus Paint.—The *Thon-Industrie Zeitung* states that a M. Reissig has patented a paint for walls, ceilings and the like, that renders the penetration of fluids or vapors impossible and prevents the formation of fungi, and is of such stability that it can be washed down with boiling water without injury. This paint or varnish is, essentially, a solution of stearate of soda in spirit, in the proportion nf about 50 grammes of the stearate to 1,000 of sp. gr. 66. Spirituous solutious of seap of all kinds and strengths can bs applied in a similar manner, but where cost is no particular object, the stearate of soda is far to he preferred, as it forms a very hard and firm coat, which can be thoroughly cleaused without the application of moisture. The solution may be tinted as desired with dragon's blood, auiline dyes, etc., or by the direct admixture of ordinary colors that are not subject to decomposition, such as ocher, ultramarine and the like. The paints are said to present an especially handsome appearance, and in the sick wards of hospitals, or in cattle sheds where disease is prevalent, can readily he mixed with disinfecting materials. They do not readily adhere over oil paint, but lie well on wood, plaster and cement.

A Paste that will Keep Well.—A correspondent gives an exchange this formula for a non-poisonous paste that will keep well in hot weather:

Wheat flour	1 ounce.
Powdered alum	½ drachm.
Water, sufficient, or	8 ounces.
Oil of clove, or wintergreen	3 or 4 drops.

Ruh the flour and the alum with the water to the consistency of milk; place this over a moderate fire, and stir constantly, until the paste drops from the wooden paddle in jelly-like flakes, and has the appearance of glycerite of starch. While the mass is still hot, add the csseutial oil, and pour the paste into an earthenware pot or open jar. In the course of ahout au hour a crust forms on the top; pour gently on this an inch of water, more or less. When some paste is wanted, decant the water, take out the quantity needed, and put some water again on the remainder, repeating the operatien each time. Paste may he kept in this way for months, and will never he trouhled with flies.

Postage-Stamp Mucilage.—The following is said to he the formula for the mucilage used on the United States postage-stamps: Dextrine, 2 oz.; acetic acid, 1 oz.; water, 5 oz.; alcohol, 1 oz. Add the alcobol to the other ingredients, when the dextrine is completely dissolved.

Good Health.

Notes on Consumption.

Dr. Geo. H. Napheys, an eminent physician, says: A particular kind of exercise is to he recommended for those whose chests are narrow, whose shoulders stoop, and who have a hereditary predisposition to consumption. If it is systematically practiced along with other means of health, we would guarantee any child—no matter how many relatives have died of this disease—against its invasion. It is voluntary inspiration. Nothing is more simple. Let her stand erect, throw her shoulders hack, and the hands hehind; then let her inhale pure air to the full capacity of her lungs, and retain it a few seconds by an increased effort; then it may he slowly exhaled. After one or two natural inspirations let her repeat the act, and so on for 10 or 15 minutes, twice daily. Not only is this simple procedure a safeguard against consumption, hut, in the opinion of some learned physicians, it can cure it when it has already commenced.

A correspondent of an English medical journal furnishes the following recipe as a new cure for consumption: Put a dozen whole lemons in cold water and hoil until soft (not too soft), roll and squeeze until the juice is all extracted, sweeten the juice enough to he palatahle, and then drink. Use as many as a dozen a day. Should they cause pain or looseness of the bowels, lessen the quantity and use five or six a day until hetter. By the time you have used five or six dozen you will hegin to gain strength and have an appetite. Of course as you get hetter you need not use so many. Follow these directions and we know that you will never regret it if there is any help for you. Only keep it up faithfully. We know of two cases where hoth of the patients were given up hy the physicians, and were in the last stages of consumption, yet both were cured by using lemons, according to the directions we have stated. One lady in particular was hedridden and very low; had procured everything that money could procure, hut all in vain, when, to please a friend, she was finally persuaded to use the lemons. She hegan to use them in February, and in April she weighed 140 pounds. She is a well woman to-day, and likely to live as long as any of us.

An Anecdote of Jenner.—The celebrated Dr. Jenner, who introduced vaccination, was a man of genial wit, and the following lines addressed to a lady upon the recovery of her daughter, and sent with a pair of ducks, afford a fair specimen of his facetious vein:

"I've dispatched, my dear madam, this scrap of a letter,
To say that Miss ——— is very much better;
A regular doctor no longer she lacks,
And therefore I've sent her a couple of Quacks."

Dieting for Health.

Dieting for health, says *Hall's Journal*, has sent many a one to ths grave, and will send many more, because it is dons injudiciously or ignorantly. Ons man omits his dinner hy a herculean effort, and thinking he has accomplished wonders, sxpects wonderful results, hut by the time supper is ready he feels hungry as a dog, aud eats like one, fast, furious and long. Next day hs is worse, and "don't believe in dieting" for the remainder of his life.

Others set out to starve themselves into health, until the system is reduced so low that it has no power of resuscitation, aud the man dies.

To diet wisely, does not imply a total abstinence from all food, but the taking of just enough, or of a quality adapted to the nature of the case. Loose bowels weaken very rapidly—total abstinence from all food increases the debility. In this case food should be taken, which while it tends to arrest the disease, imparts nutriment and strength to the system. In this case, rest on a hed, and eating boiled rice, after it has heen parched like coffee, will cure three cases out of four of common diarrhœa in a day or two.

Others think that in order to diet effectually, it is all important to do without meat, hut allow themselves the widest liherty in all else. But in many cases, in dyspeptic conditions of the system particularly, the course ought to he reversed, hecanse meat is converted into nutriment with the expenditure of less stomach power than vegetables, while a given amount of work does three times as much good, gives three times ae much nutriment and strength as vegetable food would.

Atomized Sea-Water in Bronchial Diseases.—Prof. Mantegazza, in an Italian medical journal, as translated by the *Journal of Chemistry*, states that he has derived great advantage from the employment of pulverized or atomized sea-water in cases of chronic non-specific laryngitis, obstiuate chronic pharyngitis, bronchial catarrh, from chronic bronchitis with or without bronchial dilatation, the first and second stages of pbthisis, caseous pneumonia, and chronic pneumonia of different forms accompanied hy profuse hronchial expectoration, and various forms of scrofula. He does not advise it in those forms of phthisis which pursue a rapid course and are accompanied hy much febrile action and great hronchial irritation. In all doubtful cases trials may he made of a few inhalations, which, if they do no good, do little or no harm. Pulverizations of sea-water are now executed at several establishments in Italy, especially at Rimini, where they are conducted on so large a scale that 20 persons may receive them at the same time, the pulverization heing effected hy means of compressed air and a steam engine. The administration lasts for half an hour at first, and afterwards for an hour, from 30 to 40 of these being required. The patients while respiring the vapor should he encouraged tn talk and sing as far as their strength allows. The first effects produced are a pleasant excitement and a return of appetite.

Beef Tea.—Prof. Pepper, in a lecture on typheid fever, in the Philadelphia *Medical Times*, observes: "Indeed, as has been very thoroughly proven by Dr. Horace Hare in experiments made at the University laberatory, heef hoiled in the good old-fashioned way in a hottle with water gives us a resulting eolution which contains only ahout one-fourth of one per cent. of nourishing material. The heef tea thus manufactured is chiefly a solution of the salts of meat, and is, therefore, not nutritive, and only valuable as a stimulant to digestion. But there is another way of making heef tea which gives hetter results. Take a quantity of tender meat, and, after cutting off the fat, chop it up fine, put it in a bowl, pour a pint of water over it, and let it stand over night. It may possihly he well to keep the water just on a simmer; do not raise the temperature above 140°, however, or you will coagulate all the alhumen, and so either leave it on the sieve in straining, or introduce it into the stomach in the form of curds. After this simmering solution has heen allowed to stand over uight, pour it into a pipkin and heat it again gently, with enough salt to give it flavor, and, if necessary, add a drop or two of muriatic acid. Then pour it out over a hair sieve into a jar. The resulting solution will contain all the nutriments possihle, and is the most valuable kind of stimulant and laxative.

Effects of Perfume on Health.—An Italian professor has made some very agreeahle medicinal researches, resulting in the discevery that vegetahle perfumes exercise a positively healthful influence ou the atmosphere, converting its oxygen into ozone, and thus increasing its oxidiziug influence. The essences found to develop the largest quantity of ozone are those of cherry, laurel, clover, lavender, mint, juniper, lemon, fennel and hergamot; those that give it in smaller quantity are anise, nutmeg and thyme. The flowers of the narcissus, hyacinth, mignonette, heliotrope and lily of the valley develop ozone in closed vessels. Flowers destitute of perfume do not develop it, and those which have but slight perfume develop it in small quantities. Reasoning from these facts the professor recommends the cultivation of flowere in marshy districts, and in all places infested with animal emanations, on account of powerful oxidizing influence of ozone.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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The Week.

Spared the sun storms that are prostrating so many people at the East as well as the communism and tramp element there so fearfully developed, the residents of California feel that they have reason to congratulate themselves on their good fortune. Then, too, most of our national interests are in a prosperous condition. The demand for harvest and dairy hands was never better than at present, the demand having pretty well absorbed the surplus labor of the cities. The wages paid for this sort of service are liberal, considering the low prices of farm produce and the general dullness of the times. Where employed by the month this class of laborers receive from $25 to $30, day hands receiving from $1.50 to $2, with keep in all cases. There are fewer Chinamen being employed in the grain harvest this year than usual, as they do not here form a desirable kind of help, and there are plenty of white men to be had. The disposition shown by some of our large California landholders to subdivide their possessions into small tracts and sell them on easy terms is considered a move in the right direction, and if carried out will lead to very salutary results all round. Some of our land kings have already taken preliminary steps looking to the early breaking up of their unwieldy, and, at present, profitless estates.

Nothing determinate has yet been achieved in the Indian war raging on our northern borders, though our troops have at last succeeded in getting the savages pretty well surrounded. All efforts to get them so hemmed in as to force them to a general engagement have thus far been defeated, the wily foe, when sorely pressed, retreating, and when at last nearly surrounded, breaking up into small bands, the most of which manage to elude pursuit.

Records of the Stetefeldt Furnace.—No. 2.

Furnaces Erected and Results Obtained.

There have been erected since 1869, altogether 22 of these furnaces in the United States. A great many of them are now idle, the mines having failed to supply ore. The most notable furnaces have been erected in the following places:

Manhattan Mill, Austin, Nevada.

This furnace has been in operation since August, 1870, and has roasted to the end of May, 1878, over 40,000 tons of silver ore with chloridation, averaging from 90% to 91%. The ore of Reese River district contains antimonial sulphurets of silver, zinchlende, galena and pyrites of iron and copper.

Mineral Hill Mill, Mineral Hill, Nevada.

This furnace has been in operation for two years only, 1871 and 1872, during which time it roasted abont 9,000 tons of ore, with average chloridation of 90% to 92%. The silver-bearing mineral was mostly stetefeldite.

Surprise Valley Mill, Panamint, Cal.

The furnace at this mill, built in 1875, had, under Mr. Weberling's superintendence, only a short but very successful run, roasting about 5,000 tons of ore with chloridations, averaging from 92% to 93%. The silver-bearing mineral was mainly silver-fahl ore, with some zinchlende, iron and copper pyrites, and galena.

Northern Belle Mills, Columbus District, Nev.

The furnaces at the Northern Belle were erected, one in 1875 and a second in 1876. They have a most remarkable record to show. Each of these furnaces has a capacity of 50 to 60 tons in 24 hours, and as much as 70 tons have been put through one of them occasionally. Up to the end of May 1878, these furnaces had roasted 65,000 tons of ore, with an average chloridations of 91 7-10%. These statistics are from the Superintendeut, Mr. Wm. F. Belding. The ore is mostly oxidized and contains a large percentage of the hydrates of the oxides of iron and mangancse. But there occur, also, heavy sulphurets of the base metals.

Ontario Mill, Park City, Utah.

A Stetefeldt furnace was put in operation at the Ontario mill in February, 1877. The Ontario mine carried in its upper levels a great amount of decomposed ore, which yielded a very high percentage of its silver by raw amalgamation. In the lower levels, however, the character of the ore changed entirely and the ore from this part of the miue can he successfully amalgamated only by first roasting it with salt. After reaching the 500 level, the ore became much baser than that met with before, and as the working of the furnace gave occasionally results much inferior to those formerly obtained, an analytical investigation was ordered.

Specimens from the 500 level of the Ontario plainly show the following minerals, viz: Zinchlende, galena, fahl-ore, and iron pyrites. Of the zinchlende there are two varieties, the one of a light yellow color, the other black. In the latter a larger quantity of fahl-ore is found between the cleavage planes than in the former. The galena also often occurs intimately mixed with the fahl-ore. The fahl-ore itself occurs besides in compact masses.

A chemical analysis of an average sample of crushed ore from the 500 level of the Ontario mine gave the following results, viz:

One hundred parts of the ore contain:

Zinc	9.60
Lead	6.07
Iron	2.77
Copper	1.41
Manganese	0.45
Silver	0.60
Sulphur	7.68
Antimony	1.20
Arsenic	0.20
Silica	55.21
Alumina	13.14
Potash and soda from decomposed felspathic matter	1.00

Traces of bismuth, cadmium, lime and magnesia. Assay value, $229.34 silver per ton.

The differeut minerals were separated as well as their small difference in specific gravity allowed, and were found to he composed as follows:

Yellow zinchlende contains:

Iron	1.60 per cent.
Copper	0.40 " "
Cadmium	Trace.

Assay valne $92.50 silver per ton.

Black zinchlende contains:

Iron	2.40 per cent.
Copper	0.84 " "
Cadmium	Trace.

Assay valne, $92.50 silver per ton.

Galena contains:

Iron	1.80 per cent.
Copper	0.06 " "
Bismuth	Trace.

Assay value, $175 silvor per ton.

Fahl-ore contains:

Copper	24.16 per cent.
Silver	11.77 " "
Zinc	6.70 " "
Lead	4.20 " "
Antimony	27.00 " "
Arsenic	4.40 " "
Sulphur	22.20 " "

Assay value, $4,440 silver per ton.

Taking these results as a basis, we find the ore from the 500 level of the Ontario to he composed as follows:

15.00% zinchlende with $13.87 or 6.0% of the silver.
7.60% galena with $13.30 or 5.8% of the silver.
4.55% fahl-ore with $202.17 or 88.2% of the silver.
3.50% iron pyrites and metallic oxide, with a trace of silver.
60.35% gangue composed of quartz and clay.

This proves conclusively that the fahl-ore is the main source of the silver in the Ontario ore. It is, of course, more or less intimately mixed with the galena and zinchlende, but in crushing the ore through a No. 60 screen the fahl-ore becomes sufficiently exposed to allow its roasting independently of the minerals with which it is associated.

Ore, of exactly the same character as that analyzed, was roasted with about 13% of pure salt in the Stetefeldt furnace, and samples taken from the shaft and flue. These were subjected to a chemical analysis. The object of this investigation was to ascertain:

1. If there is a sufficient quantity of salt falling down the shaft, or if the low results were due to a deficiency in that direction.

2. If undecomposed salt is left in the roasted ore, and how much.

3. Which of the metals have been changed to chlorides, and which to sulphates.

4. How much unoxidized sulphur has been left in combination with metals as sulphurets.

The solution of these questions must give an exact knowledge of the working of the furnace.

Without going into the details of the analysis, which we have inspected and find very carefully made, we give the final results.

The sample of roasted ore from the shaft was found to contain in 100 parts—

Chloride of copper	0.25
Chloride of aluminum	1.51
Chloride of zinc	1.38
Chloride of sodium	3.63
Other chlorides	traces
Sulphate of lead	3.26
Sulphate of alumina	0.56
Sulphide of soda	4.02
Other sulphates	traces
Metallic oxides, gangue, etc	rest

Of the silver contained in the ore, 81.32% was chloridized. Sulphur in undecomposed sulphurets, 0.18%.

The sample of roasted ore from the flue was found to contain in 100 parts—

Chloride of aluminum	1.07
Chloride of sodium	3.08
Other chlorides	traces
Sulphate of copper	0.74
Sulphate of alumina	2.88
Sulphate of zinc	1.48
Sulphate of lead	5.18
Sulphate of soda	10.01
Other sulphates	traces
Metallic oxides and gangue	rest

Of the silver contained in the ore, 82.24% was chloridized. Sulphur in undecomposed sulphurets, 0.064%.

These very interesting results prove:

1. That in the shaft as well as in the flue over 3% of undecomposed salt are present; and that consequently an increase in the amount of salt used in roasting would be useless.

2. That there remains more undecomposed salt in the shaft than in the flue, and that the low results lately obtained in the chloridation of the silver cannot be accounted for by an insufficient amount of salt dropping down the shaft. Consequently it would be of no benefit to crush the salt by itself through coarser screens.

3. That the volatilization of the salt is by no means as great as supposed.

4. A peculiar relation exists between the shaft and flue with regard to the salts of copper, zinc and aluminum. Copper and zinc are present in the shaft only as chlorides, in the flue only as sulphates. The aluminum exists in the shaft as well as in the flue in both combinations, but in the shaft the chloride predominates, in the flue the sulphate. It is evident that in the shaft the metallic sulphates are more completely decomposed, as the ore falling against the rising gases is no longer suspended in the heat, and passes finally through the hottest zone of the furnace. In the flue the ore particles moving with the gases are only for a moment exposed to the flame of the auxiliary fireplace, and being instantly transferred to a lower temperature, the sulphates are formed, have no occasion to leave their acid, except by contact in the change with salt, which is necessarily a slow and imperfect mode of decomposition. The presence of these sulphates has, however, a beneficial effect upon a further chloridation of the silver in the ore at the bottom of the flue.

As to the lead, we find it only as a sulphate in the shaft as in the flue, but the preponderence of the formation of sulphates in the flue becomes again evident. As the sulphate of lead cannot lose its acid at a high temperature, it follows that its decomposition in the shaft cannot be accomplished.

5. The complete oxidation of the sulphur is very surprising, and shows how thoroughly the furnace does its work with such base ores.

6. Chloridations of 81% and 82% of the silver are very high for Ontario ore, and with such chloridations from 90% to 94% of the silver are extracted by amalgamation without any difficulty.

The results of this investigation have clearly demonstrated that ores as those from the 500 level of the Ontario can he worked with perfect success by this furnace, if proper conditions are maintained. Inferior results were only caused by a deficiency in the draft of the furnace, or in overfeeding it when the draft was not in a normal condition. These were defects easily corrected.

The following is a statement of the working results obtained at the Ontario mill, furnished by Mr. C. M. Watkis, the metallurgist of the mill.

The Stetefeldt furnace has roasted from February, 1877, to the end of May, 1878, 10,500 tons of ore. The following average results were obtained by amalgamation in pans:

Month. 1877.	Value of battery sample after deducting salt.	Value of tailings from settlers.	Per cent. remaining in tailings.
July	$139 00	$17 12	12.3
August	120 00	12 22	10.2
September	141 83	13 92	9.8
October	142 40	9 70	6.8
November	134 72	8 08	6.0
December	140 45	9 50	6.8
1878.			
January	139 40	14 40	10.3
February	155 20	30 50	19.6
March	152 61	17 57	11.5
April	152 40	20 82	17.6

These results were obtained with comparatively low chloridations, which have rarely exceeded 90%, and, since the 500 level was reached in January, 1878, have been occasionally as low as 50% in the shaft for reasons stated above. As soon as the draft of the furnace is corrected, the same good results will be again uniformly obtained.

Royalties, Etc.

The royalties charged hy the Stetefeldt furnace company, have been reduced to $1 per ton on ores above $50 assay value, and to 50 cents per ton on ores of a lower grade. They also sell outright the right to exclusive use of the furnace in certain districts. The terms of such sale vary with districts, capacity of furnace, etc. For further particulars we refer to Mr. C. A. Stetefeldt, room 61, No. 320 Sansome street, San Francisco, Cal.

A New Cement Mill.

We examined, this week, at Prescott, Scott & Co.'s, a ponderous piece of machinery for crushing cement, which has been built for the New York & Calaveras mining company. The machine weighs 124,000 pounds, is 41 feet long and six and a half feet in diameter. It consists of a large cylinder, set on an incline of half an inch to the foot and arranged to revolve, similar to the Bruckner furnace cylinder. The cylinder is composed of T-iron, the flanges of the rail projecting inwards, so as to form corrugations on the inside. In that half of the cylinder nearest the feed end, the T-iron bars are set close together, so that the cylinder is tight. The other half has the iron set so as to leave spaces between the rails to allow the crushed cement to pass through the interstices into the sluice, over which the cylinder is placed.

It is arranged to rotate on three sets of wheels, and is kept in position, being on an incline, by means of a brace, also carrying small wheels, pressing against a ring attached to one end of the cylinder. The power is furnished by a 14x24 engine, and boiler, 48 inches by 16 feet. The power is conveyed by the engine to the cylinder through a gear and pinion, connection being broken at pleasure by means of a clutch. The engine is geared to the center of the cylinder.

This machine is intended to work 60 tons of cement an hour. The ore is fed into the upper end with water enough to moisten the substance. A perforated pipe passes through the cylinders through which jets of water play on the cement as the cylinder is revolved. The sand, dirt, etc., is thus washed off the boulders and passes out of quarter-inch spaces into the sluice, while the boulders pass out of the lower end of the cylinder. The intention is to place the machine in a position where the boulders, etc., will pass out over a bank or place where there is dump room. It is more particularly intended for making auriferous cement, and low-grade material of a similar character which cannot be worked hy hydraulic. The action of the flanges in the cylinders is such as to break or grind up the pieces, and the water assists in washing off the sand, etc., from the boulders. Two smaller machine have been worked for some little time with great success. It is claimed that with plenty of dirt it can he worked at a profit on material worth only 25 cents per ton. They will be able, with these machines, to utilize a great deal of ground now lying idle. Water is allowed to enter the cylinder with the cement in proportions suitable to the class of material being worked.

SIERRA FLUME AND LUMBER COMPANY.—We regret to announce that this large lumbering association has been compelled to suspend operations and assign its property. A dispatch from Chico says: The Company publish a card this afternoon in the *Record*, announcing that all the workingmen engaged hy them who have preferred claims to the amount of $100 for services, will be paid promptly hy the assignees. Many of the hands have sold their claims already for 60 or 70 cents on the dollar. The general opinion is gaining ground that the mills will not he started up again this season, hut there are several million feet of lumber already cut which will be flumed down to the dumps at Chico and Red Bluff before the close of the lumber season.

THE cars are now running between Martinez and Oakland. Work on the section between Martinez and Antioch is progressing favorably, with every prospect that the line will be in operation for the overland and southern California business within the period of 60 days.

The Cerro de Pasco Mines.

A Description of the Mines and the Machinery Recently Shipped There.

There was shipped this week from this city on a vessel chartered for the purpose, a complete 80-stamp mill with all modern appliances, intended for use at the famous Cerro de Pasco mines in Peru. These mines have recently come into the hands of a company who intend working them systematically, so as to fully develop the immense property in a manner commensurate with its worth. Borings have been made at various points with diamond drills, the results of which have been eminently satisfactory. Large Cornish pumps have also been put at work to drain those portions of the mines not drained by the tunnel, but outside of the pumps and drills no modern machinery has been introduced at Cerro de Pasco. The new 80-stamp mill, however, when it gets at work will probably do as much work in a week as was previously accomplished by patio process at all the haciendas put together, in a year.

Before giving the brief description of the mines which we propose, it will be of interest to give the details of construction of the new 80-stamp mill, since the work is one which reflects credit on San Francisco mechanics, and was finished in a remarkably short space of time.

The New 80-Stamp Mill.

It was built by Rankin, Brayton & Co., of the Pacific Iron Works, on an order from Mr. W. H. Cilley, General Superintendent of the Oroya and Cerro de Pasco railroad and mining company, who is at present in this city. The building in which the mill is to be placed is to be 290 feet long with an average width of 110 feet. It is to be set on a side hill so that the machinery may be arranged to save handling of the ore. The outside walls are to be made of stone, and Mr. L. S. Carr, well known as a millright on this coast, has already gone to Peru to see to the construction of building and mill.

The ore is brought from the mines by railroad and the cars are drawn by the locomotive into the ore house. The ore is dumped on to "grizzlies," of which there are six. That which is fine enough to pass through between the bars goes directly into the hoppers or bins. That which is too large is directed to platforms in which there are Blake ore crushers and thence to the bins. There are four of these crushers, 7x9. There are two large bins so that the two run the length of the building. From the bins the ore is drawn off into 16 Hendy ore feeders, which feed it into the batteries. From the batteries it runs by spouts to the settling tanks. It is then shoveled on to the sand floor and into the amalgamating pans, thence to the settlers and afterwards to the agitators. The sand that settles in the agitators is shoveled up to a floor and reground in four grinding pans, six feet in diameter. The quicksilver is not handled at all. It is pumped by two of Boss' quicksilver pumps into tanks, and runs into the pans and settlers and then into bowls from which it is pumped back again.

There are in all 40 amalgamating pans, 20 settlers, four agitators, four grinding and four clean-up pans. Also two quicksilver pumps and two quicksilver presses, the latter for straining amalgam.

The Turbine Wheels.

The power to drive this machinery is derived from water, no steam being used. There are four Leffel turbine wheels for driving the pans, each 30½ inches in diameter; two 23-inch Leffel turbines drive the batteries. These wheels run with a head of 45 feet. The battery turbines will run 400 revolutions and the pan wheels 300 revolutions per minute. The water is brought in from each end of the building through a 66-inch pipe. There are three of the turbines on each side of the mill, the center one on each side being for the batteries. The battery wheels are belted to a counter shaft to reduce the revolutions and from there to the battery line shaft, a separate pulley being provided for each set of five stamps. The other two turbines on each side, belt direct to the pan line. The pans and settlers are divided into two sections on each side, each section having ten pans and five settlers, an agitator and a grinding pan. In addition the two center sections have a grinding pan with two clean-up pans.

All of the machinery had to be made in sections for transportation on mules, and no piece could weigh over 300 pounds, which of course has added to the difficulty of construction. The cam shafts are split lengthwise so as to form two pieces accurately fitted and tongued and grooved. They are eight feet long. The stamp stems are 13 feet long and 3⅜ inches in diameter. The battery line shafting is cut in short lengths the largest diameter being 4½ inches. This shafting is driven by a wooden 84-inch pulley with 23-inch face. The mortars, it may be stated, are to be cast at the mines, the core boxes having been made here. This was necessary as the weight would have greatly exceeded the limit.

The Pans, Settlers, Etc.

The pans are the "combination" pans, 62 inches in diameter inside and 30 inches high. The pan bottoms, 1½ inches thick, are made in six pieces with the joints all planed and fitted with bolts so as to be interchangable. The sides are made in six pieces three-fourths of an inch thick, all planed and bolted together so as to be interchangable. The upright shaft for driving pans is 4 inches in diameter and 7 feet long. The pans are made to run 90 revolutions, geared two to one. Each pan has eight shoes and six dies. The joints are all turned and planed.

The settlers are nine feet in diameter and 30 inches deep with sheet-iron sides; bottoms are made in ten pieces. Each settler has attached four cast-iron arms with two shoes to each arm. The joints and faces of bottom are planed and fitted to be interchangable. The main upright driving shaft is 3¼ inches in diameter and six feet three inches long. The settlers will make 15 revolutions, geared four to one.

The settlers are driven from the main settler line of shafting by a clutch instead of the usual tight and loose pulleys. This line is driven from the pan line shaft by a 16-inch belt. Below each settler is a quicksilver bowl, from which the mercury is pumped back to the receiving tanks.

The agitators are of wood, nine feet in diameter and 36 inches deep. The sides are three inches thick and the bottom four inches. The arms are of cast-iron, the four arms being each fitted with six cast-iron teeth 21 inches long. These agitators are to run 20 revolutions, geared four to one, driven by tight and loose pulleys from settler line.

The four grinding pans are six feet in diameter and 24 inches deep; will run 25 revolutions geared two to one. The sides are made of six pieces of sheet iron. These will be driven from the settler line of shafting. The clean-up pans are five feet in diameter and 18 inches deep, made in four sections.

Weight, Etc., of the Machinery.

All this machinery, as stated, is made in pieces of less than 300 pounds for convenience of transportation. The whole weight aggregates 530 tons, and the machinery was completed in 50 working days from receipt of order, during which time drawings and all were made. The general plans, which are excellently executed, were drawn by Mr. J. K. Firth, draftsman at the Pacific Works, and the details were drawn by Mr. Erlach. Mr. Cilley visited Virginia City before ordering the mill, in order to see the various improvements in milling machinery. There are only four 80-stamp mills on this coast, none of which, however, were originally constructed with that number of stamps. The stamps for the mill weigh 870 pounds, being a little heavier than customary.

The work is all well finished and no expense has been spared to make the mill perfect in all its parts. The capacity is from 350 to 450 tons per day. A Howell roasting furnace has been shipped with the mill, but is for experimental purposes only.

The Superintendent of the Mill.

We are pleased to state, in this connection, that Mr. Cilley has appointed as Superintendent of the mill, Mr. A. D. Hodges, formerly editor of this journal and more recently connected with the milling interests at Dayton, Nev. No better choice could have been made, Mr. Hodges being a young man of great intelligence and ability, a thorough metallurgist and an enthusiast in his profession. Being a good chemist, a practical mill man and close student, Mr. Hodges will, without doubt, be able to work the ore as close as it is possible to do it and at the same time in an economical manner.

Cerro de Pasco Mining District.

The mines to which this machinery are to go are famous in the world's history. They lie in the province of Junin, Peru, at an elevation of 14,000 feet, and were discovered as long ago as the year 1630, and have been worked in a primitive manner, on a small scale, almost uninterruptedly ever since. There are two distinct veins, on which the principal work was done for many years, one running in a northeast and the other a northwesterly direction. These veins join in an immense mass or deposit of ore, the scene of present mining operations. The veins have been worked comparatively little since the discovery of this ore body, in the year 1630 all attention then being turned to that spot. The ore body of Cerro de Pasco is about a mile and a half long and nearly a mile wide, and it is this tract which the company, who have built this mill, are working.

The Product of the Mines.

The veins as stated, have been worked hundreds of years, and this body since its discovery. The mining, however, has been done in the most primitive manner, and no work has been accomplished below the water line. On reaching water, work was abandoned and new shafts sunk. The miners delved through the mass in search for rich pockets, the poorer ore being left. The pockets frequently found yielded enormously in born or native silver, and the whole tract has been "coyoted" in search of them. The ore below the water line is richer than above, as assays from diamond drill borings prove, but little of it has been worked as yet. The Peruvian miners brought up the water, as the ore, in leather sacks, and when too much water came in, their holes had to be abandoned. The deposit therefore, in all its magnitude is hardly touched, and would be considered scarcely prospected in a mining country like this. Nevertheless, the government records prove that upwards of $493,000,000 were produced for 1630 to 1821 by the Cerro de Pasco mines, and since that time about $3,000,000 a year has been produced, even by the primitive methods of mining referred to. Previous to 1821 it was obligatory on all persons to bring their metal to one place to be melted, in order that the tax might be collected, and probably a large amount was smuggled, of which no record could be made. At the time of the war of independence the mines were almost entirely abandoned and the haciendas allowed to go to ruin. About three-quarters of all the haciendas worked during the Spanish rule, have been abandoned since the war of the revolution. No capital has ever been invested, and the poorer ores have not been worked. The only reason so much money was taken out was on account of the presence of so many very rich pockets.

From 1828 to 1846 there were 4,647,052 marks (about $10 to a mark), produced, according to the best authorities. The mines were generally owned by Indians, who, naturally suspicious of one another, would allow no combinations to be made for work on a large scale. Each worked his little claim as he chose until he got to water, when he abandoned it and took another. The deepest shaft on the property is 360 feet deep, and has been sunk through the decomposed rock forming the surface ore. At the time the property was taken hold of by Mr. Henry Meiggs, there were only 53 claims of 90 by 60 varas, being worked by private individuals, all the remainder having reverted to the Government by a law which provides that those claims abandoned for four months become again government property. These mines came under the proprietorship of the present company in the following manner:

Mr. Meiggs' Contracts with the Peruvian Government.

Everybody has heard of the enormous interests acquired by Mr. Henry Meiggs in Peru, and of the magnitude of the contracts made by that gentleman with the government. His enterprise and skill accomplished objects which appeared almost impossible, and in railroad construction in particular he has astonished the engineers of the world. It is not our purpose to speak at length of these various enterprises, but to confine ourselves to Mr. Meiggs' connection with the Cerro de Pasco mines alone.

The Callao, Lima and Oroya railroad was built by the government, and Mr. Meiggs by contract took the road by administration, and for this administration was to receive five per cent. of the gross receipts.

This road ran within 85 miles of the Cerro de Pasco mines, and Mr. Meiggs directed the attention of the government to these mines from which so much money had been taken, but which were now practically abandoned. Negotiations were entered into for building a railroad to the mines, running a tunnel to drain them deeper, and developing their wealth. In order to accomplish this the government authorized Mr. Meiggs, or any representative of his, to issue bonds for £2,400,000 sterling for the construction of the Oroyo and Cerro de Pasco railroad and completing the tunnel. These bonds bore seven per cent. gold interest and were guaranteed by the Peruvian government. The security for paying principal and interest were placed at Mr. Meiggs' disposal. First, 200,000 tons of guano; second, the export duty of five per cent. on all treasure shipped from the country; third, the government profits on the railroad; and fourth, the government share of the profits from working the mines of Cerro de Pasco. All these revenues were to be applied to paying interest on the bonds and a certain specified excess to be used in funding them.

The mineral lands of Cerro de Pasco were therefore ceded to Mr. Meiggs under this contract, only 53 private claims being in existence at the time, as stated previously. These miners were given the choice of paying Mr. Meiggs 25% of the net yield of their claims in consideration of his driving the tunnel to drain the mines, or they could allow him to work their claims and pay them 30% of the net yield for the privilege. They all agreed to the latter proposition, so the whole property came into his hands. The government is to receive 25% of the profit of the mines after the bonds referred to are redeemed, but the remainder of the proceeds go to the company working the mines.

This cession was made to Mr. Meiggs in February 3d, 1877. The Cerro de Paseo railroad, which connects with the Callao, Lima & Oroya railroad, will be 85 miles long and will connect at Oroya. With the exception of 10 miles, it is on a level plateau and can be built in six months. There was previously a railroad of seven miles in length, which was built by an English company, which eventually failed, and the road was bought by Mr. Meiggs from the government, to which it had reverted, for $500,000. It has since been extended six miles further, in order to take the ore from the mines to the river, where the 80-stamp mill is to be erected. Along the whole length of this short road are places where the ore is now being worked by patio process. In this contract with the government, it was specially provided that Mr. Meiggs might cede his rights to companies or individuals who would carry out the projects.

Formation of the New Company.

When Mr. Meiggs died, his will contained a clause, leaving all his contracts with the government in charge of a Directory, giving that Directory full power to carry out the contracts in the name of the estate, or to transfer them to other individuals or companies, as they thought proper. If these contracts had been carried out in the name of the estate it would have taken 20 years to settle it up, so the Directory thought it better to transfer the contracts to others, where satisfactory arrangements could be made. A company was formed, called the Oroya Railroad & Cerro de Paseo mining company, and this company purchased from the estate the contracts for the Callao, Lima & Oroya railroad, and the Oroya & Cerro de Paseo railrond, and the Cerro de Pasco mines. This company was formed with a capital of £3,000,000 sterling, over £1,000,000 in stock having been sold and the remainder belonging to the company. The company also, considering the bonds a good investment, took them up themselves.

Of this company, Mr. W. H. Cilley, who is now in this city, is General Superintendent. He has been associated with Mr. Meiggs for some 18 years, and has been chief engineer of different works for Mr. Meiggs during that time. Mr. Meiggs contracts with the government amounted at times to $190,000,000, and he employed over 37,000 men at one time. In operations of such magnitude, the work had to be organized under different heads, of which Mr. Cilley was one.

That portion of Peru about the Cerro de Pasco mines is all a rich mining country, after passing the summit, interspersed with agricultural tracts. There is an abundance of water power and plenty of salt near by. The salt which has supplied the mines for years is carried on wagons to the lake, there shipped on steam launches and sailing boats, carried to the other end of the lake and thence on mules to the mines.

The Ore Deposit.

The old tunnel which now drains the mines was built by the Spaniards during the Viec-Royalty. It was commenced in 1806 and finished in 1841, the work being done slowly. With its ramifications it is 3,440 meters in length, and drains the mines 297 feet below the surface at the deepest point. This tunnel now discharges about 79 miners' inches of water. The company have now two Cornish pumps, 37½ inch steam cylinder and seven-foot stroke, which pump water up to the old tunnel level, a pair of engines working each pump. Two more pumps are now ready for work, and it is thought the four will free the mines of water down to the new tunnel level.

The ground in the ore deposit is caved in all directions from the burrowing operations of the miners, some of these caves covering acres in extent. There are a large number of small shafts on the property, but the company is principally engaged in opening up open cuts. The property is all to be worked by open cuts, as they blast the ore down from the sides, shovel it on to cars and transport it to the mills. They are accumulating a large amount of ore now ready for milling, principally low grade, just as it comes out. The ore is all free milling down to water level, and there is an immense quantity of it. It changes at the water line and the higher grade ore is refractory.

Yield of the Ore.

The ore just as it comes from the mass or deposit will average $30 per ton, without taking rich pockets into consideration. Some 500 assays from diamond drill borings in deeper ore show an average yield of $165 per ton. It costs now for blasting, mining and loading on cars in the open cuts, ten cents per ton. There is no limit to the amount to be taken out, and as the cuts are extended and facilities improved, the ore can be more easily removed to the mills Mr. Cilley thinks if he had 20 mills like the one described above, he could keep them all running to full capacity. The company is at present working a number of the old haciendas which came to them, a portion by government cession and part by purchase. They have been repaired so as to work until machinery could be provided, but are principally valuable as giving exclusive water privileges to the company.

The New Tunnel.

The new tunnel being run by the company will drain the mines about 260 feet below the present water level, or 560 feet below the highest point on the surface. This tunnel will be from 1,700 to 1,800 meters in length before reaching the ore body, and how much further it will be run will depend on circumstances.

Where the mining is at present being done the tracks are run in on a level and the cars loaded from the sides of the cut by the Indians. They receive so much a ton for their work, one man being paid and he dividing it up in shares according to the number of men at work. They will not be able to get down into the richer ore for some time, as it will perhaps be two years before the lower deposits are available.

The company own large coal fields near the mines and will use the coal in working the mines and in the smelting furnaces. The new mill will be put up 13 miles from the mines at the end of the short railroad, where the water power is available.

It will be seen that this company has undertaken work of great magnitude, and is going about it in a systematic manner. It takes capital, however, to work mines in Peru, and no poor man need think of ever doing anything in that line there. Labor is procured for comparatively nothing, so to speak, a fortunate circumstance for large companies, but a bad one for working miners.

A Big Pump.—A. L. Fish & Co., Nos. 9 and 11 First street, have just received one of Knowles' plunger pumps, intended for the Empire coal mine. It is the largest one that ever came to this coast, and is well worthy of examination by mining men. The steam cylinder is 24 inches in diameter, water cylinder 10 inches in diameter. The total weight of the pump is nearly 10 tons. It is calculated to raise 25,000 gallons of water per hour 500 feet.

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Do you want to buy, sell or exchange lands or other property in any part of the U. S. or Canadas? Are you a Soldier or Sailor, in want of a Patent? Why not obtain more Bounty or Pension? Do you want to locate Government or State Lands without settlement? Why not? When I have the well-known Approved Soldiers Additional Homesteads, under seal of the General Land Office, and that can be located without settlement, upon any Government $1.25 or $2.50 lands, subject to homestead. The Sioux Half-Breed Scrip, for location upon unsurveyed lands.

Land Warrants and Scrip of all Kinds

For cash, or part on time. Good title given or no pay. Have you any lands with an imperfect title to sell, or choice vacant lands you know of which could be located to advantage; or claims not lawfully held, which we could contest. Let me hear from you in full, and I will do my best to inform you what is to your advantage.

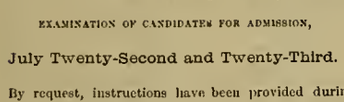
I will mail you a circular explaining all, and a copy of the new Pension Law. Address, (plainly)

D. H. TALBOT,

General Land, Scrip and Warrant Broker, SIOUX CITY, IA.

American Machine

AND



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Experimental and Fine Special Machinery, Planing and Gear Cutting, Printing Press, Band Instrument and General Machine Repairing; Dies, Taps, Punches, Reamers and other Tools made to order. Models and Patterns for Inventors promptly executed in Wood or Metals. 514 Commercial Street, between Sansome and Leidesdorff, Third Floor), San Francisco, Cal.

I. A. HEALD, Proprietor.

Copp's Hand-Book of Mining Laws.

Henry N. Copp's hand-book of mining laws, just issued, contains the United States mining laws and instructions thereunder, a digest of decisions, forms, list of mining patents issued, etc. The digest of decisions alone is a very valuable thing, giving, as it does, in brief form, all the decisions of the Secretary of the Interior and Commissioner of the General Land Office in relation to mining matters. These are all under proper headings for easy reference. Forms are given for notice of location, proof of labor, notice of forfeiture, miners' lien, application for survey, patent, etc., affidavit of improvements, etc. There is also a list of patents issued for mining claims from July 26th, 1866, to August 1st, 1877. The book is of pocket size and very convenient for all who are interested in mines. It will be sent post-paid for $1, on application to Dewey & Co., 202 Sansome street, San Francisco.

French Savings and Loan Society,

411 Bush Street, above Kearny, SAN FRANCISCO

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Machinery.

The Ingersoll Rock Drill.

Mines Using these Drills on the Cometock Lode—Virginia City, Nevada:

Best & Belcher M. Co.,	Con. Virginia M. Co.,
Crown Point M. Co.,	California M. Co.,
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Sierra Nevada M. Co.,	Ophir M Co.,
Prospect M. Co.,	Mexican M. Co.,
Baltimore Con. M. Co.,	Overman M. Co.,
Silver Hill M. Co.,	Bullion M. Co.,
Dayton M. Co.,	Con. Imperial M. Co.,
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Payne's Vertical Engines and Boilers,
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Platt's Patent Fuse Lighters,
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CHLORIDIZING FURNACE.

This furnace is guaranteed to chloridize from 88 per cent. to 95 per cent. of the silver, and put gold in a state so that 88 to 95 per cent. of the battery assay can be obtained by amalgamation on any gold or silver ore ever formed by nature.

The cost of Roasting and Chloridizing is as follows:

One man, per day	$ 3 50
One man, per day	3 00
Wood, 1¾ cords at $3	7 00
Cost of 20 tons	$13 50
Cost of one ton	67½

From 2½ to 5 per cent. of salt is necessary.

In a furnace of three or four times this capacity the cost is decreased by 20 per cent.

Several furnaces are in successful operation in California, Nevada and Idaho.

Any persons wishing any reference can address:

JUDGE WM. WEBSTER, Paymaster Mine, Reno, Nev.
LEWIS CHALMERS, Manager Exchequer and IXL Mines, Silver Mountain, Cal.
J. S. CONE, Vice-President Tehama County Bank, Red Bluff, Cal.
R. H. CAMPBELL, Superintendent Alterthought Mine, Redding, Shasta County, Cal.

For further information, apply to

D. J. O'HARRA, Reno, Nevada.

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JOSEPH C. TODD,

ENGINEER

—AND—

MACHINIST.

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Address J. C. TODD,

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ENGINE FOR SALE.

A first-class, large sized Britton Fire Engine, in fair order is offered for sale cheap. Price, $400. It is worth more than double that sum. About forty men can work on the brakes. Towns or corporations wishing a good machine should examine this engine before ordering elsewhere. Apply to

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Union Foundry, Sacramento

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STANDARD WATER WHEEL TURBINE.

WARRANTED BEST & CHEAPEST.

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(Patentee and Manufacturer.)

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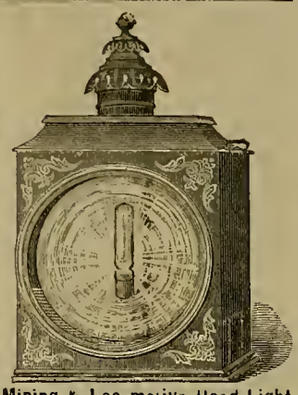

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Medal Awarded at 12th Industrial Exhibition of 1877 at S. F. Hall and Show Window Reflectors of Corrugated Tin and Silvered Corrugated Glass, Sectional, Globe and any Style of Ornamental Lamps for Hotels, Private Residences, Churches, etc. Ship, Railroad, Street Car, Coach, etc.

SPINNING OF SHEET METAL TO ORDER.

Send for further information.

Smelter and Refiner.

A competent person is desirous of receiving the position of Superintendent of a Smelting and Refining Works. Can give satisfactory reference for ability to smelt all lead ores, refine silver and make market lead. No objections to go to the Territories. Address P. F. M., this office.

ICE! ICE!! ICE!!!

Ice at $1.00 Per Ton.

PICTET ARTIFICIAL ICE

COMPANY, (Limited).

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P. O. Box 3083, New York.

SWEET Chewing JACKSON'S BEST **NAVY Tobacco**

Awarded *highest prize* at Centennial Exposition for *fine chewing qualities* and *excellence and lasting character of sweetening and flavoring.* The best tobacco ever made. As our blue strip trade-mark is closely imitated on inferior goods, see that *Jackson's Best* is on every plug. Sold by all dealers. Send for sample, free, to C. A. JACKSON & CO., Mfrs., Petersburg, Va.

L. & E. WERTHEIMER, Ag'ts, San Francisco

ESTABLISHED IN 1856. G. F. DEETKEN, Manager.

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☞Gold Silver and Copper Ores purchased at highest rates, also reduced on commission. Working tests made.

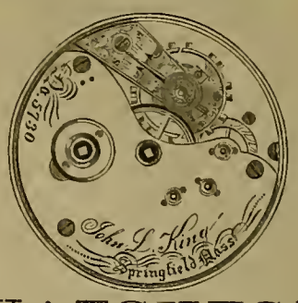
MINING INTEREST FOR SALE.

For a small amount, in several claims on one of the

RICHEST LEDGES IN ARIZONA.

Money needed for development. The ore will pay a handsome margin to ship to the city. Apply at this office.

AMERICAN



WATCHES!!

BUY THE BEST.

The New York Watches,

Made in Springfield, Mass.

Full Plate Movements Have the Following Advantages:

The winding parts of the Watch are superior to any in use in a full plate movement, for the following reasons:

They are attached to the barrel bridge on the top plate, so that in case of repairs any piece of winding part can be taken without removing the movement from the case or taking off the dial.

There is also an improvement in the manner of letting down the main spring, which is done by means of a pin attached to the click.

The winding parts are so arranged that there is hardly a possibility of either the ratchet, click, or click-spring breaking. There is a turning made in which to place the click, so that when the strain comes on it, the back rests against the solid plate, thus making it impossible for it to break.

In case the main spring breaks, the barrel can be taken out without disturbing any other part of the Watch.

The train of the Watch is run into the solid pillar plate and not into bridges screwed to the plate, as is usual; this avoids all danger of any alterations in the depthing taking place.

The hair spring stud is attached to the balance cock in such a manner that it can always be adjusted to its original position.

The escapement is the most improved form of a lever escapement now in use.

The manufacturers claim an advantage in our potence, as it is not liable to change its position and disarrange the escapement, as is often the case in full plate Watches; also on the bearing for the lower center wheel pivot, the plate being so constructed as to allow a long bearing.

The movement can be taken down and put up with less trouble than any other movement made in the United States, showing it to be the most perfect in simplicity and durability.

Sold at the lowest rates possible for perfect time-keepers, by

GEO. FINCK,

Importer and Manufacturer of

Watches, Jewelry and Silverware,

At the very Lowest Prices.

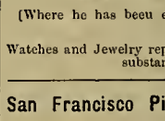
N. W. Corner of Kearny and Geary Streets, Opposite Market St., San Francisco.

(Where he has been established over nine years.)

Watches and Jewelry repaired in the best and most substantial manner.

San Francisco Pioneer Screen Works,

J. W. QUICK, MANUFACTURER,



Several first premiums received for Quartz Mill Screens, and Perforated Sheet Metals of every description. I would call special attention to my SLOT CUT and SLOT PUNCHED SCREENS, which are attracting much attention and giving universal satisfaction. This is the only establishment on the coast devoted exclusively to the manufacture of Screens. Mill owners using Battery Screens extensively can contract for large supplies at favorable rates. Orders solicited and promptly attended to.

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The undersigned, owners of LESCHOT'S PATENT for DIAMOND POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING AND TUNNELING DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

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FOR SALE.

One Engine, 14 by 30 Inches, Link Motion.
One Engine, 12 by 24 Inches.
One Engine, 9 by 18 Inches.

☞Boilers to match each Engine. Each of the above will be sold at a very low figure.

ROBERT M. CONE, 226 Fremont St., S. F.

SUMMER RESORT.

Exhilarating Climate! Grand Scenery!!

☞Persons intending to spend a few weeks in the country during the summer months should stop at the Bridge House, on the South Yuba. Accommodation may be had for a few more boarders by addressing MRS. R. H. CULBERTSON, Emigrant Gap. House only one mile from the station.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending June 20		Week Ending June 27		Week Ending July 11.		Week Ending July 18.	
Alpha	13½	11c	12½	10½	10½	8½	13½	9.75
Alta	8½	7c	8½	7½	7½	6½	8½	6¢
Andes	50c	35½	40c	35c	40c	35c	40c	35c
Alps	20c	10½	1.10	45c	....	....	65c	....
Argenta	40c	35c	40c	....	40c	....	45c	40c
Baltimore Con	....	....	....	....	....	....	....	....
Belcher	4.05	3½	5½	4.20	4½	3.80	4½	3½
Belmont	60c	50c	50c	25c	50c	35c	1	45c
Best & Belcher	14½	13½	15	13½	15½	12½	15	13½
Bullion	5½	5½	5½	4.80	4.60	3½	5½	3.80
Bechtel	2½	1.70	2½	1½	1¾	1.20	2.10	90c
Bodie	2.25	2.10	4¾	4.10	7¼	6	7½	5½
Benton	3½	3.15	2.30	2.10	2	1¼	2½	1.90
Caledonia	2.15	1¾	2½	2.15	2.15	1.95	2½	1¾
California	19½	18	18½	15	14½	12½	13½	10¼
Challenge	....	....	....	....	....	....	....	....
Chollar-Potosi	26	25	26½	25	26	25	26	25½
Confidence	4	....	4¼	4	4¼	....	4¼	4
Con Imperial	95c	85c	95c	80c	70c	55c	70c	60c
Con Virginia	14	13½	13¾	13	13½	8½	9¼	8½
Crown Point	5½	4.95	7¼	5½	6¼	5½	7	6
Dayton	....	....	....	....	....	....	....	....
DeFrees	35c	25c	50c	25c	25c	20c	20c	15c
Day	45c	40c	50c	40c	50c	....	50c	45c
Eureka Con	60	57	57	56½	57	55	56¼	55½
Exchequer	3.90	3.15	3¼	2.60	2.85	2.65	2.90	2.70
Endowment	85c	80c	80c	75c	75c	65c	70c	65c
Gen Thomas	....	....	....	....	....	....	....	....
Crand Prize	4	3¾	4.65	3.90	3.60	3.30	3.60	3.20
Gila	75c	65c	85c	60c	65c	55c	55c	50c
Golden Chariot	....	....	....	....	....	....	30c	25c
Gould & Curry	7	6¾	6¾	6¼	7	6	7	6¾
Hale & Norcross	7½	7	7¾	7	7½	7	7½	6¾
Hussey	30c	25c	25c	10c	20c	....	25c	10c
Julia	8½	5½	7½	6	6¾	5½	6¾	5½
Justice	3¾	3.45	4	3¾	4.60	4.05	5½	4.05
Jackson	3	....	....	....	3¼	2½	....	....
Joe Scales	....	....	....	....	....	....	....	....
K K Con	....	....	....	....	....	....	....	....
Kentuck	2.80	2½	3½	2.85	3.10	2½	3½	2.90
Kosuuh	....	....	....	....	....	....	....	....
Lady Wash	3	2½	....	....	....	....	....	....
Leopard	45c	40c	50c	40c	50c	45c	1.45	85c
Leviathan	15c	....	20c	15c	50c	....	45c	35c
Leeds	1¼	....	1.15	1	....	....	1	....
Modoc	1.65	1¼	1½	1.90	1	70c	70c	50c
Manhattan	6¾	6¾	7	6¾	6	....	....	....
Meadow Valley	....	....	....	....	....	....	....	....
Mexican	13½	12	14½	12½	15½	14½	16½	14½
North Con Virginia	....	....	....	....	....	....	....	....
New York	40c	....	70c	55c	65c	60c	60c	50c
Northern Belle	8¾	8¾	11½	10½	12	11½	11	10½
New Coso	85c	80c	75c	40c	50c	25c	45c	40c
Navajo	20c	15c	50c	30c	40c	35c	40c	35c
Occidental	....	....	50c	....	50c	....	....	....
Ophir	49	46½	49½	43¾	48¾	47	53½	47½
Overman	13¾	12¾	13½	12	11½	10	11	8¾
Panther	....	....	....	....	....	....	....	....
Raymond & Ely	4	3½	4	3.85	3¾	3	3	....
Rock Island	....	....	....	....	....	....	....	....
Savage	11½	10¾	11½	11	12½	11½	11½	10¾
Seg Belcher	20	....	20	....	24	....	24	....
Sierra Nevada	4.30	4	5½	4.20	8¼	5½	7¾	6½
Silver Hill	1.40	1½	1.30	1.20	1.10	60c	1.05	70c
Succor	15c	....	15c	10c	1.15	....	1.05	1
Solid Silver	2½	....	2.80	2½	2.80	2½	2.65	....
Star	....	....	1½	1.35	1½	1.20	1.05	40c
Trojan	35c	30c	40c	25c	50c	45c	50c	35c
Union Con	5½	4.95	6	5	7¾	6½	7¾	6¾
Utah	8¾	6¾	8¾	8½	9¾	8½	10¾	9
Wells Fargo	40c	25c	35c	10c	15c	10c	15c	9c
Woodville	30c	....	30c	....	35c	25c	35c	30c
Yellow Jacket	8½	8	8¾	....	7¾	8¾	7¾	9

Sales at S. F. Stock Exchange.

Friday A. M., July 12.
350 Alta 6¾ 7¾
210 Alpha 10½ 10½
135 Andes 35 40c
310 Best & Belcher 14½ 15
945 Bullion 4.05 4.50
820 Belcher 4½ 4.20
200 Benton 1.90
1570 Con Virginia 9¾ 9¾
335 California 13½ 13½
10 Chollar 25½
360 Crown Point 6½
440 Caledonia 1.80
1270 Con Imperial 60 65c
50 Confidence 45
275 Exchequer 2.70
430 Gould & Curry 6¾ 6¾
165 Hale & Nor 6¾
540 Justice 4.05 4.10
4400 Julia 5½ 6½
170 Kentuck 2.95
1300 Leviathan 45 40c
780 Mexican 14 14½
100 New York 50c
510 Overman 8¾ 9
1160 Ophir 48 47½
2175 Sierra Nevada 7¾ 8
120 Savage 11¾ 11½
685 Silver Hill 80c
1 200 Succor 1
600 Trojan 50 45c
270 Union Con 6¾ 6¾
50 Utah 8¾
1900 Wells-Fargo 10 15c
550 Ward 1.40
50 Woodville 30c
450 Yellow Jacket 8¾ 8¾

AFTERNOON SESSION.

10 Alpha 10
475 Arcnta 40c
120 Best & Belcher 14½
350 Belcher 4.40 4.30
100 Bechtel 1.20
665 Bodie 5.90
875 Belmont 50c
480 Con Virginia 9¾ 9¾
20 Chollar 25½
530 California 13¾ 13¾
865 Crown Point 7¼
890 Con Imperial 60c
50 Day 50c
200 DeFrees 20c
250 Endowment 65 70c
200 El D South 50c
1000 Eureka Con 57
700 Golden Terra 1.60
1200 Grand Prize 3.20 3.30
740 Gila 50c
200 Golden Char 25c
100 Hale & Nor 7
250 Hillside 2½ 2.10
350 Hussey 15 20c
650 Indepen 1.60
6000 Julia 6½ 6¾
125 Justice 4.15
1540 Leonard 25c
1230 Mexican 14 14½
120 Manhattan 6½
1200 Modoc 70 65c
100 Martin White 4
50 Northern Belle 10½
650 Navajo 35c
100 New Coso 45
10 Ophir 47½
110 Raymond & Ely 3
200 Star 40c
520 Sierra Nevada 6½
100 Silver Prize 10c
50 Tiptop 1½

Saturday A. M., July 13.
115 Andes 35 40c
10 Alpha 10½
485 Alta 7¾ 7½
350 Bullion 3.95
800 Benton 2½ 2.15
375 Best & Belcher 14½
535 Belcher 4.35 4.40
50 Boyle 40c
400 Bodie 5¾
300 Belmont 45c
915 Con Virginia 9¾
1295 California 13¾
115 Chollar 26 25½
1080 Crown Point 6¾

1520 Con Imperial 60 65c
1 85 Caledonia 1.95
10 Confidence 4¼
250 DeFrees 20c
2 20 Gould & Curry 6¾
50 El Dorado S 15c
680 Falcon 10c
1200 Grand Prize 3.30
330 Gila 55 50c
100 Golden Chariot 30c
1 Hale & Curry 6¾
200 Hussey 20c
250 Hale & Nor 7
10 Hillside 1.95
280 Independent 1¼
285 Justice 4.30
3700 Julia 6¾
100 Keutuck 2.90
370 Leviathan 40c
1300 Leopard 1.10
2300 Mexican 14½
90 Manhattan 6¾
1150 Modoc 70 65c
480 New York 50c
65 Northern Belle 10½
1270 Ophir 48½
280 Overman 9¾
2100 Navajo 35 40c
190 Ophir 48 49
1200 Overman 9¾
1270 Sierra Nevada 7¾
100 Succor 1
80 Savage 11½
230 Silver Hill 90 80c
100 Silver Prize 20c
50 Solid Silver 2.85
150 Tiptop 1.30
205 Trojan 45 40c
840 Union Con 6¾
100 Utah 9¾
400 Wells-Fargo 10c
540 Yellow Jacket 8¾

Monday A. M., July 15.
580 Alta 7¾
60 Andes 40c
5 Bullion 4.15
310 Best & Belcher 14½
1770 Belcher 4¼
600 Benton 2½
100 Boyle 35c
950 California 12¾
100 Con Virginia 9¾
310 Crown Point 7
1000 Con Imperial 60c
200 Crown Point Rav 15c
440 Caledonia 1.90
100 Confidence 4¼
310 Excheuer 2.80
225 Gould & Curry 6¾
235 Grand Prize 3.30
30 Hale & Nor 6¾
375 Justice 4.40
1680 Julia 6¾
140 Kentuck 3
50 Leviathan 40c
1210 Mexican 15
50 New York 50c
1210 Ophir 49¾
240 Overman 9¾
50 Occidental 50c
110 Savage 11½
165 Sierra Nevada 6¾
350 Silver Hill 90c
170 Solid Silver 2.85
100 Succor 1
600 Trojan 45c
100 Utah 9¾
540 Union Con 6¾
500 Ward 1.45
50 Wells-Fargo 10c
150 Yellow Jacket 8¾

AFTERNOON SESSION.

365 Alpha 10½
50 Alta 7¾
600 Argenta 35 40c
210 Boulie 5¾
80 Best & Belcher 14½
60 Bechtel 1.20
2000 Belmont 50c
1000 Belle Isle 15c
50 Con Virginia 9¾
350 Crown Point 6¾
225 California 12 12½
300 Con Imperial 70 65c
1000 Coso Con 35 30c
70 Caledonia 2

850 DeFrees 20c
50 Day 45c
10 Eureka Con 56
760 Endowment 70 65c
425 Falcon 10c
325 Grand Prize 3.30
200 Gila 50c
700 Hussey 15 10c
325 Hillside 2
50 Hamburg 2.30
1280 Independent 1.60
100 Julia 4.55
520 Julia 6¾
1355 Leopard 1.35
750 Modoc 55 60c
2345 Mexican 15½
10 Manhattan 6¾
30 Northern Belle 11 10½
100 New Coso 40c
1550 Navajo 45 50c
900 Ophir 53 53½
330 Overman 10½
300 Star 1.10
2175 Sierra Nevada 7¾
175 Savage 11½
965 Tiptop 1 1.30
560 Union Con 7¾
200 Utah 9¾
200 Ward 1.55
80 Yellow Jacket 8

Tuesday A. M., July 16.
70 Alpha 10½
750 Alta 8¼
150 Andes 35 40c
90 Best & Belcher 14½
400 Belcher 4.40 4.35
350 Bullion 4.30 4.20
250 Benton 2
350 Boyle 45 40c
650 California 12½
290 Con Virginia 9¾
90 Confidence 4¼
900 Con Imperial 65 70c
435 Crown Point 7
430 Caledonia 2.15 2.20
45 Chollar 26
520 Crown Point 2.80
205 Could & Curry 7
320 Hale & Nor 7¼
230 Justice 5¼
750 Julia 6¾
150 Kentuck 3
380 Leviathan 40 35c
1715 Mexican 16½
1200 New York 55 60c
820 Ophir 53
440 Overman 10½
2025 Sierra Nevada 7¾
130 Savage 11½
300 Succor 1.05
1295 Silver Hill 1.05
720 Trojan 45 40c
1460 Union Con 7¾
70 Utah 10½
655 Ward 1.40
150 Woodville 30c
2200 Wells-Fargo 10c
300 Yellow Jacket 8¼

AFTERNOON SESSION.

70 Alta 7
100 Argenta 40c
650 Belmont 90c
200 Bechtel 1.60
730 Belcher 4.30
100 Best & Belcher 14½
250 Bullion 4.10
385 Bullion 4.10
705 Con Virginia 9¾
1320 California 12½
475 Crown Point 6¾
1000 Coso Con 25c
1550 DeFrees 20c
400 Day 45 50c
15 Eureka Con 55½
2200 Endowment 70 65c
450 Gila 50 55c
560 Gould & Curry 7
650 Grand Prize 3.30
1200 Hussey 15 20c
990 Independent 1.55
1235 Julia 6½
470 Justice 5
250 Leeds 55
1780 Leopard 1.30
630 Modoc 55 50c
210 Mexican 16
120 Martin White 4
200 Manhattan 6¾

SALES OF LAST WEEK AND THIS COMPARED

Thursday A.M., July 11.
110 Alpha 10½
210 Alta 8¼
130 Andes 35c
295 B & B 15 14½
1180 Bullion 4.20 4.15
670 Belcher 4.30 4.55
250 Benton 1.80
705 Bodie 6 5¾
940 Con Virginia 9½ 9¾
895 California 12¾
660 Caledonia 2 1.95
1080 Crown Point 6¾
250 Con Imperial 70c
430 Exchequer 2.80 2.85
425 Gould & Curry 6¾
440 Hale & Nor 7
300 Justice 4.05 4.10
980 Julia 5½
470 Kentuck 2.95
500 Leviathan 45c
405 Mexican 14¾
200 Mides 1¼
550 New York 50c
185 Overman 10½
880 Ophir 47¾
2625 Sierra Nevada 6¾
100 Succor 1
685 Savage 11½
965 Silver Hill 60 75c
50 Trojan 45c
760 Union Con 6¾
90 Utah 9½
900 Wells Fargo 10c
100 Woodville 30 35c
10 Ward 135
485 Yellow Jacket 8

AFTERCON SESSION.

350 Argenta 40c
50 Benton 2.55
435 Belmont 45 50c
300 Bechtel 1.01 1.20
235 Best & Belcher 15 15½
330 Bullion 4.05 4.10
235 Belcher 4.30 4.35
805 Con Virginia 9½
50 Chollar 26
295 Crown Point 6¾
1200 Coso Con 30c
445 California 13¾
800 DeFrees 20 25c
100 Day 50c
50 Eureka Con 55¾
1050 Endowment 65 70c
180 Exchequer 2.20
320 Grand Prize 3.20
75 Gila 55c
100 Golden Chariot 35c
255 Gould & Curry 6¾
400 Independent 1.60
1360 Julia 5½
190 Justice 4.20
1650 Leopard 80c
430 Modoc 50 70c
65 Manhattan 6¾
365 Mexican 14¼
250 New Coso 45 50c
200 Northern Belle 10½
1450 Navajo 35 40c
100 Phenix 2
50 Raymond & Ely 2
1100 Silver Prize 20c
125 Savage 11½
430 Star 1.10
845 Sierra Nevada 6¾
100 Silver King 15
355 Tiptop 1
500 Union Con 6¾
200 Yellow Jacket 8¼

2050 Navajo 50 60c
200 New Coso 40c
255 Ophir 52 52½
330 Overman 10¼
200 Phenix 2½
50 Rayda & Ely 3
50 Star 1.05
1500 Sierra Nevada 7¾
130 Savage 11½
200 Tiptop 1.70
605 Union Con 7¼
20 Utah 10½
1260 Ward 1.40
735 Yellow Jacket 8¼

Wed'sday A.M., July 17.
200 Alta 7½
500 Andes 35 40c
60 Alpha 10
170 Best & Belcher 14½
1605 Con Virginia 8¾
145 Crown Point 6¾
285 Julia 6¾
70 Kentuck 3.20
200 Leviathan 40c
1565 Mexican 16½
150 New York 55c
520 Ophir 52 52½
295 Overman 11¼
2375 Sierra Nevada 7¾
245 Savage 11½
450 Silver Hill 1.05
225 Succor 1
50 Trojan 45c
250 Ward 1.55
210 Bullion 3.85
1000 Belcher 3½
1050 Crown Point 6¾
1130 Con Virginia 8¾
1200 California 10 10½
1900 Coso Con 40 35c
60 Day 50c
450 DeFrees 20c
1000 Endowment 65 70c
10 Eureka Con 56
100 Falcon 10c
310 Grand Prize 3.60
300 Gila 50c
275 Could & Curry 6½
10 Hamburg 2½
150 Hillside 2
3095 Hussey 20 25c
270 Homestake 9
500 Independent 1.55
600 Julia 6¾
430 Justice 4.40
2230 Leopard 1.60
125 Manhattan 6¾
130 M White 4
1280 Modoc 50c
2555 Mexican 16½
650 New Coso 40c
50 Northern Belle 10½
1450 Savajo 60c
660 Ophir 53 53¾
160 Overman 10½
50 Phenix 3½
220 Savage 11¾
1995 Sierra Nevada 7¾
250 Silver Prize 10c
150 Tiptop 90c
765 Union Con 7¾
50 Utah 10½
110 Yellow Jacket 8½

Thursd'y A. M., July 18.
90 Alta 7¾
40 Alpha 10
150 Andes 35 40c
170 Best & Belcher 14½
1725 Bullion 3.80
370 Benton 1.90
1385 Belcher 3.95
600 Boyle 35c
255 Con Imperial 70c
1680 California 10½
1350 Con Virginia 8¾
75 Confidence 4¼
20 Chollar 25½
400 Crown Point Ravine 15c
480 Crown Point 6¾
800 Caledonia 2.20
235 Exchequer 2½
150 Gould & Curry 6½
295 Hale & Nor 6¾
650 Julia 6¾
675 Justice 4.80
110 Kentuck 3
1865 Mexican 16½
650 New York 55 60c
615 Ophir 52¾
145 Overman 10½
300 Succor 1.05
3340 Sierra Nevada 7¾
55 Savage 11½
1570 Silver Hill 70 75c
30 Seg Belcher 24
300 Trojan 35 40c
110 Utah 10¼
1380 Union Con 7¾
400 Ward 1.35
6800 Wells-Fargo 5c
240 Yellow Jacket 8¾

AFTERNOON SESSION.

1325 Alta 7¾
250 Argenta 50c
1230 Belmont 1.01
40 Best & Belcher 13½
1400 Bullion 4.05
1570 Bechtel 80 85c
1030 Bodie 7
1350 Coso Con 35 40c
360 Con Virginia 8¾
290 Crown Point 6¾
200 DeFrees 20c
170 Eureka Con 57
550 Endowment 70c
1575 Falcon 10c
325 Grand Prize 3.90
700 Golden Terra 1.90
400 Gould & Curry 6¾
2150 Hussey 40 70c
125 Hamburg 2
15 H & Norcross 7¾
130 Indepe dent 1.55
1780 Justice 6
615 Julia 6¾
1415 Leopard 1.05
700 Modoc 45 50c
100 Manhattan 6¾
120 Martin White 4
65 Mexican 17
210 Northern Belle 10½
1625 Navajo 60 50c
700 Ophir 54 55
100 Phenix 3¼
50 Raymond & Ely 3
400 Silver Prize 15 20c
10 Silver King 13
1425 Sierra Nevada 7¾
310 Savage 11¾
100 Tiptop 85c
50 Utah 10½
550 Union Con 7¼
600 Wells-Fargo 5c
140 Yellow Jacket 9

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS—STOCKS ON THE LISTS OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business
Alps S M Co	Nevada	13	1 00	May 21	July 25	Aug 21	O D Squire	331 Montgomery st
Belcher S M Co	Washoe	15	1 00	July 17	Aug 20	Sept 10	Jno Crockett	419 California st
Crown Point G & S M Co	Washoe	34	1 00	June 5	July 10	July 31	James Newlands	419 California st
Emigrant S M Co	California	2	50	May 28	July 1	July 22	B W Mudge	309 Montgomery st
Grand Prize M Co	Nevada	1	1 00	July 9	Aug 15	Sept 5	R H Brown	327 Pine st
Hussey Con G & S M Co	Nevada	5	15	June 21	July 24	Aug 14	R H Brown	327 Pine st
Justice M Co	Washoe	25	1 00	June 4	July 13	Aug 3	R E Kelly	419 California st
Leviathan M Co	Washoe	7	15	May 28	July 2	July 23	F E Luty	507 Montgomery st
Leopard M Co	Nevada	7	30	June 10	July 15	Aug 5	R H Brown	327 Pine st
McCracken Con M Co	Arizona	1	50	July 10	Aug 24	Sept 28	H Ang Whiting	211 Sansome st
Minnietta Belle S M Co	California	2	50	April 3	May 27	July 26	J T McGeoghegan	318 Pine st
Modoc Con M Co	California	5	50	July 17	Aug 26	Sept 16	J W Pew	310 Pine st
Ophir S M Co	Washoe	32	1 00	June 12	July 18	Aug 6	C L McCoy	419 California st
Silver Hill M Co	Washoe	3	50	July 18	Aug 22	Sept 12	W E Dean	419 California st
Silver Prize G & S M Co	Nevada	2	15	May 28	July 5	July 22	Chas K Clark	111½ Leidesdorff st
Succor M & M Co	Washoe	18	1 00	May 29	July 9	July 25	W H Watson	302 Montgomery st
Savage M Co	Washoe	34	1 00	June 7	July 10	July 30	E B Holmes	309 Montgomery st
Tiptop S M Co	Arizona	3	50	July 15	Aug 21	Sept 18	D F Verdenal	327 Pine st
Trojan M Co	Washoe	8	25	June 4	July 8	July 29	David Wilder	328 Montgomery st
Utah S M Co	Washoe	20	1 00	June 12	July 15	Aug 2	G C Pratt	309 Montgomery st
Young America M Co	Nevada	10	20	June 27	Aug 1	Aug 21	R H Brown	327 Pine st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Black Hawk G M Co	California	2	25	June 4	July 8	July 29	B S Kellogg	240 Montgomery st
Comanche M & M Co	California	2	50	May 28	July 9	July 30	W W Traylor	309 Montgomery st
El Tesoro S M Co Lower	California	5	5	May 29	July 13	Aug 3	W H Chickering	330 Pine st
Eagle S M & M Co	Nevada	7	15	June 24	July 9	Aug 19	R H Brown	327 Pine st
Excelsior S M Co	Nevada	2	25	July 16	Aug 20	Sept 6	Francis P Devine	304 Post st
Father De Smet G M Co	Dakota	1	1 00	June 17	July 22	Aug 19	J A Quinan	404 Montgomery st
Cover M & M Co	California	36	50	May 24	July 10	Aug 1	W O Wilson	402 Front st
Gold Mountain M Co	California	6	1 00	June 22	July 24	Aug 15	Charles Doore	410 Pine st
Golden Rule M Co	California	7	75	July 15	Aug 17	Sept 9	J B Russell	432 Montgomery st
Henrietta G M Co	California	3	10	June 7	Aug 12	Sept 6	F Klosterman	309 California st
Kimberly Coal Co	Alaska	1	1 00	May 29	July 1	July 22	W H Hooke	Pier 4 Stewart st
King M & S Co	Nevada	2	25	June 24	July 29	Aug 20	Chas K Clark	111½ Leidesdorff st
Moore's Flat B G M Co	California	7	25	June 14	July 19	Aug 12	J M Buffington	309 California st
Morgan M Co	California	4	50	June 1	July 8	July 29	John J Raphael	533 Kearny st
Murchie G & S M Co	California	1	20	July 2	Aug 7	Sept 6	S D Rogers	Merchants' Exchange
Nevada Gravel M Co	California	2	10	July 8	Aug 10	Aug 28	J Pentecost	511 California st
Oroville G M Co	California	1	10	June 14	July 27	Aug 22	Ph D Auh	417 California st
Orion M Co	California	2	70	July 9	Aug 9	Aug 24	P Conklin	28 Sansome st
Panther M Co	Nevada	1	8	June 21	Aug 19	Sept 10	J W Pew	310 Pine st
Summit M Co	California	4	05	July 17	Aug 19	Sept 10	J W Clark	318 Pine st
S F Sulphur M Co	Nevada	3	5	June 14	July 18	Aug 13	P M McLaren	310 Pine st
Tiger M Co	Arizona	1	30	July 16	Aug 26	Sept 20	W H Lent	309 Montgomery st
Telegraph C & S M Co	California	1	03	July 17	Aug 19	Sept 9	I T Milliken	528 California st
Watt B G M Co	California	2	10	June 10	July 16	Aug 6	R Wegener	414 California st

MEETINGS TO BE HELD.

Name of Company.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Dayton G & S M Co	Washoe	W E Dean	419 California st	Annual	July 25
Jenny A & Black Rock M Co		J W Clark	318 Pine st	Annual	July 24
New York Hill G M Co	California	F J Hermann	418 Kearny st	Special	July 29
North Con Virginia M Co	Washoe	W M Helman	309 California st	Special	July 22
South Comstock G & S M Co	Washoe	J M Buffington	309 California st	Annual	Aug 19
Vermont Con M Co		Edward F Stone	306 Pine st	Annual	Aug 1

LATEST DIVIDENDS—WITHIN THREE MONTHS

Name of Company.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
California M Co	Washoe	C P Gordon	Nevada Block	1 00	July 15
Con Virginia M Co	Washoe	A W Havens	Nevada Block	1 00	June 15
Eureka G M Co	California	R Wegener	414 California st	25	April 25
Mexican W & M Co	California	Geo P Thurston	315 California st	50	July 15
Eureka Con M Co	Nev	W W Traylor	309 Montgomery st	3 00	July 20
Empire M Co	California	David A Jennings	401 California st	25	June 15
Georgia S M Co	Washoe	R Wegener	414 California st	3	April 16
Independence M Co	Arizona	R H Brown		25	July 10
McMillen S M Co	Arizona	A C McMeans	Safe Deposit Bldg	50	June 20
Silver King M Co	Arizona	Wm H Boothe	320 California st	50	May 30
Standard G M Co	Cal	W Willis	309 Montgomery st	1 00	July 12

Pacific Board—Latest Sales.

Wed'sday A.M., July 17.
110 Alpha 10
50 Alta 7¾
90 Best & Belcher 14½ 14¾
160 Bullion 4
70 Belcher 4½
145 California 11
170 Crown Point 6¾
75 Caledonia 2.20 2.15
150 Con Imperial 68 65c
230 Con Virginia 8¾
140 Exchequer 2.80
300 Gould & Curry 6¾
460 Hale & Nor 6.85 6.90
590 Julia 6¾ 6.70
130 Justice 5 5.05
315 Mexican 16 16½
90 Ophir 52 52½
170 Overman 11
140 Savage 11½ 11¾
820 Sierra Nevada 7¾ 7.55
10 Silver Hill 1
200 Trojan 40 42c
515 Union Con 7¾ 7.55
30 Wells-Fargo 6c
200 Ward 1.55
70 Yellow Jacket 8¼

AFTERNOON SESSION.

100 Argenta 50c
700 Black Hawk 60c
50 Best & Belcher 14½ 14¾
600 Belcher 3.85 3.80
130 California 10½ 10¾
20 Con Virginia 8¾
170 Crown Point 6¾ 6¾
230 Con Imperial 67 66c
20 Caledonia 2.15
50 Endowment 62½
20 Eureka 57
300 Gould & Curry 6¾
350 Hale & Nor 6¾
590 Julia 6¾ 6.70
160 Julia 6¾
315 Mexican 16½ 16¾
20 Justice 4.85 5
50 Independent 1.60
525 Leopard 1.05
290 Mexican 16½ 16¾
210 Modoc 50c
10 Ophir 53¾
50 Overman 11¼
20 Raymond & Ely 3¾
50 Savage 11¾
250 Sierra Nevada 7¾ 7.90
1100 Trojan 43 41c
420 Union Con 7¾ 7¾
1000 Wells-Fargo 5c

California Board—Latest Sales.

Wed'sday A.M., July 17.
20 Alpha 10
50 Alta 7¾ 7.30
60 Bullion 4 4¼
30 Belcher 4½ 4.20
60 Best & Belcher 14½ 14¾
60 California 11½ 10¾
150 Caledonia 2.10
725 Coso Con 37c
50 Con Virginia 8¾ 8½
340 Con Imperial 68 65c
60 Crown Point 6¾ 6¾
30 Exchequer 2.85 2.80
20 Gould & Curry 6¾
30 Hale & Nor 6¾ 7
50 Justice 5 5¾
70 Julia 6¾ 6¾
400 Mint 19c
50 Mexican 15½ 16
60 Ophir 51½ 51
50 Sierra Nevada 7¾ 7¾

50 Savage 11½ 11¾
700 Silver Prize 20c
30 Union 7¾ 7¾
150 Ward 1.35 1.30
200 Wells-Fargo 6c
20 Yellow Jacket 8¾

AFTERNOON SESSION.

40 Alpha 10
70 Alta 7¾ 7¾
30 Alexander 6½
40 Best & Belcher 14½ 14¾
60 Belcher 4.05 4.35
270 Bullion 3.95 4.15
100 Caledonia 2.15
30 Golden Chariot 32½
30 Hale & Norcross 6¾ 6¾
50 Justice 5 5¾
30 Julia 6¾ 6¾
20 Kentuck 3 3.10
40 Mexican 15¾

Mining Share Market.

Business during the week at the several Boards has been moderately active with the slightly varying rates common for some months past, no advance or decline of any moment having occurred. The aggregate volume of sales has been notably small, the heaviest offerings having been of bonanza shares towards the close of the week and mostly on Eastern account, holders there having become alarmed at the break in these stocks caused by the non-payment of dividends by Con. Virginia and the fear that California will soon follow suit. Bonanza shares have in fact ceased to dominate the market, which has come to be controlled more by the Gold Hill, Julia, Ophir, Mexican and other north end stocks. As regards the future of the market we can only remark, as we have often done before, that no great animation or marked improvement in prices can reasonably be looked for till new ore bodies have been actually developed on the Comstock or satisfactory evidence furnished that such developments will soon be made. The reports of experts, the letters of superintendents and the opinions of the press, however favorable, will no longer suffice. Dealers of every class have had enough of them. Only ore developments will any longer suffice to keep life in the market or even stay it from further demoralization. Even in doctrinal matters faith without works is vain, in mining it has proved to be a delusion and a snare.

The Sutro tunnel having made connection with the Comstock lode, the manager and the mining companies are in treaty with a view to a settlement of the questious so long at issue between them. That these questions will meet with early adjustment seems probable, as all parties appear to be animated with a spirit of concession, causing these negotiations to be conducted with less acrimony than aforetime. Seeing the benefits likely to be derived from the use of the great adit, it may be expected that the mining companies will be more liberal and Mr. Sutro less exacting than during the earlier history of the enterprise, when both its completion and its practical utility were matters of doubt.

At no time since its inception has the business of mining for the precious metals on this coast been in a more healthful or promising condition than at present, and it only requires that this industry be now pursued in a prudent and economical way, to establish it on a permanent, profitable and every way satisfactory basis.

Significance in Bells and Whistles.

We read in the *Railway World* that a number of locomotive bells of various shapes and composition have recently been cast at the Altoona shops, from which a selection will soon be made for the purpose of finally establishing a marked distinction between the sounds produced, respectively, by the bells of freight and passenger engines. A corresponding distinction will also probably be made in the sounds produced by locomotive whistles. The success of this undertaking will manifestly render good service by enahling railway employees and the general public to distinguish the character of an approaching train while it is still at a considerable distance, and valuable infercnces may often he drawn from this iuformation. The period is probably near at haud when a bell of long, clear and pleasing reverberation, or other marked characteristics, will apprise all whom it may concern that a passenger train is approaching or passing, while a heavier, duller and more business-like sound will give notice of the movement of a freight train. In the bells already cast, marked variations of sound have been produced by slight changes in the composition, shape or distribution of metal. One bell, containing five parts of copper to one of tin, is in the key of A, and another bell of the same composition, but with slight variations in the shape or distribution of metal, is in the key of B flat.

METALS.

[WHOLESALE.

WEDNESDAY M., July 17, 1878.

IRON.—	
American Pig, ton	28 00 @30 00
Scotch Pig, ton	28 00 @30 00
White Pig, ton	28 00 @— —
Oregon Pig, ton	— — @— —
Refined Bar	2½@ 3
Horse Shoes, keg	5 00 @— —
Nail Rod	—@ 7
Norway, Oval	—@ 7
COPPER.	
Sheathing, lb	34 @ 35
Sheathing, Yellow	21 @ —
Sheathing, Old Yellow	12 @ —
Composition Nails	24 @—
Composition Bolts	24 @—
STEEL.—	
English Cast, lb	13 @ 14
Anderson & Woods, ordinary sizes	15 @ —
Drill	15 @ —
Flat Bar	14 @ 19
Plow Steel	8½@ 12½
TIN PLATES.—	
10x14 I C Charcoal	7 50 @ 8 50
Banca Tin	23 @— 24
Australian	17 @ 17½
ZINC.—	
By the Cask	9 @— —
Zinc, Sheet 7x3 ft, 7 to 10, lb	9 @— 10
7x3 ft, 11 to 14	10 @— —
8x4 ft, 8 to 10	11 @— —
8x4 ft, 11 to 10	11 @— —
NAILS.—	
Assorted sizes	3 15 @3 25
QUICKSILVER.—	
By the lb	43 @ 45

LEATHER.

[WHOLESALE.]

WEDNESDAY M., July 17, 1878.

Sole Leather, heavy, lb	22 @ 29
Light	20 @ 24
Jodot, 8 Kil., doz	48 00 @50 60
11 to 13 Kil	65 00 @76 00
14 to 19 Kil	80 00 @90 00
Second Choice, 11 to 16 Kil	55 00 @70 00
Cornellian, 12 to 16 Kil	57 00 @67 00
Females, 12 to 13 Kil	63 00 @67 00
14 to 16 Kil	71 00 @76 00
Simon Ulmo, Females, 12 to 13 Kil	58 00 @62 50
14 to 15 Kil	66 00 @70 00
16 to 17 Kil	72 00 @74 00
Simon, 18 Kil	61 00 @63 00
20 Kil	65 00 @67 00
24 Kil	72 00 @74 00
Robert Calf, 7 and 9 Kil	35 00 @40 00
Kips, French, lb	1 00 @ 1 35
Cal. doz	40 00 @60 00
French Sheep, all colors	8 00 @15 00
Eastern Calf for Backs, lb	1 00 @ 1 25
Sheep Roans for Topping, all colors, doz	9 00 @13 00
For Linings	5 50 @10 5
Cal. Russet Sheep Linings	1 75 @ 4 50
Boot Legs, French Calf, pair	4 00 @— —
Good French Calf	4 00 @ 4 75
Best Jodot Calf	5 00 @ 5 25
Leather, Harness, lb	35 @ 38
Fair Bridle, doz	48 00 @72 00
Skirting, lb	33 @ 37
Welt, doz	30 00 @50 00
Buff, ft	18 @ 20
Wax Side	17 @ 18

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & Co.]

SAN FRANCISCO, July 10, 3 P. M

LEGAL TENDERS in S. F., 11 A.M., 99⅞@99¾. SILVER, 2¦@2 GOLD in New York, 100¾.

GOLD BARS, 890@910. SILVER BARS, 8@15 ₱ cent. dis count.

EXCHANGE on New York, ½%; on London bankers, 49@ 49¼. Commercial, 50; Paris, five francs ₱ dollar; Mexican dollars, 94@95.

LONDON Consols 95⅝; Bonds, 108¼.

QUICKSILVER In S. F., by the flask, ₱ lb, 41@42c.

Signal Service Meteorological Report.

Week Ending July 16, 1878.

HIGHEST AND LOWEST BAROMETER.

July 10	July 11	July 12	July 13	July 14	July 15	July 16
20.97	29.08	30.01	30.00	20.06	29.88	20.95
20.88	29.93	29.95	29.95	29.87	20.83	29.87

MINIMUM AND MAXIMUM THERMOMETER.

62	62	73	66.5	63	62	62
51	53.5	54	57	54	54	52

MEAN DAILY HUMIDITY.

86	85	63	72	76	71	82

PREVAILING WIND.

W	W	W	SW	SW	SW	W

WIND—MILES TRAVELED.

471	378	246	213	328	283	395

STATE OF WEATHER.

Fair.	Fair.	Clear.	Clear.	Clear.	Clear.	Fair.

RAINFALL IN TWENTY-FOUR HOURS.

Total rain during the season, from July 1, 1877. —— in.

Woodward's Gardens were never more attractive than at present. Besides three lions already mentioned, six monster living alligators, several iguanas and a boa-constrictor have just been added. New stars are constantly engaged for the Pavilion exercises. Rates of admission as usual.

IONE VALLEY, Cal., January 20, 1878.

MESSRS. DEWEY & CO.—*Gentlemen*:—I received my patent last night, and was glad to find that you were so prompt in the matter. I am pleased to give you the credit due you for the faithful and honorable manner in which you have discharged your duty in getting my patent. I shall hereafter recommend you to the public as having discharged your duty with honor. Yours, etc., W. W. CARLILE.

EXAMINE the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.94. Lewis C. Grover, President; L. Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

MR. W. J. WOODLEY, who took out a Canadian Patent some four years ago, is requested to call at the MINING AND SCIENTIFIC PRESS PATENT AGENCY OFFICE. Business of importance.

MODEL MAKER AND MACHINIST.—I. A. Heald, No 514 Commercial St., San Francisco, (fourth floor).

BUSINESS LETTERS should be addressed to the firm. Individual members are sometimes absent.

WANTED.

Good Live Business Men to sell the Excelsior Improved Letter Copying Book. No Press, Brush or Water used, copies instantly. Agents Outfit, $2.50. Agents make from $10 to $15 per day. Address, EXCELSIOR MANUFACTURING CO., 47 La Salle street, Chicago, Ill. Incorporated Feb, 16th, 1877. Capital, $1,000,000. Exclusive Territory given.

To Mining Secretaries.

An amendment to Section 336 of the California Code, taking effect July 1st, 1874, provides that in addition to the regular publication, daily or weekly, of the assessment and sale notices as heretofore,

PERSONAL NOTICE

Must be served as provided in the following quotation from the law:

"The notice must be personally served upon each stockholder, or in lieu of personal service, must be sen through the mail, addressed to each stockholder at his place of residence, if known, and if not known, at the place where he principal office of the Corporation is situated."

The above refers to the ASSESSMENT NOTICE only. Advertisers in the MINING AND SCIENTIFIC PRESS will be furnished with copies of assessment notices printed on slips suitable for serving personal notice under this law at short notice.

DEWEY & CO., Publishere.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommed the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the eame.

Excelsior Silver Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Potosi District, Lincoln County, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the Sixteenth day of July, 1878, an assessment of Twenty five Cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary at the office of the Company, 304 Post street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 20th day of August, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, the Sixth day of September, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

FRANCIS P. DEVINE, Sec'y.

Office, 304 Post street, San Francisco, Cal.

Gover Mining and Milling Company —

Location of principal place of business, Room No. 8, 402 Front Street, San Francisco, California. Location of mine, Amador County, near Drytown, California.

Notice.—There are delinquent upon the following described stock on account of Assessment No. 36, levied on the 24th day of May, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Knox, Joseph A	567	100	$50 00
Knox, Joseph A	571	50	25 00
Knox, Joseph A	572	50	25 00
Knox, Joseph A	573	50	25 00
Knox, Joseph A	727	30	18 50
Stevens, Mrs H A	192	50	25 00

And in accordance with law and an order of the Board of Directors, made on the twenty-fourth (24th) day of May, 1878, so many shares of each parcel of such stock as may be necessary will be sold at public auction, at the office of the Gover Mining and Milling Company, Thursnay, the first day of August, 1878, at the hour of one o'clock P. M. of such day, to pay delinquent assessments thereon, together with costs of advertising and expenses of sale.

W. O. WILSON, Sec'y.

Office, Room No. 8, No. 402 Front Street, San Francisco, California.

Mariposa Land & Mining Company of California.—Location of principal place of business, San Francisco, California. Location of works, Mariposa County, California.

Notice is hereby given that at a meeting of the Board of Directors, held on the Tenth day of July, 1878, an assessment (No. 14,) of One Dollar per share was levied upon the capital stock of the corporation, payable immediately in U. S. currency, to the Secretary, at the office of the company, Room 33, Nevada Block, No 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary, at the office No. 9 Nassau street, New York City, N. Y.

Any stock upon which this assessment shall remain unpaid on the Twelfth day of August, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the Ninth day of September, 1878, to pay the delinquent assessment, together with costs of advertising and the expenses of sale. By order of the Board of Directors.

LEANDER LEAVITT, Sec'y.

Office, Room 33, Nevada Block, 309 Montgomery street, San Francisco, Cal.

Orion Mining Company.—Location of Principal Place of business, San Francisco, California. Location of Works, Iowa Hill, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 9th day of July, 1878, an assessment, No. 2, of 70 cents per share was levied upon the capital stock of the Corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, No. 28 Sansome Street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 9th day of August, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Saturday, the 24th day of August, 1878, to pay the delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors.

P. CONKLIN, Sec'y.

Office, No. 28 Sansome Street (up-stairs), San Francisco, Cal.

Seaton Mining Company.—Location of principal place of business, San Francisco, Cal. Location of works, Drytown Mining District, Amador County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the twenty-sixth day of June, 1878, an assessment, (No. 11,) of seventy-five (875) dollars per share was levied upon the capital stock of the corporation, payable immediately in U. S gold coin, to the Secretary, at the office of the Company, Room No. 58, Nevada Block, northwest corner Pine and Montgomery Streets, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the thirtieth day of July, 1878, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the twenty-first day of August, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

JOEL F. LIGHTNER, Sec'y.

Office, Room No. 58, Nevada Block, northwest corner of Pine and Montgomery Streets, San Francisco, Cal.

Office South Comstock Gold and Silver Mining Company.—Notice.—The annual meeting of the stockholders of the South Comstock Gold and Silver Mining Company, for the election of Trustees and the transaction of such other business as may be presented, will be held on Monday, the 19th day of August, 1878, at two o'clock P. M. of that day, at the office of the Company.

Transfer books will be closed on Saturday, August 12th, 1878, at the hour of 12 M. of that day.

J. M. BUFFINGTON, Secretary.

Office—Rooms 3 and 4, second floor, No. 309 California street, over Aetna Insurance office.

Summit Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the Seventeenth day of July, A. D., 1878, an assessment, (No. 4,) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of said Company.

Any stock upon which this assessment shall remain unpaid on the 19th day of August, A. D., 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the Tenth day of September, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors. J. W. CLARK, Sec'y.

Office, No. 318 Pine Street, San Francisco, Cal.

Telegraph Copper and Silver Mining Company.—Principal place of business, City and County of San Francisco, California. Location of works, Gopher Mining District, Calaveras County, State of California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 17th day of July, 1878, an assessment of three (3) cents per share was levied upon the capital stock of the Corporation, payable immediately in United States gold coin, to the Secretary, at his office, Room 2, 528 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 19th day of August, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the Ninth (9th) day of September, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

I. T. MILLIKEN, Sec'y.

Office, Room 2, 528 California street, San Francisco, Cal.

Office of Union Consolidated Silver Mining Company, San Francisco, June 15th, 1878.—The annual meeting of the stockholders of the Union Consolidated Silver Mining Co., for the election of Trustees for the ensuing year, and for the transaction of such other business as may properly come before it, will be held at their office, 309 California Street, Rooms 3 and 4, second floor, over Aetna Insurance office, San Francisco, California, on Monday, July 15th, 1878, at two o'clock P. M. Transfer books will be closed Friday, July 5th, 1878, at three o'clock P. M. J. M. BUFFINGTON, Sec'y.

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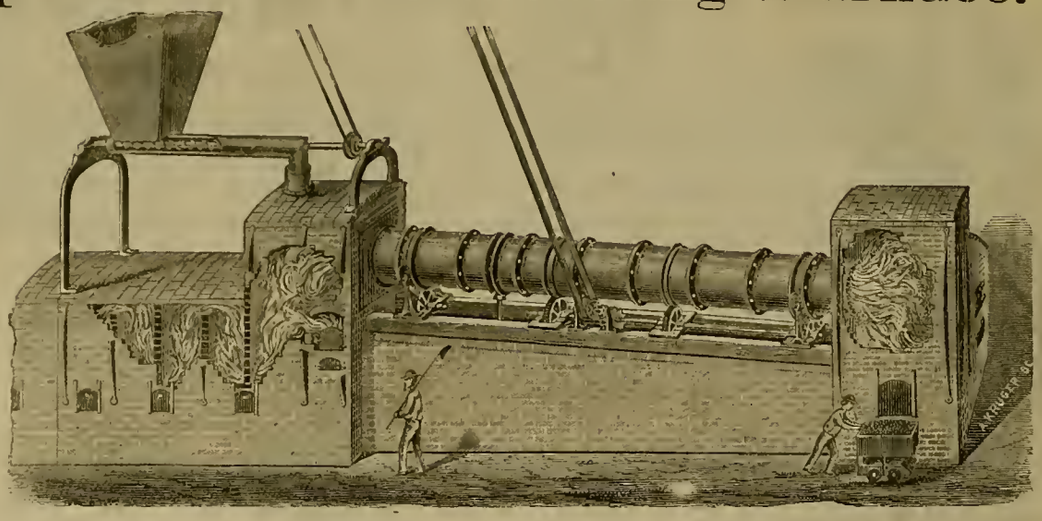

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The undersigned, with Mr. John Howell, are the sole owners of the Howell patent, and they have perfected arrangements with him, and also with Mr. J. M. Thompson, who is owner of an interest in the White patents, and as such is possessed of as full and perfect rights and powers under the same as the patentee himself, by which they have acquired the exclusive right to manufacture these furnaces for the Pacific States and Territories. We hereby **caution** all parties against purchasing the same from any others but ourselves, or the said Howell or Thompson, as we shall prosecute all parties infringing upon the same. For particulars, price and terms, address

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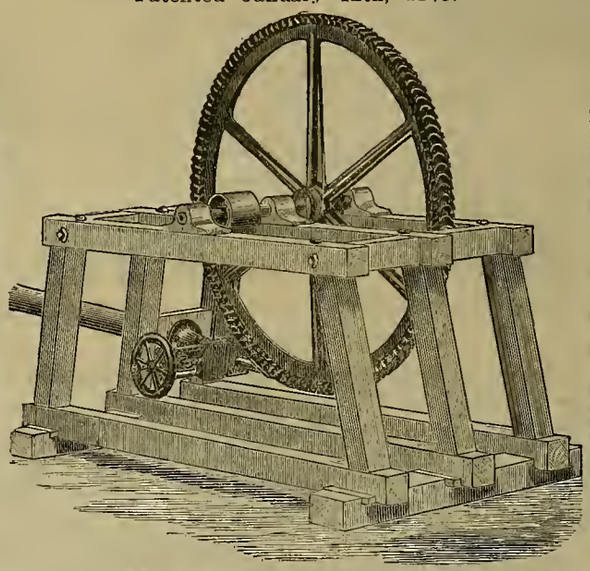

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1-Four and one-half foot wheel, running Original Co.'s Mill, Amador county, Cal.; 40 stamps, one pan, one rock-breaker. J. R. Johns, Supt.
1-Four-foot wheel, running Gover Mining Co.'s new Mill, Amador county, Cal.; 20 stamps.
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1-Six-foot wheel, running Talisman Mining Co's Mill, Amador county, Cal.; ten stamps.
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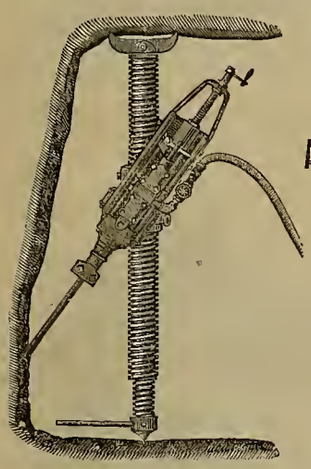

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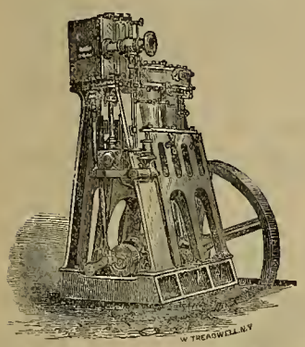

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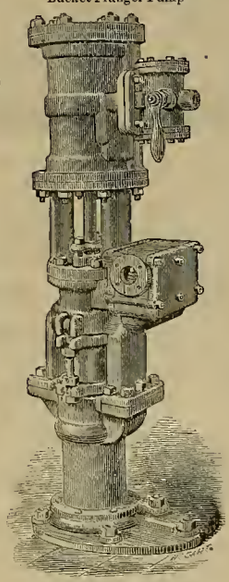

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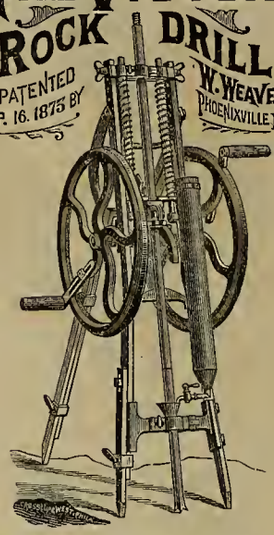

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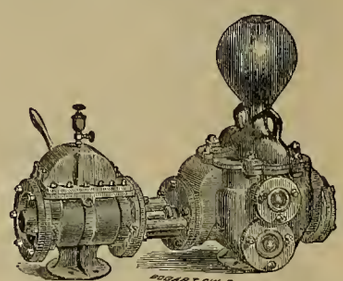

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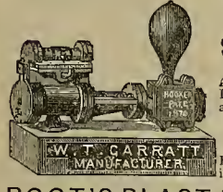

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Publishers.

SAN FRANCISCO, SATURDAY, JULY 27, 1878.

VOLUME XXXVII Number 4.

Quantitative Determination of "Slimes" in Water.

We notico in a late numher of the *Comtes rendus*, a simple and easily applicable method of determining tho amount of silt or mud, or what our mill men call "slimes" in water. It is frequently a matter of some interest to them to determine with ease and accuracy the amount of "slime" which is contained in the water flowing from their settlers. This is so easily and quickly determinod hy the simple apparatus, that we think a short description of it is worth the attention of mill men, and also of such others as are interested in hydraulic engineering.

The instrument is called a Pelometer, "slime measnrer;" it is composed of a two plane surfaces of glass strips about six inches long and about an inch wide. These strips are arranged in the form of a ridge, at an angle of about six degrees. The open sides are closed hy two parallel plates of hrass or tin. Along one of the sides of the glass plates is a graduation, which may be either in centimeters or in inches.

Previous to a nse of the instrument, it is necessary that onc arrange a numher of titrated tests for the purpose of comparison. These are contained in tuhes made of glass or of metal. They are ahout an inch long and one-third of an inch in internal diameter. They are closed by parallel glass plates which should he cut in circles, so as to enter the tuhes at either end, and press tightly against a cork which is perforated so as to enable one to see through the tuhe. There is an aperture on one side which allows the tuhes to be filled and emptied. Now when one fills the Pelometer with the water to he tested, and holds the instrument in a vertical position, he can, by direct comparison with the tuhes just mentioned, heginning with the thin layers at the bottom and going upwards, take as many readings of the thickness of the horizontal layers as he has comparison tubes at hand. A previously calculated tahle gives for these readings the contents of solid "slime" or silt contained in one liter, one gallon, or one cuhic foot, according to the unit used. In determining the coefficient of the instrument it is necessary to take the mean of many readings.

Instead of the comparison tuhes one may use a piece of white porcelain, or of white paper, upon which are drawn two black lines, 2 m.m. thick and 1 m.m. apart. (1 m.m. = ahout 1-25 inch). These ruled lines are to he moved up the glass sides of the instrumont, until on looking through it from the opposite a position is found where the horizontal layer of water and "slime" is thick enough to just hide the white space hetween the lines. From a special table, easily constructed, one finds the weight of "slime" contained in each liter, quart or other unit. In this method the light which makes the lines visihle has, of course, to make two passages through the layer of liquid before it reaches the end.

If the amount of "slime" contained in the water is too small for the Pelometer to be of use, one can then avail himself of a very simple arrangement, which consists of a cylinder at whose hottom is placed the ruled lines; the sides of the cylinder are graduated, and it is provided with a cock for letting out the water at the hottom. This is filled with the water to he examined and then hy means of the cock at the hottom the wator is allowed to slowly escape until the white space hetween the lines is just harely visible. This method reminds one of the old way of determining the transparency of the sea by lowering a white plate by means of a line until it was barely visihle.

It is necessary to remark ahout this method that of course it does not refer to silt, which is coarse enough to settle during the time of an observation, but to those impalpable powders of which so many tons arc discharged from our pan mills and which are such a source of annoyance and loss. It is also to be noticed that the source of light should he exactly the same and at the same distance in each case. For the most exact work tests should he made in a darkened room, with a candle at a fixed distance. Such details arc, however, nearly self-evident. The iustrument is so simple and easy of manufacture aud use that any intelligent person can make aud use it, and as there is, we believe, no patent on it there is no reason why the Pelometer should not be in use all over the State.

There is no doubt that the great production of "slimes" is the chief drawhack to our system of treating silver ores by the stamp battery and pan amalgamator. The amount of capital that lies useless, sometimes lost entirely in these beds, is something simply enormous, and at the same time there has heen steam power and wear and tear of machinery wasted in producing them. If this little instrument calls the attention of mill men to the amount of money which slips through their fingers day by day, it will he worth the trouhle it takes to make it.

The East River Bridge.

We illustrate herewith the East River bridge, counecting New York city with Brooklyn, as it will appear when completed. The labor on this bridge was commenced, on the Brooklyn side, on January 3d, 1870, upon the plans of the chief engineer, John A. Roehling, of Trenton, N. J. This gentleman, when he undertook this work, had already huilt two of the finest suspension bridges in the world—at Niagara Falls and at Cincinnati—and now he has added to his laurels another "wonderful monumeut of the engineering skill of the age." Soon after the completion of the plans Mr. Roebling died, and the work has been carried on by his son.

This bridge, crossing so great a water-thoroughfare as the East river and joining cities of such large traffic as New York and Brooklyn, required to he made high above the water so as not to interfere with navigation, and at the same time very strong, so as to bear the immense vertical strain which will inevitahly come upon it, as well as the great lateral strain arising from its hight and length of span. It will be seen from the following description how Mr. Roehling's plans are calculated to produce a hridge that will do the work assigned to it, and yet offer no impediment of any kind to river travel.

In the first place, there are no obstructions whatever in the river, the only two piers used in the bridge being allowed to stand not even in the water near the shore, but high and dry on the shores themselves. These piers are 280 feet bigh, reaching above the tallest spire of New York. The upper 150 feet of this pier is for the attachmeut of the cahles, the floor of the hridge heing only 130 feet high. There are two archcs in each pier, affording entrance to the hridge. Each archway is 32 feet wide, giving ample room for a railroad track, a carriage-way and a sidewalk. Each arch is 120 feet ahove the floor. Each pier contains 70,000 tons of granite. They were built by sinking huge iron-shod timber caissons, hollow and water-tight, to permit the laborers to excavate the foundations. On the Brooklyn side no suitahle rock for a fonudation was found at a reasonahle depth, and so the caisson remains with the pier upon it. The distance between the piers is 1,620 feet.

The bridge proper will weigh 3,600 tons, or adding the weight of the maximum number of foot passengers, railway trains, carriages, etc., 5,000 tons. It is supported partly hy four large cables, made of parallel steel wire into a bundle nearly one foot thick. The cahles are anchored in solid walls on the New York side, 1,337 feet from the pier, on the Brooklyn side, 837 feet. This gives the total span of the suspension bridge proper 3,794 feet. Beyond these anchoring points on either side the bridge is approached over arched masonry so high as not to interfere with the houses and streets. The cahles are so arranged as to afford resistance to horizoutal as well as vertical strain, thus preventing danger from gales. But not all of the vertical strain comes upon the cahles; it is shared with a numher of straight stays extending from the top of each pier toward the bottom of the hridge, so that, to quote from Mr. Roehling, "if the cables were removed, the stays would hold the hridge—only it would sag in the middle."

The hridge with its approaches extends far into New York city aud Brooklyn, having an easy grade on the outside of the piers, and affording a very safe and in every way convenient suhstitute for the old ferry hoats.

EAST RIVER BRIDGE, CONNECTING NEW YORK AND BROOKLYN.

THE MECHANICS' FAIR.—The Thirteenth Industrial Exhihition, under the auspices of the Mechanics' Institute, will open in this city on August 13th. This Fair is always the hest one on the Coast, and the manager this year promises many new features. As the exhihition each year has eclipsed former ones in attractions, the coming one will, without douht, he of greater interest than those preceding it. The space has nearly all been applied for already, so that the success of the exhibition is insured. Dewey & Co., proprietors of this journal, have been granted exclusive advertising and printing privileges, and will publish the ninth volume of the *Mechanics' Fair Daily*, a journal devoted to the interests of the Thirtecnth Industrial Exhibition. It will he of large size, printed and circulated FREE in the Pavilion, and contain the day and evening programme, a list of exhibits, and official bulletin of the Institute. Its columns will embrace a large variety of important industrial and scientific information, illustrations and well-written descriptions of the general features and most deserving and novel exhibits in the Fair.

THE gross earnings of the Central Pacific railroad for the six months ending June 30th compare with last year's earnings as follows: 1878, $7,839,537.03; 1877, $7,463,138.64. Increase, for 1878, $373,398.89.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—EDS

Letter from Bodie.

EDITORS PRESS:—Possibly a revisit to Bodie, after three months' absence, including a trip over the new route via Sonora, may have afforded a few notes of an acceptable nature to the readers of the PRESS. Leaving San Francisco by the Stockton boat, July 3d, at 5 P. M., the passenger for Bodie connects with the train for Milton, at 8 A. M. next day; 28 miles miles east by rail, and the regular stage for Sonora, 36 miles farther, passing through Copperopolis, brings the passenger in connection with the new tri-weekly stage line to Bodie, 120 miles farther—in all 156 miles of stage travel, and a cut-off of about 175 miles in distance over the old Carson route. There is also a saving of $6 in fare. The new road over the Sierras is really an old one, built at great expense by Calaveras, Tuolumne and Mono counties, commencing at Sonora and ending at the Big Meadows; a fine, grassy valley on the East Walker river, and now possessing the county seat of Mono, at Bridgeport, 20 miles distant from here. For many miles this side of Sonora, the road is cut through a dense forest of pines, cedar, etc., the trees being very large, requiring great labor and expense in their extraction, roots and all, and removal. Where timber is thin, the granite cropping on the surface is great, and excavation necessary by means of powder, extensive and costly.

This road was finished ten years ago, yet through these years it has remained in a passable condition, indicative of the selection of route, with respect to freshets, water courses, snowslides, etc. The grades are uniformly even and comparatively easy of ascent. The scenery is continuously interesting, rising toward the main summit into grandeur only secondary to the Yosemite. From Hayes' station (a most romantic spot indeed), the distance to the summit is 12 miles, and the elevation attained is the difference between 6,100 and 9,800 feet, or 3,700 feet. The fall is a steady but not difficult one, and one is constantly interested in gazing above and below and in listening to the roaring torrents of the headwaters of the Stanislaus. There are several waterfalls and cascades of great hight and beauty. It may be something of a question as to the ability of the stage company to compete with the railroad route across the Sierras during the entire winter, but be that as it may, the enterprise is one of great importance to a large section of California and Nevada, both as regards passengers and freight. Already the stage owners express themselves as more than pleased with the prospects. In the matter of grain and fruit, the road must afford an extensive market to the people of Tuolumne, etc. It will serve to render a residence in Bodie and elsewhere over here much more pleasant, as the more avenues to and from, the more content the people will be with their isolated lot, and the development of mines must be reduced in cost perceptibly. In returning to San Francisco from Bodie, the connections by this route are an improvement on those in coming this way, as the stages can run to connect exactly with the overland train at Stockton. All in all, the Pioneer stage line, operating between Sonora and Bodie, may be set down as a fixture and one of the important institutions of California. In due time the mails and express will be carried that way as well as by Carson.

The revival of affairs in Bodie and Aurora is lending new life to the country all round about. The timber and hay interests pertaining to the mountains around all of the Big Meadows are great and growing; new roads are building and things in general are taking on the most substantial business airs. The town of Bodie has grown one-third since the snow melted, and the number of mills and hoisting works is in a fair way to be doubled ere the next snow-fall of consequence. The rich developments in several of the leading mines impart increasing confidence in the entire district, and it only remains for the Real Del Monte company, at Aurora, to strike it several hundred feet deep in proportion as Esmeralda produced on the surface, to inaugurate a line of mining activity here, of at least equal importance with the Wasboe in its best days. The indications could not be more favorable than at present, but we'll see what we'll see. During the past three months, Bodie and Aurora have been connected with the great world by telegraph and their newspaper facilities increased accordingly. This makes it more pleasant to be here. JOS. WASSON.

Bodie, July 12th, 1878.

NORTHERN PACIFIC CONNECTIONS.—Mr. C. B. Wright, President of the Northern Pacific Railroad Company, has authorized a survey for a railroad from the line of its road near Fargo, D. T., down the Red River of the North to the Canadian line, a distance of 150 miles, for the purpose of opening connections with the Canada Pacific railroad, which is now being constructed to the boundary line.

Alaska.

From an article on Alaska, prepared by Dr. Jackson, and published in the Chicago *Ledger*, we compile the following: As this is the latest of our territorial acquisitions, so it is the least known. Indeed, the interior regions of the country, away from the Yukon river, are as little known as Africa itself. The word Al-ak-shak means "the great land," and correctly describes the country. It is great territorially. From its eastern boundary to the island of Atton, the extreme western limit, is 2,200 miles in an air line. According to Prof. Guyott, this island is as far west of San Francisco as Maine is east. Consequently between the extreme east and west of the United States, San Francisco is the middle city.

The coast lines of Alaska, following up and down the bays and inlets, are about 25,000 miles, or once around the globe. Its total area is about as large as all the United States that lies east of the Mississippi river and north of the Carolinas and Alahama. Its great river, the Yukon, is over 2,000 miles long, and navigable for steamers from 1,500 to 1,800 miles. With a varying width from one to five miles along its course, it is 70 miles across the delta of its five mouths.

Alaska has the greatest mountain peak on the continent, Mount St. Elias, 19,500 feet high. It is the great island region of the United States, containing an aggregate area of over 31,000 square miles, equal to the size of some of our important states. It contains 64 volcanoes, ten of which send forth fire and melted rock. The seal fisheries make it a valnable possession; then the furs of the fox, martin, mink, beaver, otter and other animals make it worth having. Its fisheries alone are worth all it cost. The cod, salmon, halibut and herring being there in inexhaustible quantities. Its mineral resources will some day attract a large population and prove to the world that Alaska was no barren purchase.

The great surprise in connection with Alaska is the mild winter climate of the northern Pacific coast. The great Japan current of the Pacific that gives Oregon and California their delightful winter climate, first strikes the shores of our North American continent at the western end of the Aleutian islands and imparts its greater heat to the Alaska coast. Consequently, while in a higher northern latitude it yet has a warmer climate than New York city.

MINERAL PAINT DEPOSITS.—Mr. C. H. Sweetnam displayed in our sanctum this morning, a lump of black mineral deposit, much resembling asphaltum. It had been subjected, evidently, to the action of the ocean for many years and was so decomposed as to be readily crumbled or cut with a knife. Mr. Sweetnam informs us that this forms an excellent body paint when ground and properly mixed. If compounded with a little Prussian blue, it becomes a beautiful jet black, suitable for carriage painting, and equally as good as that which is sold for 55 cents a pound. Ledges of similar deposits, and representing all the fundamental colors except two, were first discovered on the beach near the old salt works. The brighter colors were first located by the discoverers to the neglect of the black, which was much the more valuable. When Mr. Sweetnam went to the spot he lost no time in placing his claim on the black ledge. He says there is enough of the mineral in sight to load a schooner, and he is confident that he has a paint bonanza in it. Mr. Guillroy, a well-known carriage painter of our city, has acquired a fourth interest in one of the ledges at an expense of several hundred dollars. He has prepared the material for experiment and is highly pleased with its results. We hope that the new lead may prove everything that is claimed for it, and that several rich men and another rich industry may be established in our community.—*Los Angeles Express.*

THE VERRAZANO DISCOVERIES.—The leading article in the August number of Barnes' Magazine of American history, is from the pen of Mr. B. F. de Costa, on the mooted question of the Verrazano discoveries. In previous essays the magazine has presented the writer's views upon the "Voyage of the Florentine," and the authenticity of the letter attributed to him; the present treats of his map, the North American section of which is reproduced now with the coast lines for the first time, as an illustration to the text. Able authorities have considered Verrazano the map-maker as a myth, but the light now thrown upon him dispels all doubt of his existence. A copy of the map is known to have been presented to Henry VIII. These interesting contributions to the history of early American discovery will close with a final article on the "Globe of Verrazano," one of the rarest treasures of the New York Historical Society.

A GYPSUM FIND.—A gypsum deposit has been discovered, says a Los Angeles paper, ten miles from here, and Mr. Bryd brought in a wagon load a day or two since, and it will be tested on some of our alkali lands. Dr. Wolfe has a mill for grinding the gypsum. Mr. Sesler, of this place, imported a quantity of gypsum from San Francisco, a short time since, for use on his lands, and we understand the experment has been highly satisfactory.

Lead Works Needed in Utah.

The low price at which lead is now selling has caused the mine owners and smelters of Utah to take into consideration such measures as seem best calculated to afford relief to this interest. As they cannot hope for any reduction of freights to Eastern markets, they have concluded, says the Salt Lake *Tribune*, to seek relief by building up such industries at home as would absorb this mineral. Fuel for smelting is now brought at great cost from Pennsylvania. There being, however, in San Pete valley plenty of coal that makes good coke, it only becomes necessary to build a railroad connecting these deposits with the lead mines to insure cheap supplies of fuel from that source. This done the production of lead would be greatly increased, causing further depreciation in the price of that article unless means were provided for utilizing it at home, to which end refining works would have to be erected, to be supplemented by others for the manufacture of sheet lead and shot, litharge, red and white lead, and lead pipes for supplying the domestic market. The manufacture of white lead alone would, it is contended, absorb a great portion of the base metal produced, which in turn would necessitate the manufacture of sulphuric acid and linseed oil, the former of which could be made very cheaply in Utah, because of the great abundance of sulphur near by. The Dutch system of making white lead could, it is thought, be inaugurated at a very trifling outlay of capital, but preceding it sheet lead works would be required, as rolling the metal out in thin sheets is an indispensable preparation. But the metal thus prepared has many uses, the product of the Utah mines being now made into sheets in England and supplied to China for tea packing and other purposes. The manufacture of shot, either by the tower or rotary table system, could and ought to be carried on there as it is in this city, and be made to pay. To accomplish all this would require a good deal of money, but the requisite capital ought to be easily commanded where such good and almost certain returns would seem to await investment.

The Great Mexican Railway.

The building of the great railway from Vera Cruz to the City of Mexico was a colossal feat in constructive engineering. The intervening country was superbly beautiful, and crossed at right angles by the great Sierra range, through which is one continued panorama of beauty.

The railway is 267½ miles long, has 18 lengthy tunnels, and many fine iron bridges. It cost 40,000,000 Mexican dollars, and is undoubtedly the finest constructed railway on the American continent.

The first 40 miles is straight, and on a gentle grade, rising slowly from the sea; then for a distance of 75 miles it crosses over three distinct ranges of mountains, each of which stands up like a colossal stair-case. This section is very crooked. Winding around the numerous canyons in the mountain, the train runs for many miles over the brink of precipices, almost perpendicular, 3,000 feet. The grades are 400 feet per mile; and the ordinary American locomotive finds the greatest difficulty in crossing unincumbered. But the company use an English engine—known as the Fairlie patent—which carries 10 loaded cars with ease. It is a double engine, or two engines connected, with their heads turned together, and 30-inch drivers.

At the west end of this division, which is at Boca del Monte, the road bed reaches its greatest elevation, which is 13,000 feet above the sea at Vera Cruz; from there it gradually declines through a continuation of broad valleys to the City of Mexico. These valleys are from three to 20 miles wide, entirely hemmed in by the tall mountains. Every foot is irrigated, and in a thorough state of cultivation.

ENGLISH ARTISANS AT PARIS.—We read that the movement set on foot by the Prince of Wales for sending artisan reporters to the Paris exhibition, is attracting considerable attention in the various manufacturing districts of the kingdom. Birmingham, Bristol and Edinburg have already reported to the committee sitting at the Society of Arts that active steps are being taken to promote this important work, and subscription lists have been opened to defray the expenses of sending over skilled workmen in various trades. It is understood that arrangements have been made, by which the artisans sent over will have secured to them both board and lodging on reasonable terms, and besides will have facilities given them for visiting industrial establishments in Paris. In return, it is made a condition that every artisan thus assisted must present a written report on his own special industry. These will be collected and printed for publication at a cheap rate.

COVERING THE MAN TRAPS.—The County Commissioners of Story county (Nev.), have ordered that all dangerous abandoned shafts be filled up or covered over. Since the opening of the mines of the Comstock many men have lost their lives by falling into old shafts. A number of men reported missing—men who walked off into the midnight, as it were—are thought to have found graves at the bottom of some of these old abandoned shafts. No less than three skeletons were found in one shaft a short distance below Gold Hill a few days ago.

Examinations for Phylloxera.

We lately made microscopic examinations of vine roots in a case of suspected phylloxera, and found the eggs and newly hatched larvæ of the insect in abundance. Though we regretted the discovery, it was no less a fact. It is time every man whose vines show signs of disease and enfeebled growth knew whether this ruinous pest was in his vineyard or not. Many have not the skill nor the appliances to make close microscopic examinations for themselves, but they should not be denied full knowledge. For obvious reasons a man who may have the scourge just appearing in his vineyard and proposes to fight it, does not care to have his ill fortune proclaimed through the newspapers. Therefore we make this proposition to subscribers of the RURAL PRESS: If any one of you find marks of disease in your vines, and desire to know whether the phylloxera is present or not, send samples of the leaves and pieces of the thick roots and fine roots or tendrils, addressed to the "editor of the RURAL PRESS, care Dewey & Co., No. 202 Sansome St., S. F." The root samples need not be large, and if roots and leaves be securely tied (not pasted) in strong paper they can be sent by mail at one cent per ounce postage. Put your initials on the package and at the same time send your name and postoffice address in the letter, enclosing stamp for reply. For all subscribers to the PRESS, who comply with these instructions we will make microscopic examination of the specimens sent, and communicate the results by private letter, free of charge. We will do this for all sending samples unless we should find the examinations were more numerous than we have leisure hours to spend upon them. The editor as a rule does not have time to attend to matters not intended for publication, but in this matter we are willing to "make time" in some way because of the importance of it. We are led to make this proposition to friends of the RURAL, because we believe that some of them are dwelling in darkness on the phylloxera question, through fear of the shade which the publication of finding phylloxera in their vines would cast upon their property. While this is going on the insect is multiplying. Therefore, we offer to tell our readers the facts, as the divorce lawyers say, "without publicity," hoping thus to win them to vigorous efforts to stamp out the growing evil. This offer of free work for individual interests must be restricted to those who are subscribers to the RURAL PRESS, and to such it stands open until notice is given of its withdrawal.—*Pacific Rural Press.*

The Hayden Geological Survey.

The United States Geological Survey of the Territories, in charge of Prof. F. V. Hayden, will leave Washington in a few days for the field of work in the West, Prof. Hayden and his executive officer, Capt. Stevenson, having matured their plans. The work during the present season will be an extension northward from the work of last year. The sources of the Snake and Green rivers, southwestern slopes of the northern end of the Wind River mountains; and the famous Yellowstone National park, which was brought into prominent notice by the surveys of Prof. Hayden in 1871 and 1872, are included within the area to be surveyed this year.

As indicated above, a part of the area marked out was explored several years ago by the survey. The work done was, however, more of a reconnoisance character, and the object this year is to make a final survey and to connect the work with the triangulation system carried north from the railroad.

The region is intensely interesting. In it are the sources of three of our greatest rivers—the Missouri, the Columbia, and the Great Colorado of the West. Geologically considered, there is no portion of the globe that presents more of interest to the scientist, artist or tourist. It is a region of former volcanic activity, as is abundantly evidenced by the numerous hot springs and geysers scattered through the park. Volcanic rocks are found everywhere and the collection of the varieties will be made a specialty by the survey. The geysers and springs will be carefully studied, with the view of developing all that may be learned concerning them.

Cheyenne, Wyoming Territory, will be the rendezvous of the party, and after spending a few days outfitting at that point, the various divisions will proceed westward via the Union Pacific railroad, from which they will strike northward to the respective fields of work.

The geological and topographical work will be carried on by two divisions, one of which will be in the Park and the other south and east of it. There will also be a party of primary triangulation, for controlling the geographical work. Special geological and paleontological work will be done in interesting localities. The economic resources of the areas will be carefully noted and specimens of the minerals and spring deposits collected. Chemical examinations of the spring waters will be made.

The topographical and geological work will be published in sheets, that will form part of the Atlas of the west, of which the Colorado Atlas just published is a type. As the work progresses, there will naturally be an advance, and the character of the work will become better and better, as the Atlas of Colorado is a great advance on all previous maps produced in this country.—*Alta.*

MECHANICAL PROGRESS.

The Art of the Eye-Maker.

The development of the mechanic arts as an adjunct or auxiliary of surgery has been rapid and great. In one line it may be illustrated by the success of the eye-maker. His methods are outlined in the *Polytechnic Review*. When a surgeon is forced to the last alternative of taking out an eye, it is desirable that he should leave as much of the ball as possible. Makers of artificial eyes call this the stump; and if it is large, it moves the artificial eye back and forth so naturally, that the change is not perceptible except to a close observer, who has previously known of the misfortune of the wearer. When the patient first goes to the maker of artificial eyes, the latter carefully studies the cavity, the size and shape of the stump, and the size of the eyelids, measured on their inner surface. These measurements differ greatly in different persons, and are very irregular in the same person, so that in no case can the porcelain be made symmetrically perfect. A sphere of porcelain is never used. The new eye is always hollow on the inner side. The extent of this concavity depends upon the size of the stump, which the porcelain must fit accurately, but without hugging. There are no rules of measurement for making a good fit, and for this reason a maker of artificial eyes should be an artist.

The material of the eye-maker is drawn for him at a glass manufacturer's into tubes about one inch and a half in circumference. He redraws a tube until it is a little smaller than a lead-pencil. Next he blows a bulb at one end, of the size of the eye-ball in his pattern, contriving to make it slightly oval to imitate the natural curvature of the eye. At the place where the iris and pupil are to be he flattens the little sphere, and in the center of the flat surface he applies a circular patch of black pigment. This is the pupil. Next follows a work of great nicety. With indelible colors taken from a palette, he imitates, on the flattened part of the sphere around the pupils, the iris, which he has previously studied in the sound eye. This having been done, a circular piece of clear crystal glass, flat on one side and convex on the other, is laid upon the pigments, with its flat side down. It is firmly fastened in place by fusing its edge with the porcelain with the aid of a blow-pipe. After this delicate operation, the front of the sphere should exactly resemble the sound eye, which it is to match with the exception of the small red veins in the eyeball. These are imitated by drawing out red glass to the necessary fineness, and applying bits of this glass thread, while yet hot, in vein-like shapes, to the cornea. They are fused into it under the flame of the blow-pipe. The work of imitating the natural eye is then complete. The fitting of the eye to its socket is an operation requiring much skill.

The Largest "Strong Box" in the World.

It is reported that the great vault which is now being built for silver coin at the United States Sub-Treasury in New York is the largest of its kind in the world; considered as a whole, even larger than that of the Bank of England. The *Iron Age* says it is 47x28 feet inside, and and 12 feet high, made burglar proof, designed for the expected large accumulation of silver coin under the operation of the new law. This new vault is building under a contract with George L. Damon, of Boston, who has about 20 men employed on the work. The estimated cost is $22,000. The outside granite walls are six feet thick, while the safe proper will be two inches in thickness on all sides, formed of alternate layers of iron and steel. The plates for the floor are laid directly on the stone flagging, supported by a solid bed of concrete, so that it would be folly for burglars to attempt to reach the treasure within by any process of excavation from outside. The top of the vault will be supported by rolled iron beams and girders let into granite columns, while lattice partitions of iron to support the bags of coin will divide the vault into a dozen stalls, arranged on either side of a longitudinal aisle. The general plan is not unlike that of an ordinary horse stable. Four openings in the ceiling and as many in the floor, covered by strong gratings, will provide for ventilation. The process of cutting out the brick floor of the Sub-Treasury building so as to convert two stories into one, is the laborious task now engaging attention, directly under what is known as "the gold room." When completed, communication between the gold room and vault will be by means of an elevator and stair-case, so that coin can be easily transferred.

COATING METALS WITH TIN.—The brilliancy and cleanliness of tin has long kept it in great favor for culinary and various other purposes, and an invention of Messrs Neuberg & Co., of Vienna, promises to make it still more readily applicable. They propose its electro-deposition by means of a zinc and carbon battery. The inner cell containing the carbon is half filled with chromic acid, and the outer cell containing the zinc is filled with dilute sulphuric acid. The articles to be coated with tin are put into a bath composed of protochloride of tin and cream of tartar, with or without chloride of tin. The proportions of these ingredients are: Eight parts of protochloride of tin, 16 parts of cream of tartar and two parts of the chloride if the latter is used. When it is present the tin coating is effected more rapidly, whereas when the bath is composed of protochloride of tin and cream of tartar only the tin coating is very white, but is not produced so rapidly as when the chloride is used. These ingredients should be dissolved in about 100 gallons of distilled water. The black plates are first "pickled" in any suitable manner, and then immersed in the above described bath or solution, and are allowed to remain in the same for a longer or shorter time, according to the thickness of the deposit or coating of tin required on the plates. While in this bath the plates or other pieces to be coated are connected by a wire with the positive end of the battery, while the negative end of the battery is connected with a piece of tin hung in the same bath. When the plates or other pieces or articles have been sufficiently coated with tin they are held over a fire in order to give the tin a lustrous appearance.

Building Spouts in Flour Mills.

Mr. Abernathy writes a letter to the *U. S. Miller* concerning the right and wrong in spouting for flour mills. Deprecating the guesswork which seems to rule most wheelwrights, he says: It is only important to know the lowest angle on which a given kind of material will slide freely and then if you have got the fall to give it greater pitch, do so, and it will be so much better; but if there is not the fall for the required pitch, make it. It does not matter how great a pitch the spout for any kind of meal may have, but for whole grain it is different. Wheat will run very freely at 22½ deg. on a smooth-bottomed spout, and so will any other hard grain. And I would not give a grain-spout a pitch of more than 35 deg. in any case.

Purified middlings will run very freely at an angle of 35 deg. on a perfectly smooth-bottomed spout, while any kind of middlings will run at 45 deg. Bran will also run at from 35 to 45 deg., according to its condition. For flour returns, dustings, etc., never fix a spout at less than 45 deg., and as much above it as possible. If comparatively flat spouts are unavoidable, be particularly careful to have them very smooth, and also have them broad in proportion. Small spouts are apt to choke under favorable circumstances, and sure to do so under unfavorable circumstances.

One thing should never be lost sight of in erecting a spout or series of them, and that is, to have the bottom level crosswise, else the material to be spouted will run to the lower side or corner, pile up and choke.

It does not matter how many different directions a continuous spout runs, each section should be level. This can be easily done if the spout be parallel by drawing a square line across the spout to level by. By a little attention to these suggestions, choking spouts may at all times, with ordinary care, be avoided.

CAR FOR ONE-RAIL TRACK.—There is building in Cleveland a car to run upon a one-rail track now in operation near the oil regions of Western Pennsylvania. The road is a single-rail track six miles long, and is said to be doing a large freight and passenger business. The car is not unlike an ordinary passenger car in looks. The *Iron Age* says: It is 28 feet long, eight feet two inches wide, with seats running lengthwise of the car as in English railway carriages. Underneath the car, and running its entire length, are two sections or boxes, flush with the outer sides of the car, three feet eight inches deep, with sufficient space between each section for the wheels and the rail they travel on. The sections serve to balance the car upon the rail, and also for the carriage of haggage. In the floor at each end of the car is a 34-inch double flange wheel, with the axles set in the floor with right angles to its length. The upper half of the wheel is, of course, covered. The rail is laid upon piles about four feet high. Along the piles, on each side, about a foot below the rail, are laid flat rails. The inner sides of the two sections that come below the rail have friction rollers that run snugly on the flat rails, thus further tending to balance the car and steady it while running. The car will cost about $4,000.

CUTTING RAILS.—It is a very difficult thing to cut red or nearly white hot rails so that they are of the same length when cold, as, if cut at different temperatures, they will vary in length on cooling. The following ingenious mode of obtaining a standard temperature has been adopted in some German and Russian rail mills: The glowing rails are looked at through a dark glass; when they have cooled to a certain temperature they can no longer be perceived. Using a dark blue or orange-yellow glass, *e. g.*, the rails may still be at a red glow, when the light radiated from them disappears in the dark glass. It may be considered that the light from two rails observed from the same dark glass disappears at the same temperature, and thus one is guided in cutting the rails while in this similar state, each rail after rolling being allowed to cool till it can no longer be seen at a given distance through the dark glass; thus they can be all cut of the same length.

SCIENTIFIC PROGRESS.

The Flow of Solids.

There has been a scientific congress in session at the Paris exposition. One of the subjects considered was the flow of solids, introduced by M. Fresca. An outline of his presentation of the subject is as follows: For all bodies two distinct periods are recognized—the period of perfect elasticity, which corresponds to variations of length proportional to the pressures applied; and the period of imperfect elasticity, during which the changes of dimension, on the contrary, increase more rapidly than the pressures. This second phase leads towards a condition in which a given force, sufficiently great, would continue to produce deformation, so to say, without limit, such as in drawing lead wire. This third period is designated by the author as the period of fluidity, and the greater part of his experiments on the flow of solids are related to it. This period of fluidity is more extended for plastic substances, while it is more restricted and may altogether disappear in the case of vitreous or brittle substances. But it is perfectly developed in the case of the clays and in that of the more malleable metals. Instances of deformations illustrating the period of fluidity were quoted in various operations of squirting, punching, forging, stamping, planing and turning, and principles were derived therefrom which lead the author to conclude that the idea of the flow of solids is, of all the modes of regarding their deformation, perhaps the one which most truly interprets all the phenomena of molecular mechanics, and of the internal constitution of bodies which underlie the various industrial operations. A curious instance of the collateral bearings of this theory is the fact that it is capable of explaining some geological phenomena.

The President said they must all be struck with the enormous development which this subject had taken in M. Tresca's hands. They appeared now to have arrived at something like mechanical analysis, corresponding to chemical analysis. He supposed that very soon the Government inspectors would be sufficiently learned to appreciate M. Tresca's system, and instead of adopting force would judge how weldings had taken place, and what was the quality of the metal, and, in fact, would have a complete laboratory where all such experiments could be tried.

Prof. Blake, lately of California, said the point which had struck him most was the geological aspect of the question which had long been considered on the other side of the Atlantic. At Newport, in Rhode Island, there was a conglomerate that had been cut away by the action of water, and it was found that the pebbles were washed out into the form of elongated ellipsoids, so regular and so geometrically uniform that they long ago suggested to some persons that they had been pulled out. That idea had been rejected at several meetings of the American Association for the Advancement of Science. But in the Rocky mountains he had encountered another conglomerate formed of homogeneous quartz pebbles, which had evidently been uniform in their constitution, but which had not only been elongated but in some instances compressed, so that one pebble was partly inside another. Others had been broken transversely and recemented. The conclusions at which he had arrived were that such pebbles had been elongated and flattened, and that the physiognomy of some of the mountains was due to the elongation which the rocks had undergone. There were vast regions in California where the rocks were sharp ellipsoidal points standing up through the soil, and every grain of sand and every pebble was an elongated and flattened ellipsoid. There had not only been elongation but compression. These conclusions were not commonly accepted, and had been a good deal ridiculed. It had been shown by Hungerford, in the United States, that fracture was not necessary to the flow of ice. If a block of ice were encased in a wooden mold, and kept at a temperature far below that of melting, it might be compressed and caused to flow through an aperture without any fracture. It was possible to reproduce the experiments, the results of which M. Tresca had shown, in one of the most vitreous materials with which they were familiar—solid water. They ought to consider all solids mobile under certain conditions.

NEW SACCHAROMETER.—A recent number of *La Nature* contains drawings and a description of Laurent's new saccharometer. The light from a fixed monochromatic yellow flame is passed through a diaphragm containing a plate of bi-chromate of potash, which absorbs the violet and blue rays. The yellow rays which pass it fall on a bi-refracting prism which turns on the longitudinal axis of the instrument, and in which the second image is diverged to one side and intercepted by diaphragms. One of these carries a thin plate of quartz parallel to the axis, which covers only one-half of the diaphragm. Its thickness is one-half wave for the yellow rays. Between this diaphragm and a second one the testing tube containing the sugar solution to be tested is placed. In front of the second diaphragm is the Nichol analyzer, an objective and a concave eye-piece. The latter three parts inclosed in a tube revolve, the angle through which they move being indicated on an alidade.

The Geology of Gibraltar.

In a paper read before the Royal Institution on this subject, as reported by *Iron*, Professor Ramsay, F. R. S., states that the main Gibraltar rock is a bedded limestone, which has been uplifted to high angles, being, in some cases, nearly vertical. The age of this limestone is not easy to determine, as there are but few fossils, and of these there is but one that can be recognized. It is a *Rhynchonella*, so closely resembling *R. cocinna* of the English oolites that the limestone has been assigned a Jurassic age. This limestone slopes away to the west, and forms the great eastern escarpment, and overlaying it are shales which form the lower slopes on which the town is built. Both the limestone and the overlaying shales are met with again on the African coast at Ape's Hill, Barbary, and there seems no reason for doubting the connection of the two portions at the time of deposition. From the fact that there are found recent Mediterranean shells at an elevation of 700 feet up the rock, it is inferred that the rock, after receiving its contour, sunk that much at least, and was after re-elevated. After the rock had been re-elevated, the sub-aerial forces modified the surface of the marine sands that covered the limestone platforms so that they came to form long sand slopes. It is probable that the land surface was greater then than now, and was re-united to Africa. The remains met with in the bone caves are a subject of great interest, and they show that the district was inhabited by mammalia common to Northern Africa. To solve the problem of the origin of the Mediterranean is not easy. It seems to have been a western extension of the inland drainage of Asia. There were probably two large inland salt lakes in the basin of what is now the Mediterranean, and these got rid of water by evaporation. An examination of the soundings of the sea shows how slight a change would be needed to bring about the present conditions. The sea is a very unusual one, and the Professor said it had, therefore, engaged his attention for years.

AN UNEXPECTED SCAVENGER.—An unexpected friend to man has been discovered in a kind of animalcule engendered by sewage, which prevents the decomposing matter from becoming a dangerous nuisance. Mr. Angell, the public analyist for Hampshire, having examined the sewage-polluted fluid in Southampton water, has discovered that where the suspended matters are thickest there is going on a silent destruction of the foul matters through the agency of millions of minute creatures, by some held to be of animal, but Mr. Angell believed to be of vegetable origin. On examining the muddy fluid through a microscope it was found to contain myriads of little brown organisms surrounded with a gelatinous substance. Each specimen was found to be active in its movements and of peculiar shape, being furnished with a belt of cilia round the center of the body, and with a long, transparent, and very flexible tail. After death these tiny atoms give off an odor similar to that of sea-weed, and change to a green color. During life they evolve bubbles of oxygen gas, which serve to purify the water from the effects of the decomposing matter on which they themselves feed. It is a pity, however, that man, by polluting rivers with sewage, should stand so much in need of this self-developed scaveuger.

DISTRIBUTION OF PLANTS.—Prof. Meehan remarks in the *Independent* that is one of the most remarkable facts in vegetable physiology that nature does not put species where they will do best, but evidently where she wants them, quite independently of their wishes and desires, if plants might be supposed to have any. Thus trees which nature places in swamps do much better when man places them on comparatively dry ground. And we know how remarkably well many plants thrive as weeds in our country, in comparison to what they do in their own lands. A recent illustration of this is a fact recorded of the watercress in New Zealand, where it has found a home as an immigrant from Europe. In that country and also in this, to which it has also been introduced, the stems under the most favorable circumstances seldom exceed one's finger in thickness; but in New Zealand the stems grow thicker than one's wrist and impede seriously the course of rivers and streams. The branches, here seldom more than a foot or so, reach a length of nearly 10 feet.

HONORS FOR PROF. HAYDEN.—We are glad to learn that the University of Rochester at its annual commencement on the 3d inst., conferred on Prof. F. V. Hayden the honorary degree of Doctor of Laws. In his letter communicating its action, the President, Rev. Dr. M. B. Anderson, says: "The Trustees and Faculty of the University desired to recognize by this action your great services to science through your personal attainment, as well as the almost unparalleled energy and success which have characterized your explorations, in regions hitherto unknown to the geologist as such. They did not hope to add in the slightest degree to your well-earned reputation, but they desired to express their appreciation of the honor you have done our country, and the State and city of your early residence, by those great labors which have linked your name with geological science for all coming time. The friendship of many years has made my official connection with this public act a source of the most sincere pleasure."

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

ALPINE.

LEACHING.—*Chronicle*, July 20: This process is being used at the Advance mill and the prospects are that it will be a success. Ottokar Hoffman, of San Francisco, has arrived to assist Prof. Jones in treating the sulphurets. Mr. Hoffman is the introducer of the "leaching process" in this county, and modifier of it to the adaptation of ores on this coast. He will remain here two weeks, and is sanguine that his work will prove satisfactory.

THE FLINT.—Superintendent Ray has commenced work on the Flint, at Monitor. It is his intention to get out about 50 tons, to he worked by the concentration process at the Advance mill.

ADVANCE.—Milling ore continues to be taken from this mine and the mill is steadily at work, and within the next two weeks the result of its workings will be known.

AMADOR.

THE EMPIRE.—*Ledger*, July 20: The 80-stamp mill at this mine, formerly known as the Phœnix, is kept steadily running and on good ore.

OTHER MINES.—The old Seaton is still in abeyance. The Gover and Pennsylvania are running their full amount of stamps, and it is thought that shortly the two mines will lapse into one. The former is crushing excellent rock. Saturday evening the mine was obliged to suspend work on account of foul air. The Potosi labored under the same difficulty, though not to the extent of suspending operations. Crown Point is doing nothing. It is rumored that Hayward intends opening the old Hazard; if this is done, and the Seaton put in operation, Drytown will have, as in days of yore, a most favorable outlook. It appears to he the opinion of many old miners, with whom I have conversed, that the lack of success in some of our mines is due to the want of perseverance in not having the shaft sunk to a greater depth. One hundred feet deeper in many instances might put a different face upon the matter. The Montirichard mill continues doing well, running on eight dollar ore, hut a better grade is expected at greater depths. The Bismark mine, at Hunt's gulch, started up this week. Owen Kelly and another miner are taking out water. Capitalists below are understood to have the matter in hand. Negotiations are pending for the sale of the Moore mine to parties in San Francisco. Whether the sale is effected or not, work on the claim is to be shortly resumed. The search for a new ore-body in the Talisman is still prosecuted, with encouraging indications. The Centennial mining company have levied a second assessment of seven cents per share. W. S. Dunning is still taking out very rich rock from his mine.

BUTTE.

FORKS OF BUTTE MINING DISTRICT.—*Mercury*, July 19: The news from this district, situated in the canyon back of the Berdan place, on the Humholdt road, is encouraging. The Knowlton-Allen claim is being pushed rapidly towards a fine gravel deposit from which they expect good returns. One of the rules of this district is that no Chinaman shall he allowed to work or hold a claim in the district, and all the companies are pledged not to sell out to any of the Mongolian race.

CALAVERAS.

VEITH'S HYDRAULIC.—*Chronicle*, July 20: The gravel here looks splendidly where piping is now being done, and as there are hut comparatively few rocks to contend with it is being put through the flume at a tremendous rate, Unless we are greatly mistaken the next cleanup at the Veith mine will be the largest one ever made.

NORTH HILL MINE.—The company are now erecting large machinery. The flywheel weighs between 7,000 to 8,000 pounds. There will he about 100 tons of machinery erected on the mine altogether. The Superintendent of the mine is H. K. Drake. The machinery is capahle of running two tons a minute. Tbey will employ from 100 to 120 men, mostly Chinamen, with white men for Superintendents.

IN OPERATION.—Hoey & Sliter's new mill, in Old Woman's Gulch, has heen in constant operation duriug the week. Everythiug works well, the machinery runniug as smoothly as a clock.

THE BONANZA.—Work progresses without intermissiou at the Bonanza hydraulic, Tunnel Ridge, Moser & Co., proprietors. It is one of the steadiest paying claims in the district, and as the deposit of gravel is an immense one it can he regarded as a fixture in the way of mining. The impending water famine is putting all the miners in this vicinity upou their mettle, and at the Bonanza especially there is no lack of effort being made to render every inch to he ohtained available. The mine is runniug full-handed aud a large quantity of water is employed.

GOOD GRAVEL.—The gravel in the Duryea mine, Chile Gulch, has very much improved in quality, lately, and the claim is as largely remunerative now as at any previous period of its history.

MONO.

LOCAL MINING NEWS.—*Standard*, July 22: The work of developing in this and adjoining districts goes rapidly forward. Prospectors are confident that their "holes in the ground" will, hy more work, show up handsome hodies of ore, and are correspondingly sanguine of the future. The energy and perseverance which has characterized the movements of our mining men has not abated in the least, and those interested in the mines of Bodie district, who arrive almost daily, express themselves as more than pleased with the outlook. There are well authenticated rumors on the street that an important strike has heen made in one of our leading mines, hut the particulars will be withheld until its extent is fully known. The Miners' mill has been running on Red Cloud ore, for the past two weeks, and the returns are considered satisfactory. Shipments of ore will be continued for some time. Some high grade ore was also worked and yielded handsome returns. The Syndicate and Standard mills are both running on Standard ore, which is the hest evidence as to the amount of ore in this mine. The Dunderhurg mill is running smoothly, hut as there has heen no clean-up as yet it is impossible to tell just how the ore will turn out, though the superintendent asserts positively that it will he a grand success. Work in the Dunderburg mine is progressing finely and the developments are such as to warrant the running of the mill constantly. The hoisting works at the Spaulding are heing erected with all possible haste, and Bechtel mill is sufficiently advanced to state almost the exact day when it will start up, which will he about the 5th of August. Reports from surrounding districts are very flattering, and considerahle work is now heing done in Prescott, Laurel and Lake districts. The populatiou of this latter district is estimated at nearly 400, and a 20-stamp mill is on the way for that place from the railroad. Rock hrought in from other districts around us assays very well and taken altogether our prospects are hrighteniug rapidly.

NEVADA.

VARIOUS MINES.—*Transcript*, July 23: The anticipations of the lessees of the Deadwood mine are heing more than realized. There is at present about 35 tons of rock on the dump, and reliahle experts say that it will yield from $60 to $75 per ton, when crushed. The new air compressor at the Murchie mine will start up Monday. The Derhee mine continues to yield very rich gravel. Work progresses on the Montana, and they have a promising ledge in sight. A crushing was had from this mine a few weeks since, and the results were profitable.

ROUGH AND READY MINES.—The new hoisting works of the Irou Clad Co., located just helow Rough and Ready, will be ready to commense operations in about three weeks. Two crushings have already been taken from the mine, and the rock averaged $30 per ton. A fine looking 18-inch ledge is now in sight, and the prospects are encouraging. Messrs. Byrne & McCullough are runniug an extensive tunnel to tap the rich gravel lead in the old Gilham claim, near Rough and Ready. The indications for the early development of the mineral wealth known to exist there are promisiug.

FORDYCE DAM.—There is uow 56 feet of water iu the lake at the dam, extending back a distance of three and one-quarter miles. As soon as the supply of water from the lakes gives out for mining purposes, which will probably he in about a month, the inside of the dam is to be planked with inch lumher from the hottom to the top, a distance of 80 feet in hight. This is found necessary in consequence of the great leakage of water, which is caused hy the want of clay in the material in that section of country, and which is so essential in stopping the crevices hetween the rocks. The Fordyce is one of the largest and most expensive dams in the State, and is part of the South Yuba Canal property, which has recently passed into the hands of Alvinza Hayward.

PLACER.

THE SWIFTSURE CLAIM.—*Herald*, July 20: Gravel has been struck in this mine, located iu El Dorado canyon. Some two years ago the owners had a tunnel in the hedrock iu what is known as the Main Top ground, some 500 feet, and were at the time raising a shaft, confident in the helief that they might, any hour, hreak through into the gravel. No gravel, however, was struck. The tunnel was ruu further in, other shafts were raised, hut still no gravel. They, however, did not despair. Even afterwards, when they hecame convinced that they were heading in the wrong direction, and that the tunnel, which had cost them much money and years of hard work to run, would have to he ahandoned, they still were not discouraged. Putting their heads together and taking another view of the ground from the surface, they finally concluded to go around the point of the hill and start a tunnel in on ground helonging mainly to the same parties, known as the Swiftsure. They had proceeded with this tunnel somewhere hetween 400 and 500 feet, when a week or two ago, as we before said, they broke through the bedrock into the gravel, the channel of some old dead river, rich in hard, washed gold, thus realizing at last the reward of their persistency, and their day dreams of years. Such perseverance, such energy deserves to be crowned with success, and we again repeat we are heartily glad they have struck it. On striking the gravel they at once begun the erection of dump-hoxes, sluices, etc., for the purpose of washing, and as the yield from this out will no doubt be steady, we feel justified in adding the Swiftsure to the list of Placer county's rich drift mines.

SAN BERNARDINO.

RESTING SPRINGS.—*Semi-Tropic*, July 19: Two hundred and thirty hars of hase hullion from J. B. Oshorne, Resting Springs, were shipped hy Messrs. Lyon & Rosenthal, last Tuesday.

SISKIYOU.

SCOTT AND KLAMATH RIVER MINING.—Yreka *Journal*, July 20: Down at Hamhurg Bar near the junction of Scott and Klamath rivers, considerahle mining is heing carried on with great success this year, and several other companies are finding good prospects, indicating still greater prosperity in a short time. Morgan, Ramus & Taylor, at work on the Bar, took ont $1,000 last week, and will no douht continue to take out a rich yield every week. McCrary & Martin, in the river bank, find splendid prospects, and will soon he ahle to take out large quantities of the shining dust. The hydraulic companies are all husy, and as soon as they clean up, we may anticipate hearing of hig hauls of gold. The river claims, heing worked at a great expense, will soon be paying rich rewards for the immense labor and cost of tunneling under the Klamath. In about a month more Hamhurg Bar and Scott Bar will be about the liveliest and husiest mining camps iu the county, if not so now.

QUARTZ ON GREENHORN.—The Warren mill on Greenhorn was started up on Monday morning on quartz from the Cherry Creek ledge. It is the intention to crush 100 tons from this ledge to thoroughly test the quality of the quartz. They have resumed work on the Pennsylvania ledge, on the summit, and are taking out some excellent rock. Neshit a few weeks ago found the ledge in the old Sullivan claim agaiu, which had been lost some time, and has traced it down hoth the Greenhorn and Cherry creek side of the mountain for considerable distance. Another ledge ou which considerahle work has heen done has also heen traced down on both sides of the mountain.

SONOMA.

QUICKSILVER.—*Democrat*, July 20: The Great Eastern Quicksilver mine, four miles north of Guerneville, is running to its full capacity, turning out four flasks per day. Arrangements are heing made to put in a new furnace and to increase the numher of retorts so as to work up the supply of ore coming from the drifts. The Mount Jackson company have completed the new tunnel, and expect to start up the furnace in a short time. The region in the vicinity of these mines seems prolific in the production of minerals, as it is near them that persons are prospecting for chrome, coal and other minerals.

TRINITY.

BULLYCHOOPS.—*Journal*, July 20: Active operations have heen commenced hy the Bullychoop Quartz company. A trail will he graded, ditch dug aud arastra constructed, after which ore crushing will commence, when large results may he expected. Chas. Kuper, late of Junction City, is in charge of the work in the capacity of Superinteudent.

BIG PAY.—Some of the richest ground which has heen worked in this county for a long time has been run off hy J. W. Smiley at Douglas City this summer. He cleaned up the flume last week after a run of ahout ten weeks, and realized nearly $8,000, with the bedrock to hear from.

TUOLUMNE.

RICH QUARTZ.—*Independent*, July 20: Messrs. Jack Barry and Chris. Schulz are ahout to open a rich vein near the Odd Fellows' cemetery, Sonora. We have specimens of the ore hefore us, with free gold and sulphurets sticking out as thick as harnacles on the bottom of an old whaling craft. It is the intention to improve the property with appropriate works for reduction very soon. Fortune attends those who persevere.

MINING.—W. G. Long reports fine prospects iu the Live Oak mine. At a depth of 65 feet the vein averages ahout two feet and the ore shows well with free gold. He has several tons for crushing soon as the mill is ready for it. He also represents the Hunter as promisiug well, work heing constantly prosecuted.

Nevada.

WASHOE DISTRICT.

CON. VIRGINIA.—Gold Hill *News*, July 24: The 1300 station of the Consolidated shaft is being repaired and retimbered preparatory to continuing the repairs downward to the 1400 level. The heat is intense, heing greatly increased hy the extremely hot weather of the past four days. The main southwest drift on the 1300 level is being cleaned out and repaired, to assist the ventilation of a new ore discovery on the 1200 level. This ore is of a good quality and lies east of anything yet discovered in that portion of the mine. Just how much there is of it cannot yet he determined. A new drift has been started on the 1500 level from crosscut No. 1, intending to connect with crosscut No. 2 east of the ore vein. The daily yield of ore during the week has averaged 240 tons.

CALIFORNIA.—Daily yield of ore, 230 tons. The yield of ore from the stopes on the 1750 level continues good and is heing gradually increased as opening up the ore hreasts is advanced. During the first part of the week the yield was equal to 250 tons per day, the weather at that time heing much cooler thau at present, and the men in the mine being ahle to accomplish that much more. Sinkiug the C. & C. shaft is being pushed vigorously ahead. It is now down 76 feet below the 1950 level.

OPHIR.—The greatest point of interest in the mine during the week has heen the developments in the east crosscut (No. 2) from the northeast drift on the 2000 level. All access to that drift is closed, and while there is no douht hut that the drift has been in quartz and ore for the past two days, its extent and value is only a matter of conjecture, as no reliahle information in regard to it can he ohtained from any source whatever, and we do not care to puhlish any of the many rumors in regard to it, preferring to wait until the truth can be ascertained. The opening up of the 2100 station in the main incline is going steadily forward. After it is completed it will he necessary to sink the main incline enough deeper to form a sump hefore the 2100 drift can he pushed toward the ore vein.

JUSTICE.—Overhauling and repairing the pumping machinery and pumps is going vigorously forward. The water is gradually rising in the main incline. It will he hut a very short time now hefore the pumps are all ready to again start up.

SAVAGE.—A drift west has heeu started from the point of intersection with the Sutro tunnel on the 1640 level, which is intended to connect with the winze descending to the levels helow, so as to create a hetter ventilation of the lower levels of the mine. The temperature of the air of the Sutro tuunel is gradually lesseuing and as soon as a cool change of weather takes place will be quite comfortahle.

SILVER HILL.—The face of the north drift on the 900 level is showing some good quartz and ore in streaks as it advances. An east crosscut has heen started from the main south drift on the 800 level.

SUCCOR.—The ore vain in the face of the northwest drift on the 1050 level is showing hetter with each foot of advancement, the greater portion of the face heing in quartz of a fine mineral-hearing quality.

ALTA.—Sinking the main shaft is progressing steadily, though not at quite so rapid a rate of speed, on account of a much stronger flow of water coming in, which is probahly caused hy the stoppage of the pumps and the consequent rising of the water in the Justice shaft, the water hacking through into the Alta shaft.

CON. IMPERIAL.—The west crosscuts, Nos. 1 and 2, on the 2400 level, are heing steadily advanced through a fine quartz formation, carrying some very favorahle ore indications. The north drift in the Alpha grouud has nearly reached the Exchequer line, and will be continued hy that company directly through to their north line. Preparations are heing made for the speedy crosscutting of the vein at two or three different points in the Alpha ground.

BULLION.—Siuking the main incline helow the 1840 level is making excellent progress, the bottom in quartz and vein matter of a very favorable character.

CALEDONIA.—Sinking the joint winze helow the 1400 level is being pushed vigorously ahead, the bottom in good hlasting ground, and the flow of water gradually receding.

JULIA CON.—Some delays during the first part of the week were experienced hy the hreakages of the pump-rods and valves giving out, all of which has been overcome and everything is uow in good working order.

OVERMAN.—The east drift from the 1600 station of the main shaft is being steadily advanced, the face in porphyry. The west drift from the hottom of the winze on the same level running to meet it, is making good progress.

YELLOW JACKET.—On the 2400 level the south drift from the wiuze is in 76 feet; face in porphyry and quite dry.

UNION CON.—The joint east drift on the Mexican line ou the 1600 level is making steady progress, the face in hard hlasting porphyry. It is now in a distance of 470 feet.

CROWN POINT.—The north drift on the 2300 level is heing pushed vigorously ahead to open up the entire vein ready for crosscutting. Preparations are heing made for the extraction of ore again from the old upper levels.

SIERRA NEVADA.—The north drift on the 2000 level is making favorable progress, the face still in vein matter. Nothiug new of any other portion of the mine.

LEVIATHAN.—The indications continue to improve iu the north drift, occasional streaks of good quartz heing cut hy the drift, showing a nearer approach to the main ore vein.

BELCHER.—Sinking the winze helow the 1900 level is making fair progress. It is now down 312 feet on the incline helow the 1900 level. The south drift on the 2160 level is steadily advancing, the face in porphyry.

CROWN POINT RAVINE.—The new pump machinery is heing arranged for and will he placed in working position as soon as practicahle.

GOULD & CURRY.—The large air pipes are doing good work, and in a day or two more the drifts on the lower levels will he sufficiently cool to admit of a resumption of work at all points.

LADY WASHINGTON.—Crosscutting is ahout heing commenced on the south line on the 1300 level of the Justice mine.

BEST & BELCHER.—Work is progressing with steady vigor in the joint east drift on the 1900 level. Good headway is also heing made with the south drift on the same level. The faces of each drift are still in porphyry, and the heat is fearful.

HALE & NORCROSS.—The greater portion of the week has been spent in putting the pumps in good working order, two of the donkey pumps below the 2100 level having given out. Everything is again in good working order.

ELY DISTRICT.

RAYMOND AND ELY.—*Pioche Record*, July 23: The compressor is in place and ready to operate.

Every piece of machinery fitted to a nicety. The receiver is also in position and it only remains to make connection between the compressor and receiver, the pipes from the pump shaft with the receiver. Work in the mine continues as usual.

MEADOW VALLEY.—During past week running night shifts for cleaning out drifts, as it was found impossible to do it in the daytime, the engine being kept busy all day hoisting screenings. Mill running steady and doing good work.

RICH ORE.—The 35 tons ore taken from Tem Pahute to Reveille to be milled yielded from $204 to $760 per ton. This ore was taken from the Inca mine, owned by Mr. Russell, who was severely burned at Duckwater a few days ago.

LEACHING.—The ore tank built at Bullionville for the purpose of trying the leaching process on the tailings there having proved a success, four more tanks are about being erected and a large supply of chemicals necessary have been sent for. The dump of the Pioche mine, on Meadow Valley street, has been leased for the purpose of leaching the screenings, the party leasing paying at the rate of 50 cents per ton for the privilege. It is thought that it can be made to pay well.

HILLSIDE.—The furnace at Bristol which was shut down on Friday, the 5th, started up again on Tuesday morning and was running successfully at last accounts.

ORE FROM THE BACK LEDGE.—From the Mazeppa mine were shipped about 15 tons of ore to the Dry Valley mill last Saturday. No attention will be paid to the claim of the Alps Co. to this ore.

PIOCHE BULLION.—$8,798.81 in bullion was shipped during the week.

WARD.—Times here are very dull, not over a dozen or two of men at work in the neighborhood and the future prospects not cheering.

EUREKA DISTRICT.

MINING ITEMS.—*Sentinel*, July 20: The K K furnace will not be in operation again until the mine is placed in good working shape. One of the furnaces at the Eureka Con. has been shut down for repairs. It will be ready to resume next Monday. The new machinery for the Phenix hoisting works is being put in place. The Eureka tunnel is in 325 feet, with favorable ground. A portion of the machinery for the Hoosac hoisting works has arrived. It is rumored that the Hogden mine at Secret canyon will soon resume work. There has been a strike of 20 inches of first-class ore at the Two G mine at Tybo. Up to the 10th inst. the Tyho Con. had shipped $22,000 on July account. The Geddes & Bertrand is looking better than ever in its history. Messrs. Arrington and Bartlett, it is thought, will realize a cool hundred thousand out of it. Wells, Fargo & Co. shipped for the Richmond company this morning 10 dore bars valued at $18,880.13.

ORE FOR UTAH.—Thos. J. Taylor, who is engaged in purchasing ores for a Salt Lake company, shipped last evening to Mill Creek 12 tons of ore, valued at $3,000.

CHLORIDING.—The number of men who are chloriding on the mountain is much larger than ever before. There is great demand at the present time for mines to lease, and those who engage in the business, in most instances, are making it pay well, as there is little trouble in making sales of all the ore that can be taken out. Here is a chance for a large number of our unemployed men.

ANOTHER DISTRICT REVIVED.—From Mr. F. Barras, who left Eureka some weeks since for a prospecting trip and returned yesterday, we learn that he has devoted the most of his time to Bald Mountain, a district lying about 45 miles northeast of Eureka. Bald Mountain district was discovered some years since, but abandoned by the discoverers, as they could not induce capitalists to embark with them, although they exhibited some very rich gold ore.

Arizona.

MINING ITEMS.—*Enterprise*, July 20: News from Signal is to the effect that the mills are pounding away, with the usual productive results. The McCrackin Company's foundry works to a charm, and turns out all material necessary for the two mills. The '76 mill at Picket Post commenced crushing ore last week. The Turk mine, Globe, assays 546.65 ounces per ton. The Keystone, at Mineral Park, is turning out rich rock. The Peck mine is shipping a large amount of bullion. The Julius mine, Globe, shipped last week 2,104 ounces, 950 fine. A rich strike is reported to have occurred in the Stonewall Jackson mine at a depth of 125 feet. Mr. Holmes, of Walnut Grove, has discovered a very rich bed of gravel on the Hassayampa, in his neighborhood. He says it is the richest placer in the territory. A note from Mr. Marsh, at the Senator mill, says the mill is running night and day, but that water is growing scarce. The Miami mill now in its present condition is pronounced to be one of the best and most perfect mills on the Pacific coast. It is certainly well arranged and convenient in all its parts. There are 10 stamps, four pans and two settlers, rock-breaker, roasting furnace, 50 horse-power engine and boiler and all necessary machinery. It has a capacity of 12 tons in 24 hours, and certainly Globe district ought to furnish that amount of ore to keep one mill running. Mr. R. Wells, who has just returned from a trip to Bradshaw, reports business good at the Tiger and its vicinity. This is one of the richest mineral districts in Arizona, and the Grey Eagle the best mine there. It is situated favorably for working, and the ore is easily reduced. Its owners are now negotiating for machinery.

Dakota.

BLACK HILLS DISTRICT.

HIDDEN TREASURE.—*Pioneer*, June 27: After a 26 days' run, four or five having been lost through stoppage of mill for repairs, the company cleaned up $16,000 from a crushing of 850 tons of ore. The next run will be 30 days, and it is confidently expected the yield will surpass any yet obtained from this mine and mill.

PECACHO MINE, DEADWOOD.—Thirty stamps are running on ore from this mine. The extent of the new gravel cement bed cannot yet be determined. It prospects very rich, $50 per ton and more, and has the appearance of being a large deposit. Superintendent Edwards has let the contract, which will more fully develop its dimension; one from the Blacktail side of the hill, and one 20 feet below the present working tunnel. Twenty men are now employed at the mine.

THE Old Abe company, with 60 stamps, crush 600 tons of rock per week, at an average value of $12 per ton, netting the company a handsome income.

Montana.

PIKE'S PEAK MINES.—*Helena Independent*, July 17: There are but 25 whites here now, there being only two claims worked by them. Pioneer City has a mining population of 300, about an equal number of whites and Chinamen. White men are running some 18 or 20 claims. The gold yield of the camp will be about as usual. There are but four idle men in the camp, though the place is well supplied with working men. In fact, all parts of Montana are well supplied with laboring men, and some places overcrowded with late arrivals from the East. There is plenty of room for all who desire to settle on land, make homes, raise stock or go into some producing business on their own account; but it is an easy matter to overcrowd the country with men who depend on day wages for a livelihood.

MISSOULA ITEMS.—J. D. Richards, the finder of the recently discovered silver ledges some 20 miles above Missoula, near Heligate river, came into town this week for the purpose of recording his leads. He has discovered five leads, all of which gave an encouraging showing of silver and copper on the surface.

PIONEER AND PIKE'S PEAK.—*New Northwest*, July 18: These camps, once very prosperous, depending solely on the placers, have dwindled as these became exhausted. The Squaw Gulch and Irvine are the only white companies now in the camp, and the number of men employed does not exceed 25. The old placers have been slowly passing into the hands of Chinamen, but the main pay streak has held out as far as followed, and doubtless will be found further up and new claims be opened.

PHILIPSBURG ITEMS.—The Hope mining company is shipping from $15,000 to $20,000 per month. Supt. Carson is putting up a large Vanner building, and will be ready to take up and work the tailings by September. The Northwest Co. is shipping from $20,000 to $25,000 per month. The Algonquin has been proved to a depth of 200 vertical feet, and is good. After sinking 100 or 200 feet further, works equal in capacity to the mine will go up.

Oregon.

GALICE CREEK.—*Sentinel*, July 17: The English mining company have stopped work for the season. Ankney & Co. have also suspended active operations, but are still engaged in cleaning up, and running a tunnel. Green & Co. have crushed nearly 30 tons of rock this winter and expect a big yield. They will commence cleaning up in a few days. Two-thirds of the Taylor claim on this creek was last week sold by Wm. Byhee to Mr. Hockett, of Oakland, Cal. Mr. Wimer has purchased a half interest in the mining property on Butcher gulch, owned by the Simmons Bros., and preparations are now being made for active operations this winter.

CHICKEN CREEK.—At these mines, in Baker county, there has been much prospecting done for the limited amount of water to be had. The bar claims that have been opened pay from $4 to $5 per day, with what water they have; the creek has not been opened as yet. Every one believes it to be rich; the whole country is taken up; there are some 20 men there, the most of them working on the Sisley creek ditch, which is being pushed along as fast as possible. There will not be any water here this season to amount to anything.

Utah.

MINING ITEMS.—*Salt Lake Tribune*, July 20: Work is now being resumed on the north extension of the Horn Silver mine. By its present showing it bids fair to become a rival of the Horn Silver. Work is being pushed ahead on the Katie claim, bought a few days ago by Tom Couch and others. The owners of the South extensions are also to resume work again. The new town of Loeber is improving. A new building impetus will also be given to the town of Grampion. A big mining enterprise is now going on in Rocky district. A big body of high grade copper ore has lately been struck, and a tunnel is being run to tap it at a distance of 400 feet. Beaver Lake district is looking up. The Case mine, owned by Godbe & Co., is improving very fast, and large quantities of ore containing considerable gold are being extracted. The extension of this is also to be worked. The Wasco mine, in Star, is to be vigorously worked, and if lead was only selling for $40 per ton in Salt Lake, we would have the liveliest camp on the Pacific Coast. The Frisco reduction works start their new roasting and chloridizing oven to-day. They are receiving ores right along from the Horn Silver mine, and expect to make a big run the balance of this month. Quite a little stampede is being made by some of the miners here to Goose Creek, 70 miles west of this place. Some very high grade ore from there has been sent to this place. The Godbe furnace will be ready to start up again in a few days.

BINGHAM.—This will yet become a gold producing camp, another rich gold strike having been made in the Steamboat mine to warrant this belief. But it is said the Stuart, also, is turning out about 20 tons daily of ore carrying gold, and that it is now being reduced at Egan & Bates' mill. Good for the Old Reliable. She will yet lead the van.

News in Brief.

SECRETARY THOMPSON is inspecting the Boston Navy Yard.

YELLOW fever has been very fatal at Vera Cruz and Yucatan.

GOLD discoveries are reported in Paraguay and Patagonia.

THREE THOUSAND catfish will soon be put into Clear lake.

GEO. M. KIELL & Co., of Loudon, have failed for $6,000,000.

THE run of salmon down the Columbia river continues very light.

WORK on the branch prison at Folsom will soon be commenced.

THE grain crops of Utah are the largest ever raised in that Territory.

GRASSHOPPERS are reported at the head of Deer Lodge valley, Montana.

THE *Inland Empire* says that the Chinese sell liquor to the Indians at the Dalles.

FIFTEEN car-loads of Mormon emigrants arrived in Salt Lake city last week.

THE Santa Barbara oil well is in splendid indications, and yielding some oil.

THE Russians advertise great quantities of war material in Roumania.

THERE are 1,100 whites and 500 Chinese at work in the Cassiar mines.

IRELAND beat England and Scotland at the 800, 900 and 1,000 yard ranges.

THE Catholic church at Santa Rita, Monterey county, has been burned; no insurance.

THE Fresno *Republican* estimates the grain crop of that county at 750,000 bushels.

SOME of the Italian journals violently oppose the acquisition of Cyprus by the English.

MYERS, the scout who was captured by the Indians at Camp Curry, was roasted alive.

THE Utah Bank of London, with a capital of $800,000, has been opened at Salt Lake City.

JAMES GORDON BENNETT'S steam yacht *Jeannette* left New York for San Francisco July 16th.

THE honey yield of San Fernando valley, Los Angeles county, this year, is estimated at 200 tons.

THE estate of the late Isaac Friedlander is valued at $440,000, of which $280,000 is cash in bank.

THE Ute and Apache Indians have all agreed to go on their reservations, and no further trouble is anticipated.

SILVER dollars in considerable quantities are being exchanged at the mint in this city at par with gold.

JOHN P. JONES, Senator from Nevada, was honored by a public reception on his return home to Gold Hill.

THE Pintes who left Paradise valley during the excitement three weeks ago are returning and going to work again.

TWO ledges of cinnabar and two of silver have been discovered in Placer county, about 25 miles from Sacramento.

FURTHER strikes have occurred among the workmen employed in silk and lace manufactures at St. Etiune, France.

AN Indian brawl occurred at Sitka in which four Indians were killed. The natives are favorably disposed towards the whites.

MANY farmers in Polk county, Oregon, are cutting their wheat for hay. Not more than a half crop will be harvested.

SANTA MONICA, Los Angeles county, which three years ago was grazing ground, now has a permanent population of 700.

DENNIS JORDAN'S bid of $161,500 for building the Branch State Prison at Folsom, has been accepted by the Commissioners.

THE National Liberals of Germany admit that they expect to suffer some loss in the approaching elections for members of the Reichstag, but think they will retain a majority in that body.

THE water in the Carson river is receding rapidly, and as the snow has nearly all melted from the mountains, it is feared the water mills will have to shut down before the 1st of September—earlier than was anticipated.

THE salmon run in the Columbia is considered nearly over. The catch has been fair this year but not particularly encouraging. The canneries as a rule have put up a slightly larger quantity this year than last, but the business as a whole has not been satisfactory.

FORTY-TWO vessels, aggregating nearly 50,000 tons, are now lying in this port under charter to carry wheat to the United Kingdom. Fourteen vessels are engaged for other purposes to different foreign ports, and forty-four vessels are on the disengaged list.

A PARTY at Coos Bay has killed, skinned and boiled 100 sea lions. Some of these weighed as much as 2,500 pounds each.

THE orange crop of Los Angeles county has increased from about 5,000,000 in 1877-2 to nearly 8,000,000 in 1876-7.

THE shipping of ties and posts from Cuffey's Cove, Mendocino county, is lively. Six cargoes have been shipped so far this season.

ACCOUNTS from Phœnix, Tucson, and Yuma, Arizona, represent the heat as excessive, the thermometer ranging from 112° to 116°.

THE weather is very hot in England and on the Continent. In some parts of the Exposition building the temperature is unbearable.

STOKES, the murderer of Fisk, is reported to be in Cornucopia district, Nevada, looking after some mining claims in which he is interested.

TEN THOUSAND nail makers in England have struck for an increase of 30% in their wages, and 10,000 more will join the strike this week.

THE native Californian who was hung by a mob last week at San Jacinto for the murder of Palmerston, turns out to have been an innocent man.

PANAMINT is now entirely deserted by white men, a fine mill and numerous buildings remaining as monuments to its former high mining hopes.

THE Territorial Pioneers will celebrate the anniversary of the admission of California into the Union at Pacific Hall on the 9th of September.

THE General Government has ordered a survey of San Pablo and Suisun bays, and the schooner *Yukon* is coming down from the north to perform the work.

A PLAN to take the Yoakum brothers from the jail at Bakersfield, Kern county, by a mob, for the purpose of lynching them, was frustrated by the Sheriff.

IN this city, on the 18th inst., the wife of G. W. Schenck gave birth to triplets, three boys, weighing in the aggregate 17¼ pounds, all of them living and likely to do well.

THE exact amount of awards to American claimants by the American and Mexican Commission is $4,025,622. The Mexican government has thus far paid in $570,000.

ACTIVE preparations are apparent for a favorable change in commercial affairs in England. Reports from various centers of the iron industry are decidedly more encouraging.

IT is stated that an immense majority of the Russian people, as well as the mercantile community, and the wealthy as well as the lower masses, are heartily glad of a return of peace.

A BOILER in Davis' planing mill, at Barnesville, Ohio, exploded recently, destroying the entire building and killing three persons outright. Three more were fatally, and several badly, injured.

A CHINAMAN recently made application to Judge Sloate, of the United States District Court, New York, to become a citizen. The Judge denied the application under the decision of Judge Sawyer, of the United States District Court of California, in the case of Ah Yonp.

THE American schooner *Parallel*, on her way from San Francisco to Portland, boarded a Japanese vessel on which was found no living person, but only a number of dead bodies of Orientals who seemed to have been dead for some time. As there was no food on board they are supposed to have died from starvation.

A RARE SPECIMEN OF FOSSIL IVORY.—In the cabinet of Messrs. Smith & Patterson, of Sutter creek, is to be seen a specimen of ivory, that so far has proved to be a paleontological puzzle. It was found in the town of Sutter creek by parties sinking a shaft for water, at the depth of about 30 feet from the surface, embedded in a strata of blue mud, which here rests on a bedrock of talcose schist. The specimen is about four inches in length, three-fourths of an inch in width at the socket-end or base, tapering gradually to a point at the other extremity. The shaft is prismatic or thickest in the center like a double-edged bowie knife and slightly curved, the edges serrated, the teeth about the depth of a joiner's tenon-saw. The inclination of the teeth on one edge is towards the point, on the others the reverse. The joint appears to be of the kind known as ginglymoid, the articulation of the diarthrodial kind, which only admits of motion in two directions like a hinge—as the knee-joint or elbow-joint. It is evidently a powerful natural weapon, offensive and defensive, or both belonging to some of the extinct fauna of this coast, which lived and had its day away back in the many, far-off periods of the pliocene or post-tertiary, geologic epochs more easily written than comprehended. Will some modern Agassiz or comparative anatomist or paleontologist tell us what it is?

CHROMATE OF IRON.—There is some demand for this ore in San Francisco, if that containing something like 50% of the oxide of chrome can be laid down here at a moderate figure. It is not, therefore, an article that will bear costly transportation. If parties owning deposits of this ore will advise us by letter of location, quality, etc., we may, by publishing the same, help their chances for turning it to profitable account, provided the character and location of deposits will warrant.

JOHN L. BOONE, of this city, has received news of the death of his maternal grandfather, Henry Hawkins, of Silverton, Oregon, who had reached the age of 103 years. The wife of the deceased is said to have been the first white woman that entered Louisville, Kentucky.

The Engineer.

Utilizing the Power of Niagara.

An item in last week's Press announced the formation of a company to transmit the power of Niagara Falls to Buffalo, and there employing it for manufacturing and other purposes. The enterprise is audacious, and the projected details will he read with iuterest.

The principal part of the machinery will he located near the water's edge, below the falls, in the vicinity of that delightful spot called the Bridal-veil. The remainder will be on the bank immediately above. The great air receptacles, three of which will be 70 feet long by six in diameter, will be located below the bank, near the water, while the receiving reservoirs will be on the bank. The cylinders will be constructed of boiler iron, in the most substantial mauner. The perpendicular fall from the feeding hasiu above to the air receptacles below is 214 feet. The engineer's figures show that 200,000 pounds of iron will he required, and it is estimated that power enough will be generated to raise about 350,000 gallons of water 150 feet every minute. These resul s have heen obtained hy careful scientific tests, so that there is little doubt that they are nearly correct.

Gentlemen prominently connected with this enterprise own Day's caual, which was constructed several years ago by Mr. Day for water-power purposes, at an expense of nearly $1,000,000. This canal will play an important part in connectiou with the new project. It is 33 feet wide by 11 deep, and leads from a point just above the rapids, a mile across, to the bank below. At its lower terminus is a large hasin, 70 feet wide and 800 feet long and 11 feet iu depth. From the hasin a flume 300 feet long is being dug to the edge of the precipice. At the mouth of the flume will be a massive iron gate with an eight-foot openiug. The water from the flume will pass into the reservoir, which will be connected witb the air receptacle below hy means of large pipes, siphon-shaped. Attached to the cylinders will he a requisite number of large automatic valves, to let the water run out of the cylinders after the compressed air has been allowed to escape. The practical workiug of the machinery will he briefly as follows: After the water in the reservoir on the top of the hank is high enough to reach the hend of the siphon it will escape down the pipe to the air cylinders below. The pressure thus ohtained very soon closes the automatic valves. There being no escape for the water which continues to pour into the cylinder (each has its own feeder), the air which it contaius is compressed by the volume of water from above until it has as much expansive power when released as steam. The capacity of the reservoir and of the cylinders is so arranged that the reservoir will he exhausted by the time the desired compression has been obtained below. While the reservoir is again filling with water, that in the cylinder is escapiug, so that when the bend in the siphon is reached, the contents of the cylinder are exhausted, and it is ready for another charge. Thus the operation is repeated at regular intervals in each cylinder, and there being several of them, a coutinuous charge of highly compressed air is obtained.

There seems to he no doubt that the air thus compressed can he conveyed hy pipes a reasonable distance, and made to do valuable service at nominal expense. In France it is conveyed 50 miles. The loss by friction in transmitting it from the falls to Buffalo is placed at 50 horse-power on every thousand, which is scarcely worthy of meution. The projectors of this great enterprise are confident that they will he able to do the pumping for the City waterworks at figures which will make the preseut cost of the departmeut appear enormous. They are also confident that they can make compressed air take the place of steam in manufacturing, thus doing away with the necessity for fire or fuel. They are aiming to do wonders, and, what is more, the chances seem to be strongly in favor of their success.

The Oil-Pipe Line.—An exchange says: The survey for the seahoard pipe line has finally heen completed. It commences in the oil regious of western Pennsylvania in the valley of the Allegheny river, at a point one and a half miles helow Monterey station, on the Allegheny Valley railroad, and takes nearly a straight course over the highlands of Indiana and Cambria counties; descends the face of the Allegheny mountains; crosses the mountains and valleys of middle Pennsylvania; the South mountain range; the red sandstone plain iu front of them and the hills of middle Maryland to Baltimore, a total distance of 228 miles, equal to 1,202,828 feet. It passes about 14 miles south of the county town of Indiana; one mile south of Carrolton, Cambria county; crosses the Pennsylvania railroad at Elizabeth furnace, below Altoona; and the Broad Top railroad at McConnellstown; passes through Orbisonia, Shade Gap, Roxhoro, Shippensburg and Gettyshurg; passes one mile south of Westminster, and one mile south of Reiterstowu; follows the ridge hetween Patapsco falls and Guyron's falls, and terminates on Curtis bay, two miles south of Canton, on an inlet of Chesapeake hay, at Baltimore.

Advice to Young Engineers.

Mr. Eckley B. Cox, President of the American Institute of Engineers, recently delivered an address before the Alumni Association of Lehigh University. He gave the following points of advice to young engineers: The first is the importance to you of a thorough knowledge of the principles of book-keeping. An engineer should be able to construct a machine, for example, at the least cost and with the least waste consistent with the complete attainment of the object in view within a proper time, and should so keep his accounts that when it is finished he can show all the details of the expenses incurred for each of the parts, and for the whole machine, and can give a reason for them. In other words, he should know how to build, what it will cost, and why it will cost. Such knowledge can only be acquired by a careful study of accounts, and hy keeping the cardinal rules of hook-keeping before him, and is absolutely necessary if he wishes to make reliahle estimates. It is not necessary for him to he a good hook-keeper in the sense of heiug a good, rapid, and neat penman, and quick at figures in the ordinary sense of the word, but he should understand the general principles and methods of hook-keeping. I should therefore recommend you, if possihle, to ohtain permission to work a month or two in the office of the estahlishment where you may be, to get up and keep as many accounts and tables of the cost of production, materials used, time lost, work done, etc., in your department as convenient. You will he perfectly astonished to find how much you will learn hy it, how habits of economy will grow upon you, how methods of saving lahor and expense, or of increasing productiou will suggest themselves to you when studying your weekly or monthly statistical tahles, and how the losses by delays and hreak-downs in the works will become apparent to you. The business experience of our firm impresses upon me more and more the importance and value of such accounts. The more accurately and systematically they are kept, the more we find that the regularity of business aud our capacity of production increases, and the less the cost per ton of our coal hecomes. I do not helieve in good engineering practice that is not founded on a thorough system of accounts. We have tried it and find it a good investment.

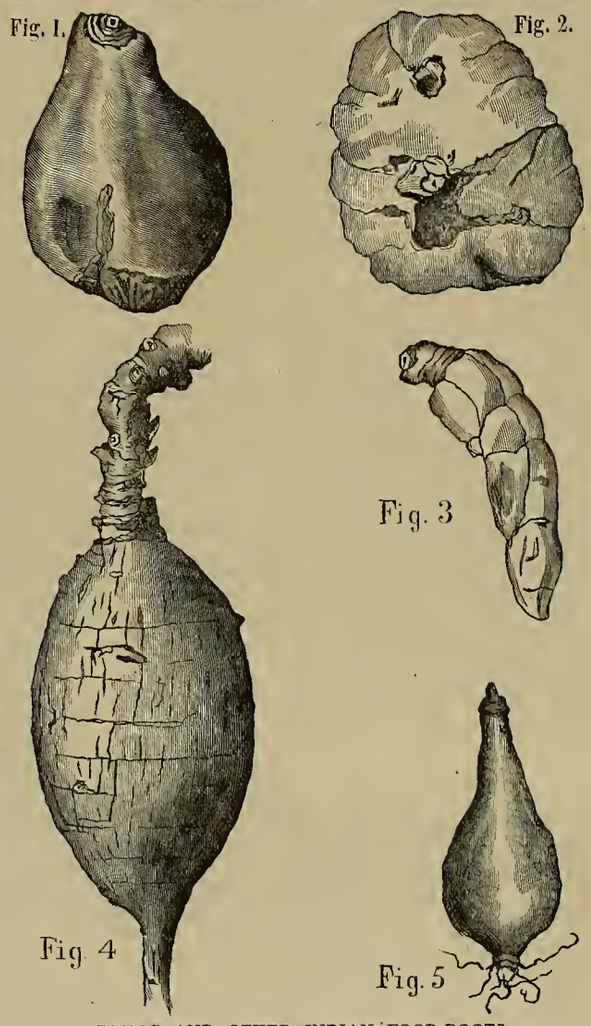
Be careful, when making a report or giving an opinion, to give your true views, uninfluenced hy any contingent fee (as it is euphouiously styled—hribe I should call it); the temptation is great I admit, aud the pill you are asked to swallow is often so carefully and thickly gilded that one is almost tempted to helieve it gold; hut if you ask yourself if I were retained hy the other side, or perhaps better, if I were retained by an impartial person, would my view be more or less favorahle? Never take a contingent fee, that is, do not make a report the price of which is to he in proportion to the favorableness of your opinion. Let the charge he the same, be the report good, bad or indifferent, and do not report on anything you are really not an expert in. It is not honest, and is had policy.

I have known engineers who, in their heyday, were perhaps envied hy younger memhers of the profession for their financial success, hut whose money was made by disgracing our profession and selling their honor, but their success has rarely heen a permanent one. I can remember when mining engineers were, for this reason, regarded by many persons who had heard of such proceedings with anything but respect. Try to live for your profession as well as by it; try to do something, however little it may be, to help it onward; move forward with the rest, and do not hold hack; for ours is eminently a profession of progress.

Above all, remember that au engineer should he proud of his profession, should always seek to elevate himself and it, and should never forget that a good engineer should be a geutleman.

Oregon Projects.—A Portland (Oregon) dispatch, dated May 30th, says: It is authoritatively announced that arrangements have been made between the Walla Walla and Columhia River Railroad Company and Messrs. J. C. Ainsworth, S. R. Thompson, S. G. Reed, W. S. Ladd, C. E. Tilton, and Dr. D. S. Baker, for the purpose of huilding a general system of narrow-gauge railroads to meet requirements of grain-producing counties hordering on the Upper Columhia and Snake rivers, and that the Walla Walla and Columhia River railroad will become part of the new enterprise, and that the work of extending the same will be commenced as soon as practicahle. It is also stated on the that in July or August next there will arrive in Portland 35 miles of steel rails, with a locomotive, rolling stock, etc., for the same enterprise.

St. Paul and Pacific Branches.—The St. Paul *Pioneer-Press* says: Work upon the branches of the St. Paul and Pacific railroad has been in progress for some weeks, and it is now certain that these important lines will be completed before the pleasant Minnesota autumn gives place to winter weather. Ahout 10,000 tons of iron was purchased in Pennsylvania some time ago, and as it is now arriving, tracklaying on the St. Vincent hranch will commence next week. The Alexandria line will also he hurried along, and as Manager Farley is superintending the work, its rapid progress can confidently be looked for. The troubles of the St. Paul and Pacific are over, and a completed system of road, stretching from St. Paul to the Red river and to the Winnipeg hasin, is only a question of half a dozen months.



CAMAS AND OTHER INDIAN FOOD-ROOTS.

Improving the Erie Canal.—There is growing conviction among New Yorkers that the preservation of the city's commercial importance is largely dependent upon the hest utilization of the Erie canal, and the Board of Trade are therefore congratulating themselves on the great increase of business since the opening of navigation this year and the reduction in transportation charges. The report of the canal auditor shows an advance of 80% in the uumber of tons carried during the first six weeks of this season over the same period last year, and 130% in the amount of tolls earned. The committee of the hoard, which has made a special study of the canal question, is very sanguine that through the ultimate opening of these water routes to free traffic and the introduction of steam power for towing, the vast commerce of the city may he easily maintained and extended. They unite in recommending the Belgian cahle system. which has been so long and successfully tried in Europe, as the most practicable means of applying steam, instead of horse-power, for towing, and are of opinion that the capacity of the canal with its present hoats would be almost fully doubled hy the change. This system has already beeu put in operation in this country, and it seems likely not to be long hefore it will entirely supersede the old and less efficient method.

A Plant Pretext for War.

It is commonly reported that the pretext which the Idaho Indians make for beginning the war which is now raging, was encroachment hy settlers upon "Big Camas Prairie," upon which grew large quantities of the "camas" hulbs, which the Indians esteem highly for food. The Iudian claim that the war was undertaken in this defense of their food resources is strongly denied hy the settlers, who assert that the "camas" was only a pretext, and that the war really sprang from the evil dispositions of the aborigines. However this may he, the "camas" becomes a subject of peculiar interest, as being ostensibly the hone of contention, and therefore we choose it and several kiudred hulhs and roots for illustration this week.

Camas root or "wild hyacinth" (*Camassia esculenta*) is shown in Fig. 1. This root resembles an onion in shape and a hickory nut in size. It hears a pretty blue flower. The root is dug in June and July. Wheu eaten raw the taste is pleasant aud mucilaginous; when hoiled it somewhat resembles that of the commou potato. The Indian mode of preparing it for future use is to dig a pit, line it with rocks, upon which a fire is made, and, when heated sufficiently, the heated stones are swept clean and the roots are heaped upon them; grass or twigs are next laid over the pile, and, finally, a covering of earth. After several days the pit is uncovered, when the white roots are found to be converted into a thoroughly cooked, dark-brown, homogeneous mass, of ahout the consistency of softened glue, and as sweet as molasses. Cooked in this manner, the roots are often made into large cakes, hy mashing and pressing them together, and, when slightly dried in the sun, they become rather pliahle and tough, and look like plugs of hlack navy tobacco. Its color does not recommend it to the taste, hut it is sweet, mucilaginous, and as agreeable as the fresh root, excepting a slight smoky flavor acquired in haking. In this pressed form it keeps softer than in the raw state or when simply cooked, and may he kept for a year or more. The roots, when boiled in water, yield a very good molasses, which is much prized, and is used on important festival occasions by various trihes. The Indians of Cape Flattery, the Nez Perces, of Idaho, and those of Pitt river, California, are the greatest consumers of this article of diet, under the name of camas root.

Kouse root (*Peucedanum ambiguum*) is shown in Figs. 2 and 3. The root of this plant is dug in April or May when in bloom. It grows on hills and mountains which are so poor that grass will not grow upon them. When fresh it is like the parsnip in taste, and as it dies hecomes hrittle and very white, with an agreeahle taste of mild celery. It is easily reduced to flour. When its hrown epidermis is removed, innumerable small dots are revealed. Both the roots and the flour will keep several months. It is sometimes called hread or hiscuit root hy travelers, and kouse root hy the Indians of Oregon and Idaho.

Prairie potato or "bread root," (*Psoralea esculenta*, Fig. 4.) It is also called Indian turnip, *pomme de prairie* of the French, and tip-sin-nah of the Sioux, who use this root very extensively. It is generally the size of a hen's egg, of a regular ovoid shape, with a thick, leathery envelope, easily separated from its smooth internal parts, which hecome friable when dry, and are readily pulverized, affording a light, starchy flour. It is of a sweetish turuip-like taste, is often cut in thin slices and dried for winter use, and is very palatahle, however prepared. The Indians of Kansas aud Nebraska consider this root an especial luxury. The Indians of the St. Croix river offer these roots as a peace offering to the Great Spirit.

Fig. 5 is wild sago (*Calochortus luteus*). The Utahs call it sago. The root is the size of a walnut, very palatahle and nutritious. The Indian children of California, Utah and Arizona prize it as the children of the whites do confectionery. The Mormons, during their first years in Utah, consumed this root extensively.

The Centennial Harvester.

Last year we gave the news about a combiued machine brought out in the San Joaquin valley, which claimed to take the grain from the stem and deliver it to you in sacks, thus doing its own heading, threshing and sacking as it moved over the ground. The inventor was Mr. Rice, of Modesto. Last year's work in the field, though encouraging, was not perfect, and the machine was remanded to its inventor and builders to remedy mistakes, and let the public see what they could do after another harvest's trial. A uumber of the machines were built during the winter by Messrs. Holt and Rice, of Stocktou, and spoken for by several leading San Joaquin farmers. We made arrangements some time siuce that one of our most cautious and trustworthy readers in the valley, Hon. C. J. Cressey, should watch the machine for us during the this season's harvest and advise us of its success or failure. Mr. Cressey ordered one of the machines that he might test its working to his own satisfaction, and he now favors us with assurance that it is a success.

The Centennial harvester is a combination of the ordinary header and separator. It is operated hy four men and 16 horses, and is moved at the rate of from two and one-half to three miles per hour. Its sickle bar is 16½ feet long, and at the speed mentioned cuts and threshes two acres of grain for each mile the machine travels. Its average cutting is from 35 to 40 acres per day. It cuts the grain the same as an ordinary header, and iustead of beiug put into a header wagon and hauled to a stack, it is, before touching the ground, carried on an apron to the separator, where it is threshed, run into sacks, which are sewed and dropped on the ground as the harvester moves round the field. Thus, with but one handling, the grain is headed, threshed, sacked and ready to haul out of the field to the warehouse or depot.

Mr. Cressey says he sets the harvester at work in his grain field in the morning, and at night he has from 35 to 40 acres cut, threshed and put into cars, aud at five o'clock the next morning the cars are at Oaklaud wharf, with the wheat ready to be placed on shipboard. Charmed with this quick work Mr. Cressey recalls the fact tbat from six to ten years ago (and before buildiug of the railroad), after spending weeks in cutting, stacking and threshing his grain, he had to haul it, with teams, 60 miles to Stockton for market, consumiug five and six days each trip, and at an expense at which the freight by rail diminisbes into insignificauce. Now he can cut his grain one day aud have it in market the next, and he can draw against it at once to pay his men and other expenses. This is quick work on a large scale, which we believe the world has never known before.

The cost of these machines is $2,000. This appears to he a large amount to pay for a single implement to use on a farm, but Mr. Cressey reminds us that every farmer who seeds 160 or more acres of ground, ueeds at least four horses for this work. Thus by using tbe power they already have, six farmers, adjoining each other, could unite iu purchasing a harvester. Four of the six could, witb their 16 horses, operate the machine, and the other two with a team, could haul the sacks of graiu from tbe field. Thus by helping each other they can cut, thresh, and haul from the field the wheat or barley from 35 to 40 acres each day, and thus turn their own resources to fullest account.

The account given us by Mr. Cressey is supplemented hy the results of a study made of the harvester iu the field by the editor of the *San Joaquin Valley Argus*. The editor says: "We visited one of the large harvest fields of Mr. C. H. Huffman; aud after following the harvester around for half an hour, we were fully satisfied that it was all that the builders and inventors claimed it to be; and also, that Mr. Huffman was master of the situation. The result of the test is, that with 16 good mules, four men, plenty of oil, and Mr. Huffmau as captain, pilot and engiueer, 40 acres of wheat can be cut, threshed, cleaned and sacked in one bour. Mr. Huffman pronounces it a perfect success, aud says that it does not lose one kernel more than the old header, and that $10 will pay for all the improvement necessary for its perfection. He is terribly in earnest, and so much pleased with the harvester that he bas already purchased two of them. We are assured that Mr. Huffman will save tbis year at least $9,000 in the harvesting of his crop, by reason of the use of the harvester instead of the common beader and tbresher."

Tbis testimony is unequivocally in favor of tbe macbine. Such being the case, we see no reason why tbe California inventors should not receive the $25,000 reward which tbe Australian government offers for such a machine.

It is fair to annouuce that the idea of cutting, thresbing and sacking grain at the same time, is also being worked out by another inventor who will have his apparatus in tbe field in time for test this year. The metbod is somewhat different from the combined machine described above, and it will doubtless soon be made public.

Tunnels.—Mr. Henry S. Drinker is preparing a work on tbe History of Tunnelliug, which is to include to this date, accounts of 1,624 tunnels, 282 of wbich are United States railroad tunnels, eight United States canal tunnels, while several, like tbe Sutro, are for mining and miscellaneous purposes, and about 1,300 are in foreign countries.

Useful Information.

Hight of Work for Filing.

Various ideas very naturally exist amongst mechanics, as to the hight at which the jaws of the vise should be set from the floor, for use in filing; arising, no doubt, from the varied nature of the work upon which the advocates of the different ideas have been accustomed to operate. In a "Treatise on Files," issued by the Nicholson File Company of Providence, Rhode Island, the following points are laid dowu:

For filing general work, the top of the vise jaws should be placed so as to be level with the elbow of the workman, which will be found to range from 40 to 44 inches from the floor—therefore 42 inches may be considered as an average hight, best suited for all hights of workmen, when tbe vise is to he permanently fixed.

If the work to be filed is small and delicate, requiring simply a movement of the arms, or right haud and arm aloue, the vise should be higher, not only in order that the workman may more closely scrutinize the work, but that he may be able to stand more erect.

If the work to be filed is heavy and massive, requiring great muscular effort, its surface should be below the elbow joint; as the operator stands further from his work, with his feet separated from 10 to 30 inches, and his kuees somewhat bent, thus lowering his stature; besides, in this class of work, it is desirable to throw the weight of the body upon the file, to make it penetrate, aud thus, with a comparative fixedness of the arms, depend largely upon the momentum of the body to shove the file.

It will therefore be seen, that in fixing the hight of the vise, the nature of the work and the stature of the operator should be considered, if it is deemed necessary to apply the the principle correctly.

Labor and Wages in Germany.—The Department of State has received from the United States Consul at Barmen a very full report on labor and wages in his district. For agricultural labor tbe pay varies greatly, according to the proximity to or remoteness from manufacturing centers, and ranges from 56 cents a day in the neighborhood of Bremen to 31 cents a day in the Lower Rhine valley, and as low as 18 cents in parts of Silesia. At Barmen, Crefeld aud Dusseldorf, carpenters, coppersmiths, plumbers, machiuists and wagonsmiths earn from 51 to 75 cents daily; saddlers and shoemakers from 47 to 52 cents daily; bakers and brewers, with board and lodging, from $1.42 to $2.14 weekly, and without board from 60 cents a day to $4.28 a week; farm hands are paid from $107 to $215 yearly, with maintenance; railway laborers from 56 to 83 cents per day, and as high as 95 cents daily for piece-work on tunnels; silk-weavers can earn from $2.15 to $2.85 a week per loom; factory women, $2.15, and children $1 a week. Business and wages are very low. In good times wages are 80% higher. The cost of the necessaries of life has increased 50% in 13 years, although it is now but little higher than five years ago. A man and wife, with two or three children, can live in two or three rooms in a poor and comfortless manner for $275 a year, and to support sucb an establishment all the members have to work 10 or 12 hours daily. For a family of six persons the cost is about $7 a week—an amount that few families can earn, as the depression of trade and the reduction of time allows few to do a full week's work, although wages are nomiually a trifle higher thau five years ago. The state of trade is deplorable. Factories are run and sales made at a loss, except, perhaps, the silk and button industries. Retail trade is somewhat more prosperous.

Care of Tools.—The following is taken from the posted rules of a Western manufactory: "Tools taken from the tool-room will be charged to the contractor or workman to whom they are delivered, who will be held responsible for their return, clean, promptly after using. These tools must not be passed from one to another; all transfers must be made at the tool-room. All lathe dogs, carriers, chucks, fixtures and general tools must be returned to their places on the tool rack, clean, after using; sockets belonging to the weigbt drills and hand latbes are not to be taken from their places for use in any other machine. In taking the socket from the drill or lathe, use a center key; never rap tbem out, as it springs tbem. Each machine must be tboroughly cleaned by the person using it after the job is done. No jobbing will be allowed in the shop except for tbe company. Throwing things in the shop, at any time is strictly forbidden. Those who disregard tbis rule will he discharged. All loud talking, wbistling, or gossiping with eacb otber must be avoided duriug working bours."

Weight of Track.—A conveuient rule for finding the number of tons of iron rails per mile of main track is: Multiply the number of pounds per yard by 11 and divide by 7. As a matter of couvenience we give the number of tous required for tbe various weights: 65 pounds per yard, 102 tons per mile; 60 pounds per yard, 94.28 tons per mile; 56 pounds per yard, 88 tons per mile; 45 pounds per yard, 70.62 tons per mile; 40 pounds per yard, 62.85 tons per mile; 35 pounds per yard, 55 tons per mile; 30 pounds per yard, 47.14 tons per mile; 25 pounds per yard, 39.28 tons per mile.

Preserving Fish.—Mr. John Eckart, of Munich, claims to have discovered a method for the preservation of fish in a fresh state by salicylic acid. His plan of procedure consists in impregnatiug fish by means of hydraulic pressure with a weak solutiou of salicylic acid, packing them in casks or cases, and ponring gelatine over them. The latter serves to prevent their becomiug stiff and dry. Prepared and packed in the above manner they may, it is said, remain from 10 to 15 days, and even longer, *en route* without detriment to their flavor or appearance; and Mr. Roosen, of Hamburg, who is turning this new system of preservation to practical account has received the most satisfactory reports respecting bis consignments of fresh and salt water fish to distaut countries. Trout caught near Munich, and treated according to Mr. Eckart's plan, arrived, it appears, at Bergen in Norway and in New York in a perfectly fresh state.

Growing Wheat Made into Bread in Less Than Five Minutes.—A certificate signed by a dozen citizens of Carrollton, Missouri, is to this effect: "We, the undersigned, certify that we were present at the Wild Moss Mills, James F. Lawton, proprietor, in Carroll county, Mo., on the 27th day of June, 1878, and witnessed the cutting, threshing and grinding of wheat growing in the field; and we hereby declare that agreeable to time kept by Mr. C. L. Bracken with a stop watch, and corroborated by several other watches, the wheat was cut with a 'Buckeye Dropper,' threshed, conveyed 40 rods to mill and ground into flour in three minutes and ten seconds; the flour cooked on a cook stove iuto griddle cakes in three minutes and 55 seconds, and into well-baked biscuits in four minutes and 37 seconds from the beginning of the time of cutting the grain."

The Hair Business.—Our human hair prospects are improving. According to the figures furnished us by the Bureau of Statistics our imports of human hair from France in 1874 were valued at $148,000; for 1875, $88,514; for 1876, $17,887; and for 1877, only $5,830. So it seems probable that in the course of a ycar or two more we can raise our own hair. These figures *hair* encouraging. Our Western Indians have also a good reputation for hair raising.

Good Health.

Tobacco's Devotee.

Ebenezer learned to smoke
When he was of a tender age,
And he could smoke and spit and chew,
And thought himself a sage;
And smoked till he was bald of head,
And chewed till he was almost dead.

He married Susan Glen, you know,
And she was pretty, young and fair;
But soon he smoked her till her face
Was just the color of her hair;
And kept her eyes and eyelids red
As those who weep for loved ones dead.

She loved him once, until she found
That his tobacco was his god;
He lived for it and worshipped it,
Till he was but a stupid clod;
And selfish self-indulgence seemed
The only hope of which he dreamed.

His poisoned children could not live,
Yet still he smoked and chewed the same,
And quarreled with his heartsick wife,
Because she knew he was to blame;
And all the burdens, toil and care,
Her slender shoulders had to bear.

The love he promised her went out
In smoke and chew, and chew and smoke;
And she would sadly mourn and grieve,
For it was certainly no joke
To see all manliness and use
Stewed out in strong tobacco juice.

Tobacco grew too weak in time—
Liquor was craved, and it was used;
The wife so sad and worn before,
Was now most cruelly abused;
And she would mourn and grieve and pray,
In hopeless sorrow night and day.

Paralysis, with lightning thrust,
Laid Ebenezer low at last,
And all his errors and his sins
Were with the unburied past;
And Susan, withered, sad and lone,
Had neither money, friends nor home.

Pitting in Small-Pox.—Mr. Gregory, of Merchants' College, Blackpool, England, believes that "pitting," the sad and permanent result of small-pox, ought rarely to be seen in auy civilized community. He starts with these facts, tbat poor people are pitted least, ricb people are pitted most, and no class of people are pitted under their dress. Poor people have less light in their homes, the ricb plenty of light, aud under the dress there is less light tban in eitber case. The explanation is a scientific one. The sunlight consists of tbree primary colors. The red, the blue and the yellow rays have distinct and characteristic properties. The yellow gives us light, and the red gives us beat, and the blue actinism. It is the actinic influeuce of the blue rays wbicb, in Mr. Gregory's tbeory, causes "pitting." No seed will germinate and young plants will soon perish if the chemically active rays—that is, the actinic rays—are filtered from the sunlight. A yellow blind drawn over a wiudow will absorb all the actinic rays. The pus of variolar pustules absorbs, by its yellow medium, the actinic rays, wbich results in corrosion of the tender flesh at tbe base, and tbus leaves tbe dreaded permanent "pitting."

Results of Sanitary Regulations.

The agitation of sanitary regulations has continued for some time, and it is fair to ask what has been the result of their enforcement. In a paper lately read before the Social Science Meeting at Cincinnati, Dr. Nathan Allen, of Massachusetts, said: It is not time yet to obtain the full benefits of such means; for while the advantages of observing some sanitary laws may be seen very soon, it will take many years to reap the complete beuefit of others. In certain localities in Great Britain, where these laws have been only partially applied for a few years, there has been witnessed a marked decrease in the amount of sickness and rate of mortality. From careful investigations it is estimated that this diminutiou will already range from one-fourtb to one-third; but it is the opinion of the best judges on the subject that, when sanitary scieuce is faithfully applied, there will be a decrease of more than one-third of the sickness and mortality which formerly occurred. The immense advautage, or value, which will be gained by this prevention of disease, in the saving of time and expense, in the preveution of pain and distress, in the geueral improvement of health and prolongatiou of life, caunot be estimated in figures or described in language. The more extensively and thoroughly these principles are applied, the greater good will they accomplish, and the more perfectly we shall find the laws of the external world adapted to the human system, showing that man has a far greater control of those laws than has generally been supposed.

Another important consideration is, that the more thoroughly sanitary agencies are applied, on a large scale, they not only serve directly to prevent disease, but furnish essential aids in curing it. Thus the more you improve ventilation and the quality of water, drainage and sewerage, and have regard to dietary habits and physical exercise, etc., the more successful will be the operation of all therapeutical agencies.

Healthfulness of Fruit.—Dr. B. F. Dunkley has made public some interesting facts derived from his own experience in regard to the healthfulness of fruit. When he first went to Dunksburg, Mo., 30 years ago, no orchards were there, and few vegetables were raised. The diet of the people consisted of corn bread, bacon and a little black coffee, without sugar or cream. Inflammatory disorders, especially such as relate to the lungs, brain, bowels and heart, prevailed in the winter, and were often attended with fatal results. Malignant dysentery, the pest of armies shut off from fruit, afflicted many of the inhabitants in the summer and fall, and in the spring it was not uncommon for whole families to be sick with scurvy, the disease so fatal to sailors on long voyages before canning fruit was discovered. Dr. Dunkley told his scurvy-stricken patients, to their great surprise, that their blood needed no medicine other than vegetable acids, and he ordered them to eat oranges, lemons aud sheep sorrels. Now fruit and garden vegetables are abundant in that locality, and the diseases are not of so malignant a type, and yield much more readily to treatment. When the orchards first began to bear, Dr. Dunkley noticed that those children whose fathers had planted apple tree eat plentifully of the fruit, both green and ripe, and eujoyed most excellent health, while children living where no apple trees grew, were dying of flux.

The Drainage of Cities.—A strong argument in favor of good drainage in cities has been furnished by the experience of St. Louis. The number of deaths in 1860 was nearly 6,000, and the average mortality for the succeeding four years was 5,600. The city then had a population of 150,000. In 1870 the deaths numbered 6,670, aud although there was a considerably increased mortality in 1872 and 1873, the average number of deaths for the last four years has been but 6,400, with a steady decrease. Yet the last census gave St. Louis a population of 310,000, and it is now estimated at not less than 450,000. As a fact, the mortality last year was less than the average during the period between 1860 and 1870. At the date first named, St. Louis had practically no sewers, and no rapid extension of the system was attempted until 1865. Since theu such improvements have been made in this direction that the city now has 180 miles of sewers. As no other great changes has been witnessed in a sanitary point of view, it is concluded that the decreased number of deatbs must be attributed to the development of the sewer system.

Cure for Sunstroke and Apoplexy.—A New York physician says: I believe sunstroke and apoplexy can be cured almost surely, if taken in any kiud of time.

1. Rub powerfully on the back, head and neck, making horizontal and downward movements. Tbis draws blood from the front brain, and vitalizes the involuntary nerves.

2. While rubbing, call for cold water immediately, which apply to the face and to the bair on the top and side of the bead.

3. Call for a bucketful of water as hot as can be borne, and pour it by dipperfuls on the back, head and neck for several minutes. The effect will be wonderful for vitalizing the medulla oblongata; it vitalizes the wbole body, and the patient will generally start up into full conscious life in a very short time.

MINING AND SCIENTIFIC PRESS

W. B. EWER.....SENIOR EDITOR.

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SAN FRANCISCO:
Saturday Morning, July 27, 1878.

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The Week.

The Trustees of the Mechanics' Institute have finally concluded to hold another fair, to open on the 13th of August. Already nearly all the room at command in their spacious Pavilion has been engaged, making the coming exhibition an assured success. The building is to be greatly improved before the opening of the fair, both in the matter of decorations, arrangements and general convenience. The Pavilion will be ready for the reception of goods early the coming week, and parties desiring to secure further space will have to apply for it at once.

About the middle of the week the announcement through the daily papers of the discovery of extensive deposits of gold-bearing sand on the beach near the Ocean House and within six or eight miles of the city, caused considerable excitement among the unemployed and that large class who are always on the lookout for something new and sensational, and many of whom hastily repaired to the new found gold fields, but with what results has not yet fully transpired. It has long been known that the beach sands in that neighborhood contained some fine particles of gold, but the best prospects heretofore obtained were insufficient to enthuse even the most chronic prospector or so much as pay Chinese wages. It is reported, however, that material of a better grade has now been found, some of it carrying as much as six or eight dollars per ton in fine gold, and that some of the parties at work are realizing fair wages, their washing appliances being by no means of the most approved kind.

Quicksilver Notes.

During the preceding week we passed through the towns of Guadalupe and New Almaden. At the former place we found several improvements being made. Some six months ago, the Superintendent, Mr. B. B. Thayer, finding that neither wrought nor cast-iron pipe would stand the action of the acid fumes passing through them, tried the experiment of using common iron-stone sewer pipe for the purpose of carrying the fumes from his condensers. Between condensers Nos. 1 and 2, he had constructed two series of pipes of this kind. The pipes were 20 inches internal diameter and the series were 50 feet in length, placed at an inclination of about 25°, slanting from condenser No. 1 to condenser No. 2. These pipes were connected with Portland cement, and were provided with numerous man-holes, which were closed in the same way. Whenever the flues became obstructed with soot, they were washed out with a hose, an operation which took only a few moments and which removed the obstructions as perfectly as possible from the smooth, glazed interior; so quickly this can be done that it does not interfere with the working of the furnace in the least, and the soot that is removed by the water is conveyed to settling tanks and allowed to separate and is treated at some future time. These common sewer-pipe tubes have been in operation over six months. Only a few of them show any signs of destruction by the acid fumes. This is, of course, due to the presence of iron in the clay of which they are made. But so well has Mr. Thayer been satisfied with their operation that he intends having a series of condensers made of the best fire-clay, in the following manner: The fumes, after passing from the furnace and into one ordinary brick condenser, are to pass into four sets of fire-clay pipes, 12 inches in internal diameter, and arranged so that the fumes pass alternately up one set of pipes, over curved connections, down the next, through another set of curved connections at the bottom, and up the next, and so on. The pipes will stand 15 feet high and be placed vertically and at distances of two and a half feet apart. They will be contained in a room, 50 feet long and wide enough for the series of pipes to be bent back on itself. The fumes will therefore be divided into four cylindrical streams, 12 inches in diameter and about 700 feet long. Each system, 12 inches in diameter and 700 feet long, will, therefore, expose 2,199.12 square feet of cooling surface, and as there are four such series, there will be 8,796.48 square feet. Very much better results are naturally expected from such an arrangement than from the old system of condensers. The flues are to be provided with man-holes at top and bottom, and it is the intention to shut off any one set of pipes by a damper when they need cleaning and flush them out with a hose, the water and soot being caught in troughs beneath each set of pipes and conveyed to settling tanks. In our opinion, the great difficulty will be to obtain good fire-clay pipes, which will resist the action of the acids. Mr. Steiger of San Jose, has undertaken this and intends to manufacture them from what appears to be a very fine variety of fire-clay, from Michigan Bar. We look to the results of this experiment with much interest, and remark that it is a curious return to the primitive system of "aludels," as used in Spain for centuries, with, however, the added improvements which a scientific technology has made possible.

Mr. Thayer has been carrying on some careful experiments as to the comparative economy of red wood versus Sydney (Wallsend) coal. They have at the hoisting works two equal boilers; the one is fired with wood, the other with coal. The amount of steam produced is kept the same in both and the fuels are carefully weighed. So far, at present prices, he finds the coal decidedly cheaper. This coal, as is well known, produces a great deal of soot, which caused great annoyance, as it filled the whole neighborhood, but a simple flue, of the width of one brick, built in the fire-bridge, not only produces an economy of fuel, but effectually prevents the escape of smoke from the chimney, a thin blue cloud being all that is visible.

It is rather a curious fact that at various times inflammable gas has escaped from fissures and crevices in the workings of the Guadalupe mine. It is reported that a substance resembling petroleum was found on one occasion. It seems that about the Fourth of July, one of the drifts, whose roof pitched upward, became partly filled with water, and remained so for several days. It was at length pumped out. The men knew that this gas had been accumulating there, and accordingly had compressed air blown into the place for 15 minutes. It seems, that instead of being in sufficient quantities to dilute the gas beyond the explosive point, they simply added air enough to make the mixture dangerous, and then entered with their naked lamps. An explosion ensued, of course. There were seven men seriously burned about the face and arms. But fortunately, nothing more serious resulted from it. It seems that a Davy lamp would not be out of place in such localities.

At New Almaden we saw one thing upon which the owners of the mine may congratulate themselves. Mr. J. B. Randol, the Superintendent, with his usual good sense, has been having a topographical survey made of the property under his charge, from the Hacienda, where are situated the furnaces, to beyond the new shaft, the Santa Isabel. The survey is being made by means of the plane table, by the well-known engineer, Ross Brown. It is very nearly finished, and presents already a very handsome appearance. The contours represent differences of level of 10 feet. When the survey is completed, it is the intention of Mr. Brown to make on tracing paper, on the same scale as the topographical, a map of all the workings of the mine, so that it may be laid upon the latter at any time, and the mine in all its parts can be easily seen at a glance in its exact relations to the surface of hills. This map has already been of great use in suggesting ideas as to the best ways of prospecting for new ore, and will, without doubt, be in the end of great service in this way, and the means of saving many times its cost. We are sorry to be compelled to say that this is the first mining property that we have heard of upon the coast, which has been so carefully mapped topographically by private interest. Such work is usually considered unnecessary, and we are glad to find that there are some, at least, of our mining men who can appreciate the help that a little science can be to legitimate mining.

The Santa Isabel shaft is being rapidly sunk to intersect the lower levels of the Randol shaft, which are being extended to meet it. We have some very fine photographs of the new machinery there, which is much heavier than that heretofore put up at the other shafts, in anticipation of more work being done there, as the ore bodies seem working in that direction.

At the Hacienda we found numerous changes in the way of condensing apparatus in the course of construction, which would take us beyond the limits of the present article were we to enter into a description of. We accordingly reserve its consideration for another occasion.

We acknowledge the receipt from the Superintendent of a very interesting translation of the German official report upon the mines and furnaces at Idria in Krain, and also an exceedingly valuable memoir by M. H. Kuss, M. E., upon the mines and works at Almaden in Spain. This latter is from the first number of the *Annales des Mines* for 1878. It has been partly translated by Mr. Fiedler, and it is our intention to give our readers the benefit of both these memoirs through the pages of the Press, and afterwards to put on record as much as possible, the state of the quicksilver interest in California, about which there seems to be so much misunderstanding in Europe and elsewhere.

Quartz Mining in Nevada County.

From what is being said by the Grass Valley and Nevada City papers we infer that greatly increased attention is being paid to vein mining in the vicinity of these places. That locality, as is well known, was the cradle of this industry and there it has been attended by as good average results as at any other point on the coast. For a time, and so long as only the tractable surface ore had to be dealt with, the business continued prosperous. Then for several years, and before either the metallurgy or mechanism of quartz mining had been much advanced, it remained in a very depressed condition, with hardly more than one or two claims on the list of remunerative properties. Some two and a half years since, and about the time of the advent of the Fryer furnace, new life was imparted to this interest, which has gone on increasing ever since. Whether the introduction of that method is to be looked upon as the cause or effect of this revival, certain it is the two were nearly coincident events, quartz mining having then received an impetus that will be likely to lead to its permanent prosperity.

In this connection it may be observed that the local press associates the name of Mr. Fryer with some of the live enterprises recently set on foot in that neighborhood, awarding this gentleman much credit for the energetic and intelligent manner in which he has engineered several of these projects to an assured success. Judging from the remarks of those journals we should infer that Mr. Fryer enjoys the confidence and respect of the community, into which his enterprise has carried him, in a high degree. The resuscitation of the old Murchie mine, the commencement of operations on Gold Flat and the rehabilitation of various other really good, but long neglected properties, are said to have been largely due to his persistent and well-directed efforts.

The Fryer Process.—Letters patent were received last week for improvements on the much abused Fryer process, by which it is claimed the process will be made a success after all. The company which took hold of the works at Grass Valley have been persistently but quietly experimenting and working for a long time, and the improvements suggested by experience have been patented. Affidavits filed for the benefit of the examiners at Washington go to show that very favorable results have been accomplished. Mr. Charles E. Sherman, Superintendent of the Fryer Nohle Metal and Mining Company, has been indefatigable in testing and experimenting with the machinery devised by Mr. Fryer, and in due time will probably show the public what can be done with the improvements recently patented. We shall be pleased to rejoice with the mining public whenever the company definitely establish the successful working of this process.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s Scientific Press American and Foreign Patent Agency, the following are worthy of mention:

Fruit Cutting and Pitting Machine.—Chas. P. Bowen, Oakland, Cal. This device consists of an endless belt, with peculiar self-adjusting carriers, which are revolved by suitable mechanism. Connected with this is a tube with extended springs, carrying knives that cut the fruit into properly sized pieces, and permit the pit or core to pass out of the way through the hole, while the separated fruit is carried to a suitable receiver. In many localities much fruit is allowed to go to waste, and not preserved or dried, for the simple reason that it costs so much to pit and prepare it for drying. This device of Mr. Bowen's is intended to obviate this difficulty and to prepare the fruit for drying in an economical manner. The operation of pitting by this machine is very rapidly effected by mechanical means, no handling being necessary. It will handle large quantities of fruit in a short time and perfectly prepare it for the drying machines.

Bung Hole Lining.—G. H. Mixer, S. F. This patent covers an improved bushing or metallic lining for the bung holes of vessels and casks, and also an implement for inserting the bushing. These bushings, when thus applied, provide an air hole into which a wooden plug or bung may be driven without injuring the band stave or marring the edge of the hole. Heretofore these bushings have been made perfectly smooth in their interior and screw threaded on their exterior, so that a peculiarly constructed inserting implement was required to hold them, while they were being screwed into the opening, and being tapering on the inside, in cases where there was an inside pressure, as in beer casks, the bung was liable to be blown out. Mr. Mixer's improvement consists in constructing the bush with a shallow thread at the lower edge of the interior, and employing a screw plug inserter for turning it into the stave opening.

Gate.—J. M. Mendenhale, Livermore, Alameda Co. The invention relates to certain improvements in the construction of gates, and consists in the employment of two gates which run upon oppositely placed inclines, so that the gates may be separated and opened from these common centers of meeting by running up these inclines. It also consists in the combination with these gates and inclines of a series of cords and operating levers whereby the gates may be simultaneously operated by the person approaching the gate from either direction, by operating the lever without leaving the vehicle or animal, and they may be retained open until the passenger has passed through the gates, when they will close automatically. A lever opens the gates, which close by their own specific gravity at the proper time.

Wagon Axle.—Patrick R. Walsh. The improvements relate to a novel arrangement of wagon or carriage axles constructed in such a manner that the spindle ends can be taken off and replaced without disturbing the axle in its bed. An axle formed in one piece, if broken necessitates its entire removal from the axle bed and carriage, in order to be repaired, causing an expenditure of time and labor, and injuring the appearance of the carriage, paint and varnish being necessarily marred in the operation. By this invention in case of a break, which almost invariably occurs at the inner end of the spindle, the axle is taken apart at the joint, and a new spindle end fitted without removing it from the axle bed or carriage, thus overcoming the difficulties and objections of repairing a broken axle constructed of one piece in the ordinary manner.

Non-Conducting Waterproof Compound.—Alexander Sweeney. This invention is an improved compound for covering boilers, pipes and steam generators, or other articles from which it is desired to prevent radiation of heat, and at the same time to render the covering waterproof, so that it may be exposed to atmospheric influences, or washed down with a hose if desired. The compound unites itself so closely to the articles covered as to need no binding material, such as fiber, rope, or similar substances. This compound, we are informed, has been used on the boilers of some of the steamers of the Pacific Mail Steamship Company with very satisfactory results.

Bullion Shipments.—Since our last issue shipments of bullion from the prominent mines have been as follows: Northern Belle, July 15th, $8,024.20; Alexander, 18th, $3,799.13; Raymond & Ely, 14th, $3,999.42; Hillside, 17th, $11,639.80; Tyho Con., 15th, $4,657.55; Manhattan, 16th and 19th, $23,700; Star, 13th and 15th, $9,694; Christy, 22d, $4,671; Leopard, 23d, $5,900; Independence, 22d, $10,000; Tybo Con., 19th, $4,680.76; Christy, 23d, $5,759; Northern Belle, 22d, $11,532.66; Indian Queen, 15th, $3,558.83; Gold Hill, 25th, $8,660.

From Calistoga last week were shipped 160 boxes of sulphur and 150 flasks of quicksilver from the Sulphur Bank mine; 47 flasks from the Great Western, and 125 from the Napa Con. mine.

Ostrich Farming.

Ostrich farming has come into prominence of late, through the successful practice in South Africa. It was agitated as an industry fitted for our coast about two years ago, but we never heard that the suggestion was acted upon. If it has, and any one has the birds, we should like to know it.

In order to give our readers generally information concerning what is certainly a unique and interesting industry, we shall present some engravings showing the mode of ostrich growing in South Africa. The engravings are from plates which recently appeared in one of the English illustrated papers, being made in the first place from photographs taken on the spot.

The first man to go into ostrich culture on a large scale was Mr. A. Douglass, of Grahamstown, South Africa. Ten years ago Mr. Douglass obtained three wild birds, and afterwards eight more. As soon as he found they would lay in confinement, he began his experiments in artificial hatching. This attempt met with but little success for three years, till he invented the patent incubator, the success of which has become renowned. By its means he has increased the 11 birds to 900, and these and others, becoming dispersed throughout the colony, have made ostrich farming, next to wool and diamonds, the most important industry of South Africa.

Mr. Anthony Trollope's recently published book on "South Africa" contains the following description: "Mr. Douglass is, among the ostrich farmers of the colony, about the most successful, and the first who did the work on a large scale. He is the patentee for an egg-hatching machine or incubator, which is now in use among many of the feather growers of the district. Mr. Douglass occupies about 1,200 acres of rough ground, formerly devoted to sheep farming. The country around was all used not long since as sheep walks, but seems to have so much deteriorated by changes in the grasses as to be no longer profitable for that purpose. But it will feed ostriches.

"At this establishment I found about 300 of those birds, which, taking them all round, young and old, were worth about $150 apiece. Each bird fit for plucking gives two crops of feathers a year, and produces on the average feathers to the value of $75 per annum. The creatures feed themselves, unless when sick or young, and live upon the various bushes and grasses of the land. The farm is divided out into paddocks, and, with those which are breeding, one cock with two hens occupies each paddock. The young birds—for they do not breed till they are three years old—or those which are not paired, run in flocks of 30 to 40 each.

"Ostrich farming without the use of an incubator can never produce great results. The birds injure their feathers by sitting, and at every hatching lose two months. There is, too, great uncertainty as to the number of young birds which will be produced, and much danger as to the fate of the young bird when hatched.

"The incubator shown in the engraving on this page is a low, ugly piece of deal furniture, standing on four legs, perhaps eight or nine feet long. At each end there are two drawers, in which the eggs are laid with a certain apparatus of flannel; and these drawers, by means of screws beneath them, are raised and lowered to the extent of two or three inches. The drawer is lowered when it is pulled out, and is capable of receiving 15 eggs. Over the drawers and along the top of the whole machine there is a tank filled with hot water, and the drawer, when closed, is screwed up so as to bring the side of the egg in contact with the bottom of the tank. Hence comes the necessary warmth. Below the machine and in the center of it a lamp or lamps are placed, which maintain the heat that is required. The eggs lie in the drawer for six weeks, and then the bird is brought out.

"All this is simple enough, and yet the work of hatching is most complicated, and requires not only care, but a capacity of tracing results which is not given to all men. The ostrich turns her egg frequently, so that each side of it may receive due attention. The ostrich farmer must therefore turn his eggs. This he does about three times a day. A certain amount of moisture is required, as in nature moisture exudes from the sitting bird. The heat must be moderated according to circumstances, or the yolk becomes glue and the young bird is choked. Nature has to be followed most minutely, and must be observed and understood before it can be followed. And when the time for birth comes on, the ostrich farmer must turn midwife and delicately assist the young one to open its shell, having certain instruments for the purpose. And when he has performed his obstetrical operations he must become a nursing mother to the young progeny, who can by no means walk about and get his living in his earliest days. The little chickens in our farmyards seem to take the world very easily; but they have their mother's wings, and we as yet hardly know all the assistance which is thus given to them. But the ostrich farmer must know enough to keep his young ones alive, or he will soon be ruined; for each bird when hatched is supposed to be worth $50. The ostrich farmer must take upon himself all the functions of the ostrich mother, and must know all that instinct has taught her, or he will hardly be successful.

"The birds are plucked before they are a year old, and I think that no one as yet knows the limit of age to which they will live and be plucked. I saw birds which had been plucked for 16 years, and were still in high feather. When the plucking time has come, the necessary number of birds are enticed by a liberal display of mealies—as maize or Indian corn is called in South Africa—into a pen, one side of which is movable. The birds will go willingly after mealies, and will run about their paddocks after any one they see, in the expectation of these delicacies. When the pen is full, the movable side is run in, so that the birds are compressed together beyond the power of violent struggling. They cannot spread their wings, or make the dart forward which is customary to them when about to kick. Then men go in among them, and, taking up their wings, pluck or cut their feathers. Both processes are common, but the former, I think, is most so, as being the more profitable. There is a heavier weight to sell when the feather is plucked; and the quill begins to grow again at once, whereas the process is delayed when nature is called upon to eject the stump. I did not see the thing done, but I was assured that the little notice taken by the animal of the operation may be accepted as proof that the pain, if any, is slight.

The large engraving herewith given shows how the birds are herded and corraled. The birds run in large enclosures. The one where our view is taken is 3,000 acres, with a troop of 240 birds in it. Here, once a week, they are all hunted up by men on horseback, armed with large boughs of thorn, to keep the birds off, as many are very savage, and their kick is dangerous. One man will be observed in front, with a pack horse, loaded with Indian corn, to lead them.

The incubating room, as shown in the engraving, is located in a large building so constructed as not to be affected by change of weather. Here several incubators are at work; in one an egg can be seen just broken through. On the top of the machines are the birds' sleeping places, all heated. The drawers are represented as when lowered and drawn out, to show them; when again pushed in, they are lifted and fastened by large screws beneath them.

THE INCUBATOR ROOM AT MR. DOUGLASS' FARM.

CORRALLING THE BIRDS ON THE OSTRICH FARM OF MR. A. DOUGLASS, SOUTH AFRICA.

There were 97 deaths in this city last week.

Stock Operations vs. Mining.

From the misfortunes that have overtaken so many of our incorporated mining companies whose shares have been listed on the Stock Board, it has become with many a question whether this practice had not better be discontinued altogether. The moment these shares are so placed, they partake, more or less, of a speculative character, giving rise to antagonistic interests, which become thereafter active in their efforts to advance or depreciate such stock. According as one or the other of these interests obtain the mine is then run and its affairs administered, being worked, in the spasmodic endeavor to make a large bullion production, in a ruinously exhaustive way, or, on the other hand, so mismanaged as to cause financial embarrassment, put a stop to dividends and render recourse to frequent assessments necessary. Such has been the history of almost every mine whose shares have ever become the objects of this sort of traffic, many once prosperous or highly promising enterprises, and even entire districts, having been utterly ruined through the hedevilments of these conflicting interests. It is useless to deny these facts or to seek to break their force by quibbles about the convenience of this institution and the aid it has extended to practical mining.

It is notoriously the case that companies who have abstained from putting their shares on the stock market, have, in the end, done better than those who have been allured into this species of gambling. This is even true not only of particular properties, but of entire classes of mining. None of our drift or hydraulic companies have offered their shares for sale through this medium, and yet these have shown themselves the most prosperous class of mines on the coast, these companies having managed their affairs with greater economy and in the end proved more successful than any others. Among the best examples presented in the department of quartz milling, are the Hites mine, the Sierra Buttes, Black Bear and the Plumas Eureka, none of which have enjoyed the advantages growing out of stock operations. How has it been with most of the companies who, the moment they were able to make a little bullion or a decent showing of ore, have hastened to get their shares registered at the Stock and Exchange Board? How have they prospered and in what condition are their affairs as a general thing? What of Pioche and Owyhee? What of Tuscarora and Cornucopia? What of the scores of claims about Washoe, and the other scores scattered over Nevada, Utah and Arizona, that have been represented in the mining share market, and for years have figured in our stock reports? What is their present condition and what are the majority of them doing in the way of producing bullion now?

Helping to develop the mines, forsooth! It has smitten them with death and dug their graves. Doubtless there are exceptions to this general truth. Doubtless there are cases in which developments have been helped on and the interests of properties promoted through these dealings in stocks. But these cases are rare. Generally such dealings have proved a detriment to the companies who have had anything to do with them, and we are speaking now solely of the effect these stock operations have exerted on the business of mining itself. What they have done to impoverish the community and debauch the public mind, what has been their influence, in fact, upon all classes of society, including the operators themselves, is another and more serious matter, but one that falling more especially into the province of ethical science, need not by us be further considered.

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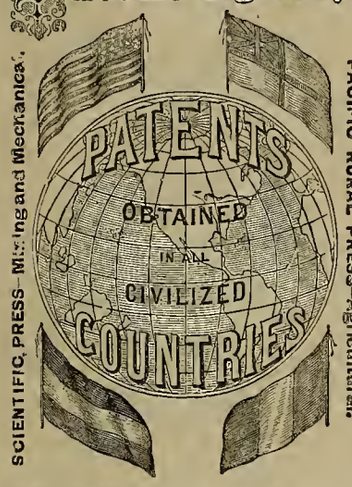

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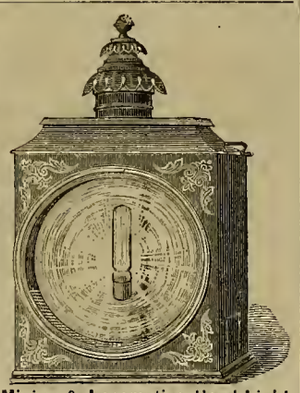

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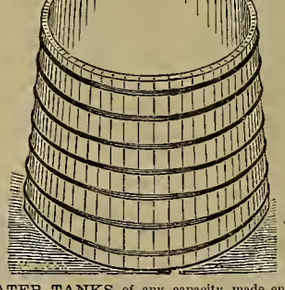

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Several first premiums received for Quartz Mill Screens, and Perforated Sheet Metals of every description. I would call special attention to my SLOT CUT and SLOT PUNCHED SCREENS, which are attracting much attention and giving universal satisfaction. This is the only establishment on the coast devoted exclusively to the manufacture of Screens. Mill owners using Battery Screens extensively can contract for large supplies at favorable rates. Orders solicited and promptly attended to.

32 Fremont Street, San Francisco.

WANTED.

Good Live Business Men to sell the Excelsior Improved Letter Copying Book. No Press, Brush or Water used, copies instantly. Agents' Outfit, $2.50. Agents make from $10 to $15 per day. Address, EXCELSIOR MANUFACTURING CO., 47 La Salle street, Chicago, Ill. Incorporated Feb, 16th, 1877. Capital, $1,000,000. Exclusive Territory given.

MECHANICS' INSTITUTE.

13th INDUSTRIAL EXHIBITION.

SAN FRANCISCO, CAL., 1878.

The Managers have the honor to announce to the public that the Thirteenth Grand Exhibition of SCIENCE, ART and INDUSTRY, given under the auspices of the Mechanics' Institute, will open at the Pavilion on Market, Eighth and Mission streets, on

TUESDAY, AUGUST 13th, 1878.

Great and unusual attractions will be presented to visitors. Mining, Agricultural and other machinery will be in motion. Pacific Coast Manufactures, Minerals and products of the soil will be fully represented, beside many new and interesting novelties never before exhibited on this Coast. The

ART DEPARTMENT

Will be under the supervision of the San Francisco Art Association, a guarantee for excellence and completeness. Local Art will be specially represented, as also works of noted foreign artists, selected from the private galleries of this City. The

HORTICULTURAL GARDEN,

So popular heretofore, will be made still more attractive this year by the addition of many new features.

THE MUSIC.

Each afternoon and evening a first-class instrumental concert will be given by the best soloists and accomplished musicians of this City, with a daily change of programme of the best and most popular music.

No expense or pains will be spared by the Management that will add to the comfort or convenience of visitors.

Applications for space or information can be obtained from the Secretary, at the office, 27 Post street.

IRVING M. SCOTT, Pres't.

J. H. GILMORE, Sup't.

J. H. CULVER, Sec'y.

GOLDEN GATE ACADEMY.

A thorough training school for the best colleges. Also offers a solid, practical, business course, including bookkeeping. Location unsurpassed; methods most approved; health preserved and physical development secured by daily gymnastic and brief military drill. Preparatory department for lads in successful operation. Attention invited to methods and terms. Address for particulars,

D. P. SACKETT, A. M., Principal,

Oakland, Cal.

N. B.—The next school year will commence July 30th.

ICE! ICE!! ICE!!!

Ice at $1.00 Per Ton.

PICTET ARTIFICIAL ICE

COMPANY, (Limited).

Room 51, Coal and Iron Exchange.

P. O. Box 3083, New York.

ST. CHARLES HOTEL,

SANTA CRUZ, CAL.

JOSEPH BLOCH, - - Proprietor.

This popular House, having been thoroughly refurnished and refitted, is now open for the reception of guests as a

FIRST-CLASS HOUSE,

And in the character of its accommodations second to no interior Hotel in the State.

The Hotel Coach will carry passengers from all Trains and Steamers to the House

FREE OF CHARGE.

Two lines of Street Cars pass the Hotel to the Beach and Bath Houses.

Mill and Mining Machinery OF ALL KINDS FOR SALE by BERRY & PLACE

At the Old Stand, Market, head of Front Street, S. F.

J. HEPBURN,

Mechanical Draftsman and Engineer

No. 214 Sansome Street, (Room 29,) S. F.

Working Drawings Furnished. ☞Premium obtained for Designs furnished the city for proposed Steam Fire Launch.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending June 27		Week Ending July 11.		Week Ending July 18.		Week Ending July 25.	
Alpha	12¼	10⅞	10½	8½	13¾	9.75	10½	9
Alta	8¼	7⅞	7⅞	6¼	8¼	6⅝	7⅝	7¼
Andes	40c	35c	40c	35c	40c	35c	40c	35c
Alpa	1.10	45c	....	....	65c	....	60c	....
Argenta	40c	....	40c	....	45c	40c	50c	45c
Baltimore Con	....	....	....	....	....	....	....	....
Belcher	5¼	4.20	4½	3.50	4½	3¼	4.45	3.95
Belmont	50c	25c	50c	35c	1	45c	1	70c
Best & Belcher	15	13⅜	15½	12⅝	15	13¼	15¾	14½
Bullion	5¾	4.80	4.60	3⅜	5¼	3.80	5¾	3.80
Bechtel	2¼	1⅞	1¼	1¼	1.20	90c	1.40	80c
Bodie	4½	4.10	7¼	6	7½	5¼	10½	7
Bentou	2.30	1.90	2	1¼	2	1.90	2.15	1.90
Caledonia	2¼	2.15	2.15	1.95	2¼	1¾	2.15	2.05
California	18¾	15	14½	12¼	13⅝	10½	10⅝	7¾
Challenge	....	....	....	....	....	....	1	75c
Chollar-Potosi	26¾	25	26	25	26	25¾	32	25¼
Confidence	4¼	4	4¼	....	4¼	....	6	5
Con Imperial	95c	80c	70c	55c	70c	60c	75c	65c
Con Virginia	13⅜	13	10½	8¾	9½	8⅛	8¾	7
Crown Point	7¼	5¼	6½	5¾	7	6	7⅜	5¾
Dayton	....	....	....	....	....	....	20c	....
DeFrees	50c	25c	25c	20c	30c	15c	25c	15c
Day	50c	40c	50c	....	50c	45c	40c	....
Eureka Con	57	56½	57	55	56½	55½	53	34
Exchequer	3¼	2.90	2.85	2.65	2.90	2.70	3.40	2¼
Endowment	80c	75c	75c	65c	70c	65c	70c	50c
Gen Thomas	....	....	....	....	....	....	....	....
Grand Prize	4.65	3.90	3.60	3.30	3.60	3.20	3.85	3¼
Gila	85c	60c	65c	55c	55c	50c	60c	50c
Golden Chariot	....	....	....	....	30c	25c	25c	20c
Gould & Curry	6¾	6¼	7	6	7	6¾	8	6¾
Hale & Norcross	7¾	7	7¾	7	7¼	6¾	7¾	7
Hussey	25c	10c	20c	....	25c	10c	55c	40c
Julia	7¾	6	6¾	....	6¾	6¼	7¼	6
Justice	4	3¾	4.60	4.05	5¼	4.05	5¾	4.95
Jackson	....	....	3½	2½	....	....	....	....
Joe Scates	....	....	....	....	....	....	....	....
K K Con	....	....	....	....	....	....	....	....
Kentuck	3¼	2.85	3.10	2¾	3¼	2.90	3.60	3
Kossuth	....	....	....	....	....	....	....	....
Lady Wash	....	....	....	....	....	....	....	....
Leopard	55c	40c	50c	45c	1.45	85c	1.10	80c
Leviathan	20c	15c	50c	....	45c	35c	45c	35c
Leeds	1.15	1	....	....	1	....	1	....
Modoc	1½	1.20	1	70c	70c	50c	35c	25c
Manhattan	7	6¾	6	....	....	....	6¾	6
Meadow Valley	....	....	....	....	....	....	....	....
Mexican	14½	12¾	15¼	14¾	16¾	14¾	18¼	14¾
North Con Virginia	....	....	....	....	....	....	....	....
New York	70c	55c	65c	60c	60c	50c	60c	50c
Northern Belle	11¾	10¼	12	11¼	11	10¼	11	10¼
New Coso	75c	45c	50c	25c	45c	40c	40c	....
Navajo	50c	30c	40c	35c	60c	35c	55c	40c
Occidental	50c	....	50c	....	....	....	....	....
Ophir	49¼	43¾	48¼	47	53¾	47¼	59	42
Overman	13¾	12	11¾	10	11	6¾	11¾	10¾
Panther	....	....	....	....	....	....	....	....
Raymond & Ely	4	3.85	3¾	3	3	....	....	....
Rock Island	....	....	....	....	....	....	....	....
Savage	11¾	11	12¼	11¼	11¾	10¾	11¼	10¼
Seg Belcher	20	....	24	....	24	....	....	....
Sierra Nevada	5¼	4.20	8¼	5¾	7¾	6¾	9¾	7¼
Silver Hill	1.30	1.20	1.10	60c	1.05	70c	90c	75c
Sucoor	15c	10c	1.15	1	1.05	....	1.20	1
Solid Silver	2.80	2.2	2.80	2.2	2.85	....	2.2	2¼
Star	1¾	1.35	1¾	1.20	1.05	40c	1¼	1
Trojan	40c	25c	50c	45c	50c	35c	50c	40c
Uniou Con	6	5	7¾	6¾	7¾	6¾	9¾	7
Utah	8¾	8¼	9¼	8¼	10¾	9	13¾	9¾
Wells-Fargo	35c	10c	15c	10c	15c	5c	10c	5c
Woodville	30c	....	35c	....	25c	35c	30c	35c
Yellow Jacket	8¾	7⅝	8¾	7¾	9	8¼	11¾	9¼

Sales at S. F. Stock Exchange.

Friday A. M., July 19.

600 Alta.....7⅞@7¾
270 Alpha.....9¼
100 Andes.....37½
330 Best & Belcher..11¾@11¾
725 Bullion.....3.95@4
1165 Belcher.....4@3.95
300 Boyle.....40c
850 Con Virginia.....8¼
675 California.....10¼@10½
85 Chollar.....25¼@26
490 Crown Point.....6¼@6⅝
335 Caledonia.....2.05
2190 Con Imperial.....70@55c
60 Challenge.....75c
250 Exchequer.....2.95@3.00
955 Gould & Curry.....6⅞@6¾
290 Hale & Nor.....7
930 Justice.....5⅝@5¾
2250 Julia.....6¾@6⅝
280 Kentuck.....3
250 Leviathan.....35c
250 Leopard.....1.10
250 Leviathan.....35c@40c
2015 Mexican.....18@17¾
150 Overmau.....11@11¼
495 Ophir.....56@55¾
3570 Sierra Nevada.....8¾@8¼
250 Savage.....11¼
490 Silver Hill.....75c
290 Succor.....1.05
220 Trojan.....40c
2455 Union Con.....8¾@8⅜
350 Utah.....11@11¼
4200 Wells-Fargo.....11
710 Yellow Jacket.....9¼@9¼

AFTERNOON SESSION.

1335 Alta.....7¼
800 Arcenta.....45@50c
160 Alpha.....9¼
115 Best & Belcher..14¼@14½
335 Belcher.....4@3.95
265 Bechtel.....90c@1.00
770 Bodie.....7
520 Bullion.....3.90@3.85
1650 Belmont.....80c@1
140 Con Virginia.....8¾@8¼
375 California.....10¼@10½
1340 Crown Point.....5¾
600 Coso Con.....35@40c
780 DeFrees.....20c
500 Endowment.....95c
310 Eureka Con.....53@52
595 Grand Prize.....3.70@3.80
1250 Gila.....50@60c
220 Gould & Curry.....6¾@6¾
200 Hillside.....90
3420 Hussey.....45c@50c
910 Independent.....1.55@1.
1570 Julia.....6¼@6⅜
255 Justice.....4.95@4.
100 Kentuck.....3
580 Leopard.....1.05@1.10
100 Leeds.....1
1035 Mexican.....18¾@18¾
50 Manhattan.....6¼
1210 Modoc.....35c
70 Martin White.....4
50 Northern Belle...10¼@11
895 Navajo.....55@50c
735 Ophir.....59@58
35 Overman.....11
190 Raymond & Ely.....3
810 Star.....1¾
3370 Sierra Nevada.....9¼@9¾
100 Silver Prize.....20c
185 Savage.....11¼@11¾
515 Tiptop.....85@80c
220 Utah.....11@11¼
565 Union Con.....9¾@8¾
50 Ward.....1.45
350 Yellow Jacket.....9¼@9¾

Saturday A.M., July 20.

400 Andes.....40c
495 Alpha.....10
205 Alta.....7¼@7⅛
1165 Bullion.....3.95@3.80
540 Benton.....2@2.05
1210 Best & Belcher..14¼@15
630 Belcher.....3.95@4
630 Bodie.....7@7¼
1920 Belmont.....80@70c
175 Bechtel.....95@90c
1935 Con Virginia.....8¾
615 Oalifornia.....10¾@10¾
430 Chollar.....27@26¾
100 Hillside.....1.90
150 Hamburg.....12
220 Hale & Nor.....7¼@7¾
720 Independent..1.30@1.35
730 Justice.....6¾@5¾
200 Julia.....6¾
300 Jackson.....3
310 Leopard.....90c@1
300 Modoc.....30c
4825 Mexican.....15¾@16¾
115 Manhattan.....6
25 Martin White.....4
90 Northern Belle.....10¾
1050 Navajo.....45c
240 Ophir.....5¾@5¾
2215 Sierra Nevada.....8@7¾
900 Silver Prize.....20@15c
180 Savage.....11¾@11¾
555 Tiptop.....80@75c
1030 Union Con.....8@7¾
235 Utah.....11
400 Ward.....1.45
585 Yellow Jacket..10¾@10¾

Monday A. M., July 23.

90 Alpha.....9¼@9¾
250 Alta.....7¾
45 Best & Belcher..15@14¾
1925 Belcher.....4.40@4.30
550 Bullion.....4.05@4.10
200 Benton.....1.90
300 Boyle.....35c
360 Exchequer.....2¾@2.70
470 Gould & Curry.....7¾@7¼
230 Hale & Nor.....7¼@7¾
555 Justice.....5¼@5¾
310 Julia.....6¾
1075 Con Imperial.....65@70c
1025 Crown Point.....7¼@7¾
225 Caledonia.....2.05@2.10
140 Chollar.....26¾
100 Dayton.....35c
360 Exchequer.....2¾@2.70
470 Gould & Curry.....7¾@7¼
230 Hale & Nor.....7¼@7¾
555 Justice.....5¼@5¾
310 Julia.....6¾
1025 Con Imperial.....65@70c
1075 Crown Point.....7¼@7¾
225 Caledonia.....2.05@2.10
140 Chollar.....26¾
100 Dayton.....35c
360 Exchequer.....2¾@2.70
470 Gould & Curry.....7¾@7¼
230 Hale & Nor.....7¼@7¾
555 Justice.....5¼@5¾
310 Julia.....6¾
3450 Succor.....1.05@1.15
1100 Silver Hill.....90@85c
235 Solid Silver.....2.35
1100 Trojan.....50c
770 Union Con.....7¼@7¾
210 Utah.....10¼@10¾
125 Ward.....1.45
750 Woodville.....40c
223 Yellow Jacket.....10¾

AFTERNOON SESSION.

850 Alta.....7¼@7¾
90 Alps.....60c
750 Belmont.....90c@1
1430 Bechtel.....1¼@1.40
640 Belcher.....4.35@4.40
370 Bodie.....8@8¼
1070 Bullion.....4.10@4
305 Con Virginia.....8@8¼
640 California.....9¼@9¾
445 Crown Point.....7¼@7¾
2600 Con Imperial.....65c
400 DeFrees.....20c
250 Day.....40c
40 Eureka Con.....45¾
245 Exchequer.....2¾@2¾
1430 Gould & Curry.....7¼@7¾
350 Gila.....55c
185 Gould & Curry.....7¼@7¾
260 Grand Prize.....3.55
150 Golden Chariot.....25c
150 Hale & Nor.....7¾
1000 Hussey.....45@50c
150 Hillside.....1¼
50 Homestake.....85
545 Independent..1.35@1.40
910 Julia.....6¼@6¾

SALES OF LAST WEEK AND THIS COMPARED

Thursd'y A. M., July 18.		Thursday A.M., July 25.	
90 Alta	7¾	210 Alpha	10@9¾
10 Alpha	9¼	580 Alta	7¼@7¾
150 Andes	35@40c	220 Andes	35c
170 Best & Belcher	14¼@14¾	65 B & B	15@15¼
1725 Bullion	3.80@3.85	5160 Bullion	4.40@5
370 Benton	1.90@2	100 Belcher	4.45
1385 Belcher	3.95@4.05	355 Chollar	31@32
600 Boyle	35c	2270 Con Virginia	7¼@7¾
225 Con Imperial	65c	1065 California	9¼@9¾
1680 California	10¼@10¾	460 Caledonia	2.10
1350 Con Virginia	8¼@8¾	425 Crown Point	7¼@7¾
75 Confidence	4¼	250 Con Imperial	70c
20 Chollar	25¾	170 Challenge	90c@1
400 Crown Point Ravine	20c	1095 Confidence	4¼@4¾
180 Crown Point	6¾@6¾	1835 Exchequer	3.20@3.40
800 Caledonia	2.20@2.15	440 Gould & Curry	7¼
265 Exchequer	2¾	280 Hale & Nor	7¼@7¾
150 Gould & Curry	6¾	865 Justice	5¼@5¾
295 Hale & Nor	6¾@6¾	2160 Julia	7¼@7
650 Julia	6¾@6¾	1240 Kentuck	3.60@3.70
675 Justice	4.80@4¾	150 Leviathan	45c
110 Kentuck	3	645 Mexican	15¾
1865 Mexican	16¼@16¾	450 New York	55c
650 New York	55c@60c	465 Overman	11¼@10¾
615 Ophir	52¼@53¾	690 Ophir	45¾@46
145 Overman	10¾@11¼	1315 Sierra Nevada	8¾@8¾
300 Succor	1.05	1140 Succor	1.0@1.05
3340 Sierra Nevada	7¾@7¾	160 Savage	10¾
55 Savage	11@11¼	285 Silver Hill	80c
1570 Silver Hill	70@75c	725 Union Con	7¼@7¾
10 Seg Belcher	24	90 Utah	10@9¾
300 Trojan	35@40c	400 Wells Fargo	5c
110 Utah	10c@10¼	1285 Woodville	50c@55c
1380 Union Con	7¾@7¾	1200 Ward	1.55@1¼
400 Ward	1.35@1¼	245 Yellow Jacket	10
6800 Wells-Fargo	5c		
240 Yellow Jacket	8¼@9		

AFTERNOON SESSION.

1325 Alta.....7¼@7¾
250 Argenta.....50c
1230 Belmont.....1@1.15
40 Best & Belcher.....13¾
340 Belcher.....4@4.10
1570 Bechtel.....80@85c
1030 Bodie.....7@6¾
1350 Coso Con.....35@40c
360 Con Virginia.....8¼@9
290 Crown Point.....6¾@6¾
200 DeFrees.....20c
170 Eureka Con.....57@55¾
550 Endowment.....70c
1575 Falcon.....10c
325 Grand Prize.....3.90@4
700 Golden Terra.....1.90@2
400 Gould & Curry.....6¾
2150 Hussey.....40@70c
125 Hamburg.....2
15 H & Norcross.....7¼
130 Indepe.dent.....1.55
780 Justice.....5¼@5¾
615 Julia.....6¾@6¾
1415 Leopard.....1.05@1.10
700 Modoc.....45@50c
100 Manhattan.....6¾@6¾
120 Martin White.....4
3040 Mexican.....17@17¾
210 Northern Belle.....11
1625 Navajo.....60@50c
700 Ophir.....54@55
100 Phenix.....3¾
85 Raymond & Ely.....3
400 Silver Prize.....15@20c
10 Silver King.....13
1425 Sierra Nevada.....7¾@7¾
310 Savage.....11¾@11¾
100 Tiptop.....85c
50 Utah.....10¾
550 Union Con.....7¾@8
600 Wells-Fargo.....5c
140 Yellow Jacket.....9

Pacific Board—Latest Sales.

Wed'sday A.M., July 24.

75 Best & Belcher...14¼@14¾
1055 Bullion.....4.05@4.10
220 Belcher.....4@4.35
75 California.....9@8¾
240 Crown Point.....7¾
230 Con Imperial.....66c
130 Con Virginia.....7¾@7¾
50 Chollar.....27
120 Exchequer.....2¾@2.70
420 Gould & Curry.....6¾
70 Hale & Nor.....7¼
1355 Sierra Nevada.....7¾@7¾
450 Tiptop.....75c@80c
570 Union Con.....7¾

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS—STOCKS ON THE LISTS OF THE BOARDS.

Company.	Location.	No.	Amt.	Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business
Alps S M Co	Nevada	13	1 00	May 21	July 25	Aug 21	O D Squire	331 Montgomery st
Alta S M Co	Washoe	12	1 00	July 18	Aug 22	Sept 10	W H Watson	302 Montgomery st
Belcher S M Co	Washoe	15	1 00	July 17	Aug 20	Sept 10	Jno Crockett	419 California st
Crown Point G & S M Co	Washoe	34	1 00	June 5	July 10	July 31	James Newlands	419 California st
Grand Prize M Co	Nevada	1	1 00	July 9	Aug 15	Sept 5	R H Brown	327 Pine st
Hussey Con G & S M Co	Nevada	5	15	June 21	July 24	Aug 14	R H Brown	327 Pine st
Justice M Co	Washoe	25	1 00	June 4	July 13	Aug 3	R E Kelly	419 California st
Leopard M Co	Nevada	7	30	June 10	July 15	Aug 5	R H Brown	327 Pine st
McCracken Con M Co	Arizona	1	50	July 10	Aug 24	Sept 28	H Aug Whiting	211 Sansome st
Modoc Con M Co	California	5	50	July 17	Aug 26	Sept 16	J W Few	310 Pine st
Martin White M Co	Nevada	3	1 00	July 23	Sept 3	Oct 1	J J Scoville	309 Montgomery st
Ophir S M Co	Washoe	32	1 00	June 12	July 18	Aug 6	C L McCoy	419 California st
Prospect G & S M Co	Washoe	6	25	July 18	Aug 20	Sept 10	Warner Craig	320 Sansome st
Silver Hill M Co	Washoe	3	50	July 18	Aug 22	Sept 12	W E Dean	419 California st
Savage M Co	Washoe	34	1 00	June 7	July 10	July 30	E B Holmes	309 Montgomery st
South Standard M Co	California	2	25	July 23	Aug 27	Sept 17	C A Sankey	331 Montgomery st
Tiptop S M Co	Arizona	3	50	July 15	Aug 21	Sept 18	D F Verdenal	327 Pine st
Trojan M Co	Washoe	8	25	June 4	July 8	July 29	David Wilder	328 Montgomery st
Utah S M Co	Washoe	20	1 00	June 12	July 15	Aug 2	G C Pratt	309 Montgomery st
Wells, Fargo & Co	Washoe	10	15	July 22	Aug 23	Sept 9	W M Helman	309 California st
Young America M Co	Nevada	10	20	June 27	Aug 1	Aug 21	R H Brown	327 Pine st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Black Hawk G M Co	California	2	25	June 4	July 8	July 29	B S Kellogg	240 Montgomery st
Comanche M & M Co	California	2	50	May 28	July 9	July 30	W W Traylor	309 Montgomery st
El Tesoro S M Co	Lower California	5	5	May 29	July 13	Aug 3	W H Chickering	330 Pine st
Eagle S M & M Co	Nevada	7	15	June 24	July 9	July 19	R H Brown	327 Pine st
Excelsior S M Co	Nevada	2	25	July 16	Aug 20	Sept 6	Francis P Devine	304 Post st
Father De Smet G M Co	Dakota	1	1 00	June 17	July 22	Aug 19	J A Quinan	404 Montgomery st
Gover M & M Co	California	36	50	May 24	July 10	Aug 1	W O Wilson	402 Front st
Gold Mountain M Co	California	6	1 00	June 22	July 24	Aug 15	Charles Dore	410 Pine st
Golden Rule M Co	California	7	75	July 15	Aug 17	Sept 9	J B Russell	432 Montgomery st
Henrietta G M Co	California	3	10	June 7	Aug 12	Sept 6	F Klosterman	309 California st
King M & S Co	Nevada	1	25	June 24	July 29	Aug 20	Chas K Clark	111½ Leidesdorff st
Moore's Flat B G M Co	California	7	25	June 14	July 19	Aug 12	J M Buffington	309 California st
Morgan M Co	California	4	50	June 1	July 8	July 29	John J Raphael	533 Kearny st
Murchie G & S M Co	California	1	20	July 2	Aug 7	Sept 6	S D Rogers	Merchants' Exchange
McElroy G M Co	California	2	10	July 23	Aug 28	Sept 17	Lewis Lillie	519 Montgomery st
Nevada Gravel M Co	California	2	10	July 8	Aug 10	Aug 28	J Pentecost	511 California st
Oroville G M Co	California	1	10	June 14	July 27	Aug 22	Ph D Aub	417 California st
Orion M Co	California	2	70	July 9	Aug 9	Aug 24	P Conklin	28 Sansome st
Panther M Co	Nevada	1	8	June 21	July 27	Aug 19	J W Few	310 Pine st
Real Del Monte M Co	Nevada	3	1 00	July 18	Aug 26	Sept 16	A Baird	304 California st
Summit M Co	California	4	05	July 17	Aug 19	Sept 10	J W Clark	318 Pine st
S F Sulphur M Co	Nevada	3	5	June 14	July 18	Aug 13	P M McLaren	310 Pine st
Tiger M Co	Arizona	1	30	July 16	Aug 26	Sept 20	W H Lent	309 Montgomery st
Telegraph C & S M Co	California		03	July 17	Aug 19	Sept 9	I T Milliken	528 California st
Watt B G M Co	California	2	10	June 10	July 16	Aug 6	R Wegener	414 California st

MEETINGS TO BE HELD.

Name of Company.	Location.	Secretary.	Office in S. F.	Meetino.	Date.
Europa G M Co	Washoe	R B Noyes	419 California st	Annual	Aug 3
New York Hill G M Co	California	F J Hermann	418 Kearny st	Special	July 29
Occidental M Co	Washoe	Alfred K Durbrow	309 Montgomery st	Annual	Aug 12
South Comstock G & S M Co	Washoe	J M Buffington	309 California st	Annual	Aug 19
Vermont Con M Co		Edward F Stone	306 Pine st	Annual	Aug 1

LATEST DIVIDENDS—WITHIN THREE MONTHS

Name of Company.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
California M Co	Washoe	C P Gordon	Nevada Block	1 00	July 15
Con Virginia M Co	Washoe	J W Havens	Nevada Block	1 00	June 15
Eureka S M Co	California	R Wegener	414 California st	25	April 25
Excelsior W & M Co	California	Geo P Thurston	315 California st	50	July 15
Eureka Con M Co	Nev	W W Traylor	309 Montgomery st	3 00	July 20
Empire M Co	California	David A Jennings	401 California st	25	June 15
Georgia S M Co	Washoe	R Wegener	414 California st	3	April 16
Independence M Co	Nevada	S H Ayers		25	July 20
McMillen S M Co	Arizona	A O McMeans	Safe Deposit Bldg	50	June 30
Silver King M Co	Arizona	Wm H Boothe	320 California st	50	May 30
Standard G M Co	Cal	W Willis	309 Montgomery st	1 00	July 12

20 Kentuck.....3.40
300 Leviathan.....40c
640 Mexican.....14¼@15
350 Ophir.....43@42
100 Savage.....10¾
955 Sierra Nevada.....7¼@7¾
880 Succor.....1¼@1.05
200 Silver Hill.....80@85c
75 Utah.....10¾
20 Yellow Jacket.....10¼

AFTERNOON SESSION.

340 Bullion.....4.20
10 Best & Belcher.....15
50 Belmont.....1.60
235 California.....9¼@9

235 Con Virginia.....7¾@8
20 Crown Point.....7¾
30 Caledonia.....2.10
100 Combination.....25c
160 Exchequer.....2.90@2.95
230 Eureka.....33@34
30 Gould & Curry.....7
420 Julia.....6¾@6.90
75 Justice.....5¼
100 Mexican.....15¼@15
10 Ophir.....45
120 Sierra Nevada.....7¾
40 Succor.....1.10
40 Union Con.....7¼@7¾
100 Ward.....1.60
350 Woodville.....65c

California Board—Latest Sales.

Wed'sday A.M., July 24.

100 Andes.....37c
15 Alpha.....10@10¼
20 Alta.....7¼
40 Bullion.....4.05
30 Best & Belcher..14¾@14¾
40 Best & Belcher..15¾@15¼
30 California.....9¼
20 Chollar.....26¾
50 Caledonia.....2
20 Con Virginia.....8¼
375 Con Imperial.....70@67½c
650 Crown Point.....7¼@7¾
120 Exchequer.....2.85@2.80
80 Exchequer.....2.80
10 Hale & Nor.....7¾
100 Hussey.....45c
40 Justice.....5¼
40 Julia.....6¾@6¾
20 Mexican.....15
10 Ophir.....43¾
20 Sierra Nevada.....7¾
20 Savage.....11¼
40 Union.....7¾
300 Woodville.....40@47½c
20 Yellow Jacket.....10¾

AFTERNOON SESSION.

20 Alpha.....9¾
20 Alta.....7¾
100 Alexander.....6¾
100 Andes.....37½c
30 Best & Belcher..14¾@14¾
50 Belcher.....4.35@4.30
70 Bullion.....4.10@4.15
1600 Coso Con.....37@35c
50 Caledonia.....2.15
20 Chollar.....27¾
130 California.....9¼@9¾
40 Con Virginia.....8¾@8¾
300 Con Imperial.....69@68c
30 Crown Point.....7¼@7¾
120 Exchequer.....2.85@2.80
60 Gould & Curry.6.80@6.85
20 Hale & Norcross.....7¾
75 Justice.....5.40@5¾
30 Julia.....6¾@6¾
10 Mexican.....15¾
40 Ophir.....44¼@44¾
30 Savage.....11¼@11
50 Sierra Nevada.....7¾
150 Spaulding.....2@2.10
100 Succor.....1.45
300 Tiptop.....48c
300 Twin Peaks.....22½c
30 Union Con.....7¼@7¾
20 Yellow Jacket.....10¼

AFTERNOON SESSION.

20 Alpha.....9¾

Mining Share Market.

The week opened with a lively and advancing market, the upward movement being especially noticeable in Ophir and Mexican, and certain of the north end stocks. Later, however, it appeared to be without stability, as, indeed, there was little calculated to impart to it either steadiness or strength. Only a weak and erratic market need in fact be looked for until tbe loug promised, delayed, ever imminent but ever postponed developments on the Comstock shall be in some measure either realized or abandoned as hopeless or regarded as tbings too far in tbe future to interest the present generation of stock operators. What was gained by Ophir and the north end stocks at the beginning of the week was afterwards lost, Gold Hill securities experiencing a spurt which in its turn also turned out to be short-lived and delusive. What with these bopes deferred and oft-recurring breaks the market seems to be staggering under a load that, with fast-coming assessments, tbreaten to break it down altogether. During the week California, for tbe first time in its history, sold below $10 per share, Con. Virginia having meantime sunk below $7.50, the lowest figure ever touched. Such a desperate decline in these once standard stocks has inspired the frequenters of the Bourse with a feeling of gloom and despondency, which nothing but the discovery of another monster bonanza can more tban partially dissipate. About the middle of the week Julia shares experienced a sharp advance, this being one of the mines in wbich it is expected a paying ore body will soon be developed; and tbat the chances for making such development are as good here as at any other point along the Comstock seems highly probable. Everywhere the miues on the Coast continue to yield their average quota of bullion. In some sections of the country and with certain classes of mines the production is unusually liberal, this being especially the case witb tbe hydraulic claims of California. With the most of these the working season is now near its close, having been one of large aud general success. The plan of operating in small companies and in a small way is coming more into vogue in this State, both because less money is needed for the purpose and because better results are reached in proportion to the amount of capital employed, than where mining is pursued by large companies. The earnings from mining operations are also in this case more diffused, tbereby aiding kindred industries and benefiting other classes hesides the miners themselves. The plan is, therefore, a good one, and as such will be likely to come into more general practice.

Guide for Quartz Mill Stamp Stems.

F. B. Picking, of Pioche, Nevada, has obtained a patent through the Mining and Scientific Press Patent Agency for an improvement in girt binders or guide frames of quartz mills, whicb keep the stems carrying the stamps in position, allowing them a vertical but no lateral motion. It consists in forming a metal hack plate which bolts to tbe girt timber, in or on which are formed dovetail mortices, and a metal hox formed square and tapering, having on one edge a dovetail tension, to fit in tbe mortices in the hack plate. In this metal box is a wooden lining or bushing, which is formed in two longitudinal valves, each half having a semi-circular groove, cut lengthwise down its inner face, so that wben they are in position iu tbe tapering box, tbe two grooves in tbe valves form a circular bole through wbicb tbe stamp stem plays.

Tbere are no bolts or fastenings to be removed and the hushing may be removed and replaced in a moment without tbe aid of tools. In case of a necessity of removing the stamp stems, the box holding the bushing may be taken from its dovetailed seat by sliding it up the stem, where it may remain, or it may be slid off altogetber. The back plate and box may be made of steel. The hardwood bushing will last a long time, and may be easily replaced when necessary.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's office at San Francisco:

BOHEMIA S. M. Co.—July 22d. Capital stock, $10,000,000. Directors — Adolph G. Roden, Thomas McKeever, P. Von Loescke, S. Klein and G. Klaber.

GRASSHOPPERS have appeared in Hicks' valley, Mariu county. They are small, and as yet have done no damage.

METALS.

[WHOLESALE.

WEDNESDAY M., July 24, 1878.

IRON.—	
American Pig, ton	28 00 @30 00
Scotch Pig, ton	28 00 @30 00
White Pig, ton	28 00 @ — —
Oregon Pig, ton	— — @ — —
Refined Bar	2½@ 3
Horse Shoes, keg	5 00 @ — —
Nail Rod	—@ 7
Norway, Oval	—@ 7
COPPER.—	
Sheathing, lb	34 @ 35
Sheathing, Yellow	21 @
Sheathing, Old Yellow	12 @
Composition Nails	24 @—
Composition Bolts	24 @—
STEEL.—	
English Cast, lb	13 @ 14
Anderson & Woods, ordinary sizes	15 @ — —
Drill	15 @ — —
Flat Bar	14 @ 19
Plow Steel	8½@ 12½
TIN PLATES.—	
10x14 I C Charcoal	7 50 @ 8 50
Banca Tin	23 @— 24
Australian	17 @ 17½
ZINC.—	
By the Cask	9 @— —
Zinc, Sheet 7x3 ft, 7 to 10, lb	9 @— 10
7x3 ft, 11 to 14	10¾@— —
8x4 ft, 8 to 10	11 @— —
8x4 ft, 11 to 10	11 @— —
NAILS.—	
Assorted sizes	3 15 @3 25
QUICKSILVER.—	
By the lb	43 @ 45

LEATHER.

[WHOLESALE.]

WEDNESDAY M., July 24, 1878.

Sole Leather, heavy, lb	22 @ 29
Light	20 @ 24
Jodot, 8 Kil., doz	48 00 @50 60
11 to 13 Kil	65 00 @75 00
14 to 19 Kil	80 00 @90 00
Second Choice, 11 to 16 Kil	55 00 @70 00
Cornellian, 12 to 16 Kil	57 00 @67 00
Females, 12 to 13 Kil	63 00 @67 00
14 to 16 Kil	71 00 @75 00
Simon Ulimo, Females, 12 to 13 Kil	58 00 @62 50
14 to 15 Kil	66 00 @70 00
18 to 17 Kil	72 00 @74 00
Simon, 18 Kil	61 00 @63 00
20 Kil	65 00 @67 00
24 Kil	72 00 @74 00
Robert Calf, 7 and 9 Kil	35 00 @40 00
Kips, French, lb	1 00 @ 1 35
Cal. doz	40 00 @60 00
French Sheep, all colors	8 00 @15 00
Eastern Calf for Backs, lb	1 00 @ 1 25
Sheep Roans for Topping, all colors, doz	9 00 @13 00
For Linings	5 50 @10 5
Cal. Russet Sheep Linings	1 75 @ 4 50
Boot Legs, French Calf, pair	4 00 @— —
Good French Calf	4 00 @ 4 75
Best Jodot Calf	5 00 @ 5 25
Leather, Harness, lb	35 @ 38
Fair Bridle, doz	48 00 @72 00
Skirting, lb	33 @ 37
Welt, doz	30 00 @50 00
Buff, ft	18 @ 20
Wax Side	17 @ 18

Gold, Legal Tenders, Exchange, Etc

(Corrected Weekly by SUTRO & Co.]

SAN FRANCISCO, July 24, 3 P. M.

LEGAL TENDERS in S. F., 11 A.M., 99⅜@99.90. SILVER, 2[illegible]@ 2. GOLD in New York, 100[illegible].

GOLD BARS, 890@910. SILVER BARS, 8@15 ⅌ cent. discount.

EXCHANGE on New York, ½%; on London bankers, 49@ 49¼. Commercial, 50; Paris, five francs ⅌ dollar; Mexican dollars, 94@95.

LONDON Consols 95⅝; Bonds, 103¼.

QUICKSILVER in S. F., by the flask, ⅌ lb, 41@42c.

Signal Service Meteorological Report.

Week Ending July 23, 1878.

HIGHEST AND LOWEST BAROMETER.

July 17	July 18	July 19	July 20	July 21	July 22	July 23
29.90	29.95	29.91	29.95	29.94	29.99	29.95
29.93	29.90	29.84	29.84	29.88	29.92	29.92

MAXIMUM AND MINIMUM THERMOMETER.

64	62	63	65	65	62	62
57	55	53	53	54	54	54

MEAN DAILY HUMIDITY.

80.7	85.7	84	79	78	79.7	79.3

PREVAILING WIND.

W	W	SW	W	SW	SW	SW

WIND—MILES TRAVELED.

249	275	267	265	239	275	297

STATE OF WEATHER.

Fair.	Fair.	Fair.	Fair.	Fair.	Fair.	Fair.

RAINFALL IN TWENTY-FOUR HOURS.

.01						

Total rain during the season, from July 1, 1878, .01 in.

Woodward's Gardens were never more attractive than at present. Besides three lions already mentioned, six monster living alligators, several iguanas and a boa-constrictor have just been added. New stars are constantly engaged for the Pavilion exercises. Rates of admission as usual.

EXAMINE the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.94. Lewis C. Grover, President; L. Spencer Cohle, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

MR. W. J. WOODLEY, who took out a Canadian Patent some four years ago, is requested to call at the MINING AND SCIENTIFIC PRESS PATENT AGENCY OFFICE. Business of importance.

MODEL MAKER AND MACHINIST.—I. A. Heald, No 514 Commercial St., San Francisco, (fourth floor).

BUSINESS LETTERS should be addressed to the firm. Individual members are sometimes absent.

The Mechanics' Fair Daily.

By authority of the BOARD OF MANAGERS OF THE MECHANICS' INSTITUTE FAIR the publishers of the MINING AND SCIENTIFIC PRESS will issue a large edition of the NINTH VOLUME of the MECHANICS' FAIR DAILY during the THIRTEENTH INDUSTRIAL EXHIBITION, which opens in San Francisco, Thursday, August 13th, 1878.

It will he of large size, printed and circulated FREE in the Pavilion, and contain the day and evening programme, a list of exhibits, and official hulletin of the Institute.

Its columns will enhrace a large variety of important industrial and scientific informatiou, illustrations and well written descriptions of the general features and most deserving and novel exhibits in the Fair, a record of the Fair and incidents of its daily progress—gay, serious and comic—as they occur.

The best of editorial, reportorial and corresponding talent will he employed, with a view to make the paper of live interest in all its departments and of standard value as a full record of the great exhihition, the wonderful inventions, rich resources and rapid progress of our great Western commnnity.

More than ONE HUNDRED THOUSAND different individuals will read copies of our paper during the Fair. The novel character of the journal—the specially attractive features of its free issue in the Pavilion, and its ahsorhing interest to visitors at the Fair, the attention its columns command when brought into the shop and family circle hy those who receive it freely at the Fair, make the paper a powerful advertising medium.

The Managers have granted us the exclusive advertising and printing privileges, and will receive no advertising in the official catalogue and reports.

Our eight previous volumes have met with unrivaled sneeess and gratifying results to advertisers, nearly all of whom were leading and first-class business firms.

Many thousands of marked copies were sent hy mail and otherwise to friends near and distant, giving the FAIR DAILY a more broadcast and universal circulation than any other newspaper published.

Its columns are more closely examined throughout than those of any ordiuary publication.

By past experience, ample facilities, and a fair reputation of doing business in our line, we expect, with the reasonahle support of all naturally interested in the success of our enterprise, to make the coming volume superior to its predecessors, and eminently satisfactory to the Institute, to our patrons and to the general public, who are more or less henefited by such an advocate of the suhstantial advanecement of the grand and worthy industries of our Coast.

DEWEY & CO., Publishers.

Office, MINING AND SCIENTIFIC PRESS, No. 202 Sausome street, N. E. corner Pine, San Francisco.

APPRECIATION ABROAD.—We copy the following rom the *Mining and Monetary Gazette*, of London, England: "We deemed it advisable, as affording valuable information to our readers, to publish in recent issues of *The Gazette*, the full text of the 'United States Mining Laws and Instructions, by the Commissioner of General Land Office, taken from our talented contemporary, THE MINING AND SCIENTIFIC PRESS, of San Francisco. The documents have now been issued in a handsomely bound volume by Messrs. Dewey & Co., the publishers of our transatlantic contemporary, and it will be found very usefnl to those already interested in American mines, and to others who may be tempted to embark in that enterprise in the States."

Thie paper is printed with Ink furnished hy Chas. Eneu Johneon & Co., 509 South 10th St., Philadelphia & 59 Gold St., N. Y.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in thie paper, as the cheapest appropriate medium for the same.

Excelsior Silver Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Potosi District, Lincoln County, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the Sixteenth day of July, 1878, an assessment of Twenty five Cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary at the office of the Company, 304 Post street, San Francisco, Cal

Any stock upon which this assessment shall remain unpaid on the 29th day of August, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, the Sixth day of September, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

FRANCIS P. DEVINE, Sec'y.

Office, 304 Post street, San Francisco, Cal.

Mariposa Land & Mining Company of California.—Location of principal place of business, San Francisco, California. Location of works, Mariposa County, California.

Notice is hereby given that at a meeting of the Board of Directors, held on the Tenth day of July, 1878, an assessment (No. 14,) of One Dollar per share was levied upon the capital stock of the corporation, payable immediately in U. S. currency, to the Secretary, at the office of the company, Room 33, Nevada Block, No 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary, at the office No. 9 Nassau street, New York City, N. Y.

Any stock upon which this assessment shall remain unpaid on the Twelfth day of August, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the Ninth day of September, 1878, to pay the delinquent assessment, together with costs of advertising and the expenses of sale. By order of the Directors,

LEANDER LEAVITT, Sec'y.

Office, Room 33, Nevada Block, 309 Montgomery street, San Francisco, Cal.

Orion Mining Company.—Location of Principal Place of husiness, San Francisco, California. Location of Works, Iowa Hill, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 9th day of July, 1878, an assessment, No. 2, of 70 cents per share was levied upon the capital stock of the Corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, No. 28 Sansome Street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 9th day of August, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before will he sold on Saturday, the 24th day of Auust, 1878, to pay the delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors.

P. CONKLIN, Sec'y.

Office, No. 28 Sansome Street (up-stairs), San Francisco, Cal.

Seaton Mining Company.—Location of principal place of business, San Francisco, Cal. Locatiou of works, Drytown Mining District, Amador County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the twenty-sixth day of June, 1878, an assessment, (No. 11,) of seventy-five (875) dollars per share was levied upon the capital stock of the corporation, payable immediately in U. S gold coin, to the Secretary, at the office of the Company, Room No. 58, Nevada Block, northwest corner Pine and Montgomery Streets, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the thirtieth day of July, 1878, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the twenty-first day of August, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

JOEL F. LIGHTNER, Sec'y.

Office, Room No. 58, Nevada Block, northwest corner of Pine and Montgomery Streets, San Francisco, Cal.

Office South Comstock Gold and Silver Mining Company. Notice.—The annual meeting of the stockholders of the South Comstock Gold and Silver Mining Company, for the election of Trustees and the transaction of such other business as may he presented, will be held on Monday, the 19th day of August, 1878, at two o'clock P. M. of that day, at the office of the Company. Transfer books will be closed on Saturday, August 12th, 1878, at the hour of 12 M. of that day.

J. M. BUFFINGTON, Secretary.

Office—Rooms 3 and 4, second floor, No. 309 California street, over Aetna Insurance office.

Summit Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the Seventeenth day of July, A. D., 1878, an assessment, (No. 4,) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of said Company.

Any stock upon which this assessment shall remain unpaid on the 19th day of August, A. D., 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will he sold on the Tenth day of September, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors. J. W CLARK, Sec'y.

Office, No. 318 Pine Street, San Francisco, Cal.

Telegraph Copper and Silver Mining Company.—Principal place of business, City and County of San Francisco, California. Location of works, Gopher Mining District, Calaveras County, State of California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 17th day of July, 1878, an assessment of three (3) cents per share was levied upon the capital stock of the Corporation, payable immediately in United States gold coin, to the Secretary, at his office, Room 2, 523 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 19th day of August, 1878, will he delinquent, and advertised for sale at public auction, and unless payment is made before, will he sold on Monday, the Ninth (9th) day of September, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

I. T. MILLIKEN, Sec'y.

Office, Room 2, 523 California street, San Francisco, Cal.

UNIVERSITY OF CALIFORNIA.

The August examinations for admission to the Colleges of Letters and of Science, will be held at Berkeley on WEDNESDAY, THURSDAY and FRIDAY, August 7th, 8th, and 9th, each day, at 10 A. M.

The University year begins August 8th. By order,

M. KELLOGG, Dean.

PAUL'S AMERICANIZED ARASTRA,

Will pulverize, amalgamate and concentrate with expedition, and amalgamate superior even to the Mexican arastra. Call and see it; just suits the times—cheap. Circulars forwarded on recipt of address.

ALMARIN B. PAUL,
Room 20, Safe Deposit Building, San Francisco.

The Ingersoll Rock Drill.

The lightest, most easily adjusted, and only Drill using rubber buffers to protect cylinder-heads, and with Automatic Feed.

Some of the mines using this Drill on the Comstock Lode, Virginia City, Nevada:

Best & Belcher M. Co.,	Con. Virginia M. Co.,
Crown Point M. Co.,	California M. Co.,
Belcher M. Co.,	C. & C. Shaft,
Yellow Jacket M. Co.,	Utah M Co.,
Sierra Nevada M Co.,	Ophir M. Co.,
Silver Hill M. Co.,	Mexican M. Co.,
Sutro Tunnel Co.	Overman M. Co.,
Gould & Curry M. Co.,	

REYNOLDS, RIX & CO., Agents.
18 & 20 Fremont Street, San Francisco, Cal.

KING — The Only SAFE BOILER.

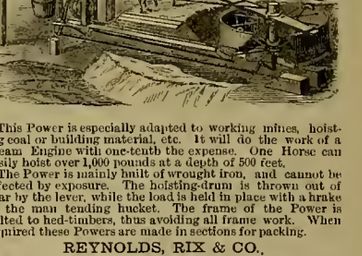
ENGINE. — SAVES One-half the FUEL Consumed by Others.

The engine is adapted to all the various industries in which small power is required. The engines are FIRST-CLASS, and are made from two to twelve horse-power.

The smaller sizes are especially recommended for irrigating land, driving printing presses, or manufactories. The larger sizes are being extensively introduced in small quartz mills, where their economy of fuel and portability especially commend them. Send for circular.

REYNOLDS, RIX & CO., Sole Agents,
18 & 20 Fremont Street, San Francisco, Cal.

MINERS' HORSE-POWER.



This Power is especially adapted to working mines, hoisting coal or building material, etc. It will do the work of a Steam Engine with one-tenth the expense. One Horse can easily hoist over 1,000 pounds at a depth of 500 feet.

The Power is mainly built of wrought iron, and cannot be affected by exposure. The hoisting-drum is thrown out of gear by the lever, while the load is held in place with a brake by the man tending bucket. The frame of the Power is bolted to hed-timbers, thus avoiding all frame work. When required these Powers are made in sections for packing.

REYNOLDS, RIX & CO.,
18 & 20 Fremont Street, San Francisco, Cal

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FEET

BLACK AND GALVANIZED IRON PIPE

—FOR—

GAS AND WATER.

Sizes From ⅛ Inch to 6 Inches.

Brass, Wrought, Cast and Malleable Pipe fittings for Gas, Steam and Water.

W. W. Montague & Co.

110, 112, 114, 118 & 120 Battery St.,
SAN FRANCISCO.

Engraving done at this office.

Iron and Machine Works.

THOS. PENDERGAST. HENRY S. SMITH.

ÆTNA IRON WORKS,

MANUFACTURERS OF

IRON CASTINGS

and MACHINERY

OF ALL KINDS.

Fremont Street, Bet. Howard and Folsom,

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PHELPS MANUFACTURING COMPANY,

Manufacturers of all kinds of

Wharf and Bridge Bolts, Railroad Trestle Work, Car Frames and Bolts, Machine Bolts, Set Screws and Tap Bolts, Lag or Coach Screws.

ALL STYLES OF FANCY HEAD BOLTS.

HOT AND COLD PRESSED HEXAGONAL AND SQUARE NUTS, WASHERS, BOLT ENDS, TURNBUCKLES, ETC., ETC.

13, 15 & 17 Drumm St., near California,

SAN FRANCISCO, CAL.

SACRAMENTO BOILER WORKS,

214 to 218 BEALE STREET,

HALL & KELSHAW,

PRACTICAL BOILER MAKERS,

Marine, Stationary and Portable Boilers, Smoke Stacks, Hydraulic Pipe, Oil or Water Tanks, Ore and Water Buckets, Gasometers, Girders, Bridges and Iron Ship Building.

ALL KINDS OF SHEET IRON WORK.

Repairing promptly attended to at the lowest possible terms.

GOLDEN STATE & MINERS' IRON WORKS.

Manufacture Iron Castings and Machinery of all Kinds at Greatly Reduced Rates.

STEVENSON'S PATENT

Mold-Board AMALGAMATORS,

Golden State Pressure Blowers.

First St., between Howard & Folsom, S. F.

UNION IRON WORKS,

SACRAMENTO, CAL.

ROOT, NEILSON & CO.,

MANUFACTURERS OF

STEAM ENGINES, BOILERS AND ALL

Kinds of Machinery for Mining Purposes.

Flouring Mills', Saw Mills' and Quartz Mills' Machinery constructed, fitted up and repaired.

Front Street, Between N and O Streets,

SACRAMENTO, CAL.

CALIFORNIA BRASS FOUNDRY,

No. 125 First Street, Opposite Minna.

SAN FRANCISCO, CAL.

All kinds of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Bells and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch. ☞PRICES MODERATE.☜

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WM. H. BIRCH. JOHN ARGALL.

California Machine Works,

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☞General Mechanical Engineers and Machinists. Steam Engines, Flour, Quartz and Mining Machinery. Sole manufacturers of Brodie's Patent Rock Crushers and Steel-Faced Tappits. Steam, Hydraulic and Sidewalk Elevators. Repairing promptly attended to.

STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

J. HENDY, 49 and 51 Fremont Street, S. F.

THOMAS THOMPSON. THORNTON THOMPSON.

THOMPSON BROTHERS,

EUREKA FOUNDRY,

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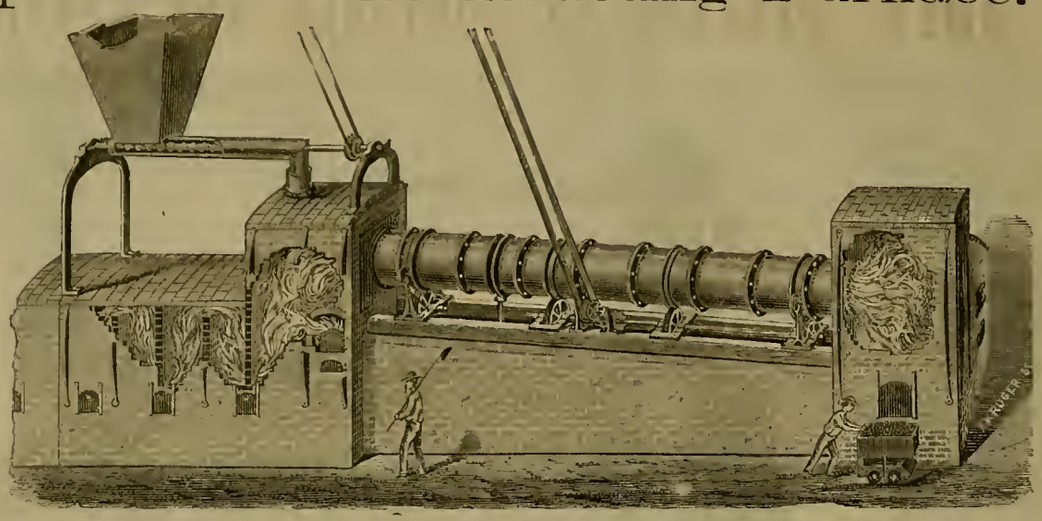

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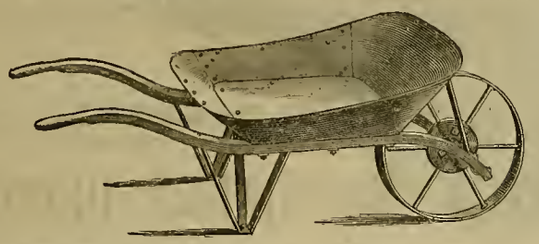

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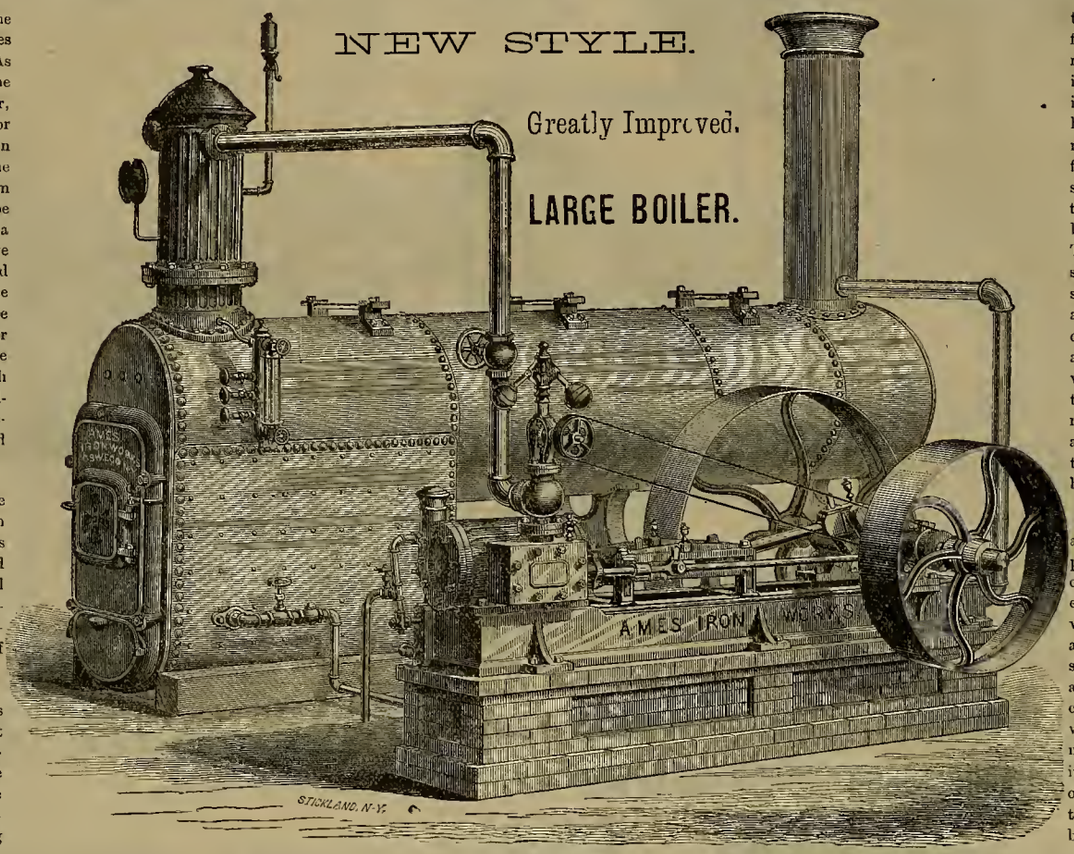

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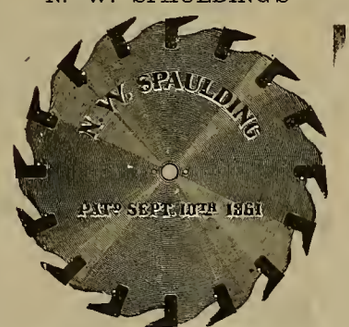

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VOLUME XXXVII Number 5.

Beauregard's Clutch-Coupling.

The engravings on this page represent an improved clutch-coupling invented by Napoleon Beauregard of this city, half of the patent right of which is owned by Mr. B. P. Bruner, Superintendent of the Pacific Rolling mills. The clutch-coupling is intended for connecting and disconnecting the meeting ends of line-shafting. The improvement consists in providing an arrangement, in connection with an ordinary interlocking clutch, by which the parts of the clutch can be automatically thrown out of gear, and the two shafts disconnected while the shafting is in motion and under heavy strain.

The engravings show the device in detail, similar parts being correspondingly lettered. *A* represents a horizontal shaft which is connected with and driven by an engine, and, *B*, a horizontal shaft on the same line.

It may be stated preliminarily that this device is more particularly intended for use in combination with the line shafting of rolling mills, although it can be also applied wherever desirable. The nature of the work done by rolls of rolling mills frequently causes strains upon the rolls and shafting which necessitates an immediate disconnection of the coupling which connects the shaft. In the rolling mill the shaft, *A*, is connected with the power, and the shaft, *B*, transmits the power and motion to the rolls.

The permanent portion, *E*, of the clutch is attached to the shaft, *A*, and has one or more lugs or projections on its outer face, while the sliding clutch-box, *C*, which moves on the end of the shaft, has corresponding lugs or projections which interlock with the other projections when the sliding box is moved against the stationary part, in the usual manner of operating clutches.

On the outer edge portion of the permanent half, *E G*, are enclosed ratchet teeth as shown, the depth of which correspond with the hight of similar projections on the clutch.

The outer end of the projections on the sliding hand, *G*, are made inclined or sloping to correspond with the inclined edges of the teeth on the other hand when they are together. This band, *G*, rotates freely around the portion, *C*, of the clutch and independent of it, and is held in place by a strap, *F*, as hereinafter described. The hand, *G*, is inclined or beveled, as shown in Fig. 2, and the strap, *F*, is correspondingly inclined, so that when the strap, *F*, is thrown forward by the lever, *I*, it grips the hand, *G*, tightly and holds it in place.

This strap, *F*, slides loosely on the band, *G*, when drawn back, and in order that it may be slid in either direction, a bar, *D*, is secured to it. This bar, *D*, has a slot in its outer end, through which projects a rug attached to the sliding guide, *H*. This sliding guide fits in a groove in the clutch as shown, and then holds the strap, *F*, in place, at the same time admitting of a rotary motion. The slot in the bar, *D*, is extended as shown, so that the strap, *F*, may be slipped back or forth without being released from the guide, *H*.

Now when the two parts of the clutch are in engagement, the hand, *G E*, will accommodate itself to the projections and rotate with the clutch; but if the brake is moved so as to slide the strap, *F*, forward on the inclined part of the hand, *G*, the strap then grips the band, *G*, which will be held stationary while the clutch rotates inside of it. The continued rotation of the shaft causes the outer edges of the interlocking projections on the sliding portion of the clutch to move against the inclined edges of the ratchet teeth on the band, *E*.

The sliding portion of the clutch will then be forced outward and out of engagement with the projections on the permanent half of the clutch, so as to disconnect the two parts, the entire operation being accomplished while the shaft is in motion and under strain.

It may be seen by the engravings and foregoing description that this clutch is very effective in its action. In cases where there is a very heavy strain on the shafting, with the old style clutch it was frequently impossible to disengage the machinery from the power in case of urgent necessity. With this clutch the action is such as to be very effective and quick. A clutch of this style is in use on the 12-inch mill at the Pacific Rolling Mills, and it will shortly be used all through the mills.

A Chance to Exhibit Minerals.

Persons having specimens of ores or minerals to exhibit at the coming Mechanics' Institute Fair may send them directly to the Institute or to the MINING AND SCIENTIFIC PRESS, care of Dewey & Co. Specimens, consigned to our care, we will see are properly exhibited at the fair and held subject to the orders of the donors. Little is known of the variety of minerals in many districts on the coast, and this present offer might furnish many with an opportunity to do much good for parts of the country in which they may chance to be particularly interested.

In this connection, it may be well to mention that Californians, as a class, have the reputation of being not very enterprising in the development of the sciences. Noted lecturers from the East have left San Francisco in disgust, after discoursing on science for a few nights to empty benches. Californians are willing to stand quietly by and see Edwards' Pacific coast entomological collection, or some other such, packed up and shipped to the Atlantic, there to find liberal and eager purchasers. It is complained at the University that valuable California mineralogical specimens are sent indifferently past Berkeley to enrich the cabinets of Eastern collectors. Many such specimens of great value scientifically, if not in a money way, necessarily fall first into the hands of men that care little about the classification and cataloguing of the minerals of the State. A very little effort and trifling expense would be sufficient to place such specimens where they could be of great service—in cabinets to which scientific men have access. An opportunity like the above should be embraced. All that need accompany the minerals is the name of the place where they are found, and, if possible, the name of the mineral.

THE Minister of Commerce has informed the Central Committee of the Exhibition that he has decided to reduce the value of the gold medals, so as to double their number. There will now be 150 grand prizes and 2,500 gold medals.

Safety Brake for Cars on Inclines.

Henry H. Garrison, of Pioche, Nev., has obtained a patent through the MINING AND SCIENTIFIC PRESS Patent Agency for improvements on safety brakes on cars, being more particularly adapted for use on that class of cars used on inclines in mines, and which are lowered and raised by means of a wire cable or rope attached to an engine on the surface. It consists in the employment of a draw-bar to which the cable is attached, mounted on the axles at right angles to them in such a manner as to be movable backward and forward for a certain distance, and being firmly attached to one of the axles by a spring wheel draws it back when the strain on the cable is relaxed, and which admits of the draw-bar sliding forward until a shoulder strikes the axle when the cable holds the weight of the car. Engaging with this draw-bar by means of a slot on the bar is the long arm of a lever, the fulcrum of which is pivoted to the main frame of the car, the short arm of said main lever being cam-shaped and having projections on each end, on which rests the long arm of a grip lever, the two arms of these grip levers being held against the ends of the cam lever by a connecting spring at their ends. These grip levers are in turn mounted on the frame at right angles to the axles in such a manner as to admit of free backward and forward motion and so that their short arms, provided with clamp plates for the purpose, will grip the rails or sleepers in case the cable breaks, which action is accomplished by the spring on the draw-bar, aided by gravity, drawing it back when the cable is slackened too suddenly or broken, and thus moving the long arm of the main lever, which turns the short or cam-shaped arm so as to spread apart the long arms of the two grip levers and bring their other ends together so as to grasp the rail between them. Tension being brought on the cable draws out the draw-bar and spring, operating the main lever arm and reversing the whole action of the mechanism so that the spring connecting the long arms of the grip levers draws the long arms together, separating the short arms with the clamp plates and releasing the rail.

It will be seen that the device provides an effective means for preventing the escape of cars on an incline, in case the cable should break. It is positive in its action, holding tighter to the rails as the weight or friction is increased. With this attachment on the cars on inclines in mines serious accidents from breaking or surging of the cable could not occur, as the brakes would immediately check the onward progress of the car at the point where it was when the cable broke.

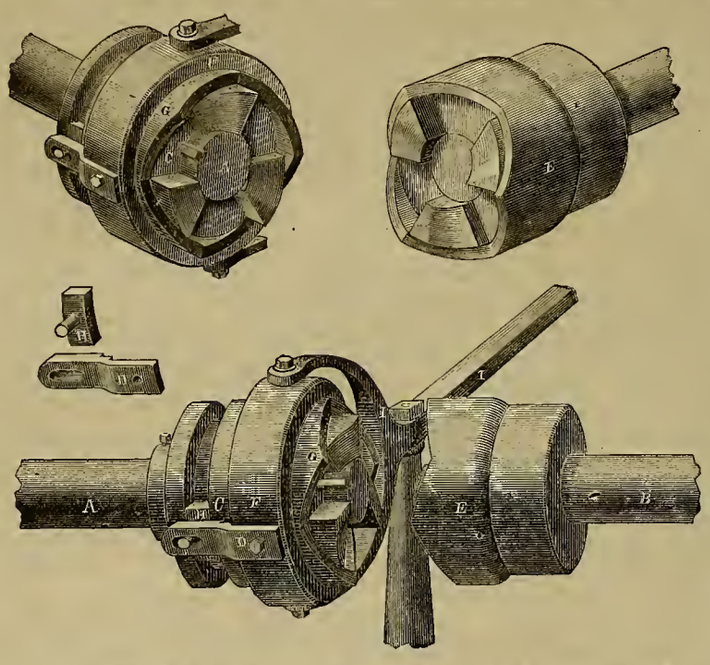
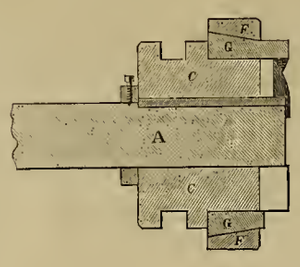


FIG. 1. BEAUREGARD'S CLUTCH COUPLING FOR ROLLING MILLS.

FIG 2.



Contemplated Railroads in Sonora, Mexico.

From Mr. J. R. Myres, a well known railroad contractor, formerly of Sonora county, and now a resident of Oakland, we gather a few facts with regard to the preliminary examination of routes for a couple of railroads, which will no doubt be built in the near future, and will extend into Arizona Territory. A party consisting of Mr. Myres, General Rosekrans and several other gentlemen, traveled by way of Fort Yuma, Cal., and Tucson, Arizona, to Hermasillo and the Allahranca mine in Sonora, by stage a distance from Tucson of 425 miles; thence by mule-back over the trails 130 miles further to the great Multatas gold mine.

This mine is near the river of the same name and is regarded as the best gold mine in Mexico. The party then returned to the Yuaka river, which they followed for about 40 miles, and then diverged to Guaymas, on the Gulf of California.

The railroad route examined was from the coal fields on the Yuaka river to Guaymas, 120 miles. The route was found to be practicable; and there is plenty of wood and water. At least one-half the distance is through as fine an agricultural country as there is to be found in the State of Sonora. The coal fields at the contemplated inland terminus are apparently of unlimited extent, and the mineral is of the finest quality of anthracite. It can be mined at very small cost. The building of this road will enable the owners of these mines to land a first quality of coal upon the wharves of San Francisco at a cost much below the price of the same article at the present time.

The party on their return from Guaymas made a preliminary examination of another route for a railroad from that place to Hermasillo, in Sonora, and thence to Tucson, in Arizona. The distance from Guaymas to the latter place is 420 miles. This road will intersect the road now being built by Thos. Scott, which has already reached Santa Fe, New Mexico, and is to be extended through Arizona to connect with the Southern Pacific or to be extended into California, perhaps to San Diego.

The route from Guaymas to Tucson, Mr. Myres says, passes through one of the best mineral and agricultural countries in Mexico. It only requires the construction of this road to facilitate the transportation of mining and agricultural machinery and the protection of a well established government to develop a very productive country. These enterprises are in the hands of San Francisco capitalists.

THE MECHANICS FAIR.—The fair will be duly opened as announced in advertisement on August 16th. Preparations are going on vigorously, and everything goes to show that this exhibition will excel all previous ones. Many changes have been made in internal arrangement of the pavilion and the exhibits will be made as attractive as possible.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—EDS

Diameter of Hydraulic Pipe.

EDITORS PRESS:—Some parties here are preparing to fit up a hydraulic claim, and not having any more fall than they want, have heeu advised to use extra large pipe for tbe amount of water to be used, as by doing so the friction will be lessened and a good stream from tbe "Giant" obtained. The question now comes up what might be called extra large pipe, for in consulting those who claim to have experience in these matters, they do not seem to have any rule to be governed by, and speak from what they have seen or tried, nor do they agree.

If some of your readers would tell their ideas and give us their reasons, it would, I thiuk, he of much interest to many of us miners. Hoping that some of them will do so, I will state the case: Amount of water to he used, 500 to 600 inches, miner's measure. Length of pipe from sand-box to hank, 3,000 feet. Wanted, to know bow large pipe would be best, the head being 275 feet. The macbine to be wbat is known as a No. 3, witb four or four and one-half inch nozzle. Yours, etc., "GUESS."

Iowa Hill, June 15th, 1878.

It is hoped that some readers of the PRESS will "tell tbeir ideas" on this subject and "give their reasons." If it is intended in the above to state the following general problem: "What diameter of pipe is necessary to carry a given quantity of water per second, its length, and total bead heing known?" The writer may be referred to reliahle works on hydraulic mining. For the solution of the above problem the following rule bas been given:

(1). Multiply the head in feet by 5,280 and divide the product hy the length in feet. Call this A.

(2). Multiply tbe discharge in cubic feet per second by itself and multiply tbis product by 5,280. Call this B.

(3). Divide B by A.

(4). Extract the fifth root of this quotient.

(5). Multiply this root by .235.

Tbe result is the required diameter of the pipe in feet.

In the present case the terms of the prohlem are as follows:

(1). Quantity of water discharged per second in cuhic feet (a miner's inch heing equivalent to .0271 cubic feet delivery per second), = 600 × .0271 = 16.26 cuhic feet per second.

(2). Head = 275 feet.

(3). Length = 3,000 feet.

Following the above rule we have:

$$\frac{275 \times 5{,}280}{3{,}000} = 484 = A.$$

$$16.26 \times 16.26 \times 5{,}280 = 1{,}395{,}926.4 = B.$$

$$\frac{B}{A} = \frac{1{,}395{,}926.4}{484} = 2884$$

The fifth root of 2884 is, approximately, 5.

5 × .235 = 1.175 = diameter in feet.

The quantity of water discharged from a four-inch nozzle with a head of 275 feet may he calculated hy the following rule.

(1). Extract square root of the head aud multiply the result hy 8.03. Call the result A.

(2). Multiply A by the area of the mouth-piece, and the result will be the discharge in cuhic feet per second. The actual discharge is probahly 80% of this.

In the present case the discharge will he somewhat under 300 miner's inches.

The four or four and oue-half inch nozzle will not he large enough to use all of the 600 inches. At Cberokee the data are as follows: Quantity of water 500 to 600 miner's inches; head = 300 feet; diameter of pipe = 20 inches; diameter of nozzle = six inches.

Some men of experience in placer mining suggest that at the top of the hauk a 16-inch pipe he used for 100 feet or so, then a 14-inch pipe. Communications on the subject will he very welcome.

A Bean Harvester Wanted.

EDITORS PRESS:—There are growing upon this rancho and its adjacent horder not less than 2,500 acres of heans. To harvest this large amount in the short time hetween bean ripening and when rains may he expected, would require a small army of men if tbe usual method of hand-picking was resorted to. Is there not some machine already invented that would either cut or pull and therehy facilitate the harvesting? If not, some inventor should endeavor to supply such a patent need.

G. W. RICHARDS.

Lompoc, Santa Barhara County.

LITTON SPRINGS.—Tbis property has recently been purchased by Judge B. Lathrop, formerly of this city, now of Healdsburg, Sonoma county, and Geo. F. McPherson, of Oakland. The tract contained 2,700 acres, which has heen subdivided into 20 farms of 120 acres each, which are offered to tbe public at $40 per acre. Three hundred acres reserved, with the hotel, springs, cottages, etc., for sbareholders, a twentieth of which is deeded to each purchaser of a farm. Personal application can be made to Judge Lathrop at 316 Pine street, Wednesdays and Thursdays of each week, from 10 to 2.

"The So-called Heat-Wave."

On all sides the papers are lamenting the sad condition of our brethren east of the Rocky mountains, as reports bave been arriving day after day of the prostration of one city and tben another hefore the hlighting "heat-wave." The impression created by the reports has been tbat somewhere near St. Louis a great wave of heat originated—a veritahle *wave*, with a crest and hollow, that rolled along from city to city toward the east. Tbe crest passed St. Louis, and there the heat then gradually diminished, wbile Cbicago aud Cincinnati were snbmerged in tbe hillow. Meanwbile, the direction of advance of tbe "wave" was so nnmistakahle tbat, we are given to understand, New York could he warned heforehand to prepare for its arrival within a certain time. But, as reports continue to come, it begins to appear that the wave did not confine itself to an easterly course, hut went also south and west. It was as if the whole country ahout St. Louis were suhmerged in a tranquil sea of heat, and a stone thrown in somewhere near that city had sent ripples of the suhtle medium in circles to every point of the compass. After New York had suffered, the voice comes up from New Orleans; then, it may be, an Arizona paper announces tbat the "heat wave" bas reached Tucson; then Winnemucca complains; and then the "heat-wave" reaches Oregon. But in all this, happy California escapes.

Sucb a phenomenon as tbis was pictured to be naturally awakens a desire to learn, if possible, what this great "wave" is and how it originates. But investigation yields positively no information upon the subject furtber tban tbat the term "heat-wave," as used in these reports, bas merely a popular, figurative meaning, and conveys no scientific idea. "Heat-wave" in physics refers to tbose vibrations of the ether wbich constitutes heat itself. The "beat-wave" resolves itself into simply the unpleasantly hot season tbat visits the unlucky regions at tbis time every year. It is doubtful if there is evidence to show that this year bas heen more notable in the present respect than former years. Under the supposition that such evidence did exist, some one has suggested that tbe excessive heat was owing to the fact tbat the present is a year of minimum sun-spots. Clearly that would be difficult to prove even with the evidence in question at hand. But, as said before, tbis is wanting. The normal average temperature at St. Louis for the montb of June is, according to the Smithsonian statistics, 74°. This year the average was only 72.9°. The normal average for July is 78°. Tbis bas heen greatly exceeded the present year on individual days, hut it is quite possible that the average will not reach above tbe normal.

At present the writer is not prepared to say wbether or not the numher of sunstrokes this year has been greater than usual. If imagination can, as it does in many diseases, invite sunstroke and aggravate its effects, it is a wonder that there have not heen many more serious cases. For a reporter on a St. Louis paper relates that while, on one of the hot days, a reliable thermometer measured 97°, a numbcr of others in the neighborhood indicated 101°, 105°, perhaps as high as 107°. Tbe dissolute and the intemperate in the use of alcoholic stimnlants, it is said, succumb most readily to the effects of the heat. Is not this the case with every malady? However, it is elaborately explained tbat the heat favors malaria, and that the human system, saturated with alcohol, is most sensitive to malarial poison. Wbether this he true or not the records of the sunstrokes in the East hold up another warning lesson.

THE POCAHONTAS GOLD MINE.—This mine is located ahout five miles from Placerville in El Dorado county. It has recently heen purcbased hy Geo. F. McPherson, a capitalist of Oakland, and Albert Mack, of tbe city of San Jose; consideration, $26,000. A three-compartment shaft is being sunk, 6x14 fect, and timhered substantially, good steam hoisting works erected, an air compresser and Ingersoll drill put in place, and everything added necessary to the rapid and efficient development of the mine. There is also connected with the property a 15-stamp mill, with steam capacity for 25 stamps additional. This mine was originally opened in 1851 and worked for ahout 20 years, during which time the yield was ahout $1,500,000, although the appliances for raising and reducing the ore were not as perfect as now generally employed. The mine was worked through an incline, which reached the depth of 500 feet, cutting and exposing three ledges at different depths, varying in width from two and oue-half to four feet. They have now 21 men on the pay roll, and as soon as the shaft is down a proper depth to commence mining the ore, and the mill is started, employment will he given to many more.

NITRATE WORKS OF PERU.—The government of Peru has concluded negotiatious with the associated hanks of a final appropriatiou for nitrate works. Five million pounds sterling is to he devoted to the purchase, etc., and the government will have £1,000,000 left, which it is proposed to devote to the completion of the Chemhote and Cuzeo railroad.

Relics of the Gold Era of "'49."

A correspondent of tbe *Bulletin* writes an interesting accouut of a town of the Forest Hill divide in Placer county, in which he says: There are many parts of California worthy of the poet's pen and the artist's brusb—worthy a trip across the continent, to see which, from the excess of imposing scenery scattered so liberally on every hand, must remain content with tbe cheap pencil of the newspaper correspondent, and the hasty, perhaps impatient glance of tbe commercial traveler.

One of the finest rides in any land would he a tour of the Forest Hill divide, starting at Auhurn, emhracing the whole middle portion of the ridge between the uorth and middle forks of the American river, and ending at Colfax station on the Central Pacific railroad. The first three miles of the journey is down the grade of the river, which we cross on a Howe truss, just ahove the junction of the two forks. The Georgetown road has a fine wire hridge a few hundred yards below. To the '49er and his friends and children, who have listened to his winter evening tales of life in the mines and early days in California, and to the student who has learned of it from Bret Harte or the argonaut, the American is a classic stream. The gold lay in heaps, wbich waited in undisturhed security for the particular parties for which tbey were destined. No one hears of the ground that proved barren; of the hard life and poor fare; of fevers and accidents; of homesick hoys who would give all their prospective wealth to see their mother's face. Distance softens tbe hard outlines, and after these many years memory covers them with beautiful tints and graceful shades, like a purple snuset on the rocky Sierra. Tbe pictures of busy camps, of changing fortunes, of fuss and bustle, and in striking contrast to the solitudes which prevail to-day.

The American River of To-day.

A handful of Cbinamen turn the river and shake tbeir rockers where the banks were once crowded with cabins. An occasional bar is worked by wbites in a dry year. A new experiment is tried once in a while, hut these only serve to emphasize the desolation. Huge piles of rocks and boulders, banks cut deep into hills, ravines cut out as far as there was pay, show the enormous amount of labor spent in working out the gold. The product, instead of coming from bere, is now gathered among tbe clouds where the pioneer only saw buge mountain tops and cumbrous forests. He thougbt even if gold existed there no water could ever he made to reach it. Now we know that the deposits found in river beds and the thin snrface diggings were only crumbs which fell from tbe hoards hid for ages by some of nature's mysterous storekeepers, to be fought for and obtained by future generations only after an outlay of its weight in lahor and treasure. & From the bridge the vast wall of the canyon rises hefore ns like au alp. The grade winds around the points, which run out like tbe teeth of a comh.

The rise is very rapid and the river soon appears far below, and its fretful murmur is lost in tbe distance. The mountain up which we climh seems to be of no possible use. It can never be cultivated. It has no timber except a scattering growth of small scrub oak, and tbat cannot he got to any market. It may have mines somewhere in its rocky depths, hut the indications do not show it.

An old wagon trail on a steep and rocky point, which a driver nowadays would declare impracticable, is where in early days all the travel crossed between Hangtown and Illinois-town. The pilgrim who came overland by the Donner Lake road crossed here or went around hy Auburn and Sacramento to reach the rich diggings.

The track makes straight down hy Murderers' Bar, and with scarce a curve mounts up the Georgetown divide to Cave valley, with the apparent determination to be swerved hy no danger or to be detained by no labor in the fierce rush for the promised land. Fit emblem—that old, unused, washed-out road of the hrave and gallant men who climhed up and down. Fit reminder of thc howed and wrinkled heads whose years of usefnlness have past.

Ou the road to Forest Hill are scveral valuable ranches, the products of which are sold among the miues and mills ahove. Grizzly, Butcher and United States ranches are old and familiar landmarks, and we choose among them for lunch.

Volcanoville aud the mines of the California Water company scar the hrink of the great canyon. Forest Hill, Michigan Bluff, Yankee Jims, Sarahville, now Bath, and Todd's Valley are mining towns of some importance, hut not the camps they used to he. Large companies work as a wbole what was once owned in small lots, and the utmost economy in both numbers and wages is practiced, to the detriment of communities depending upon such localities. The outlet to all these claims is the Middle Fork canyon, whose great depths afford ample fall to work them to advantage. The water is led in flumes and ditches from reservoirs far up among the snowy summits.

Seeking a place to spend the night we turn at a sign-board "Sunny Soutb, two miles," and find our road very up and very down. Abandoning our vehicle we lead our beast into the town and escape the dangers of the descent as well as a hard pull out. Sunny South is a cluster of 20 houses huilt at the mouth of the Hidden Treasure tunnel. The mine is worked by drifting. Some beautiful specimens of pictured rock were given us. The company employs 50 men and works tbem at a handsome profit. Wood and timbers are cut on top of the mountain and hauled to within 1,400 feet of the tunnel, wbere tbey are thrown into a chute, down which tbey fly like cannon balls. The teams are thus saved the hardest part of the road. Tbe towu is clinging for dear life to the soutb slope of tbe divide. It is not so favorably located for anytbing as for the inspection of the foundatious of one house from the roof of the next.

Descending and Ascending.

In a conspicuous place hy the side of tbe road stands a guide board bearing the laconic legend "Damascus—down damn big bill one mile." Partaking of tbe spirit of tbe hardy miner, who makes a joke of sore feet aud shaky knees, we again left our team and the scramble began. Skipping, shuffling and tumbling, we twisted down the zigzag trail in three minutes and came up in three bours. Damascus uestles near the head of Humbug canyon and lies on tbe north side of the ridge ahout opposite Snuny South. It is dependent on the Golden Gate mine, which is on the same lead with Hidden Treasure, hut much older. It is divided into shares owned hy the miuers. Each man is obliged to work his own share or put a man in his place. If he sells his claim the company pays the purchaser $1.50 per day out of the proceeds, the balauce going to pay the seller. The President, Secretary and Superintendent work their daily shift. Our road lies past the Canal Company's reservoir, whicb is in the center of a fine body of sugar pine, several miles in extent. On tbe head of Shirttail canyon aud hranches, a saw mill is at work cutting it into lumher. We get an occasional glimpse tbrough the trees of the almost bottomless canyon on our right, which we must cross before long. We gaze into its deptbs like a small man trying to fathom the mind of a great one.

Iowa Hill.

Iowa Hill bas seen better days. It is shahby geuteel. It is perched on the edge of a high bank that has been washed out, in plain sight of thc Ceutral Pacific, helow Gold Run. The mines are of gravel, and have a good depth. The prospects were very good tbis spring. The mines were nicely opened, aud preparations bad been made for a hig run, but the water failed suddenly, and tbe yield did not pay expenses. Too much rain and uot enough snow was the trouhle.

AMERICAN COAL IN EUROPE.—The United States Consul at Genoa reports that important results are likely to flow from the recent effort of a Philadelphia coal company to introduce American anthracite coal into the non-coal-producing regions of Southern Europe. Two cargoes have been received during the past quarter, and the experiment, which at first threatened failure, has proved a gratifying success. Whcu first put on the market the highest hid was 22 francs ($4.25) per ton—an amount insufficient to cover freightage from New York. On its becoming knowu that the coal was well adapted for smelting purposes, the price at once advanced to 40 francs ($7.72) per ton, which covers cost and freight, and leaves a fair margin for profits. Heretofore, English coke, selling at 60 francs ($11.58) a ton, has been almost exclusively used by Italian iron founders; hut as American anthracite, on trial, yields equally good results, if not better, there is no reason why it should not commaud the market. Over 200,000 tons of English coke are annually consumed in tbe Mediterranean basin. For this trade Amcrican anthracite hids fair to become a successful competitor.

SUPERSTITION OR SCIENCE?—This is an age of enlightenment, yet old superstitions cling fondly about us. It is related that but a few years ago a man in one of the northern counties of this State refused to kill his pigs at a certain season, hecause he said the moon was not in the right sign of the zodiac for killing pigs. In this particular instance the poor man came to grief, for a season arrived when, right sign or wrong sign, he was compelled to kill his pigs; the weather turned out very warm and his pork was ruined. Tbe question of superstition confounded with science was suggested hy noticing in a Nevada paper that in one of the towns, a few days ago, the people were half convinced that on a certain day a cloud would burst over them. Their prophetic conviction was hased upon the fact that said day was the anniversary of a cloud-burst that overwhelmed the town a year ago. We have no news of a realization of their fear. A terrific cloud-hurst has, however, deluged Tucson, Arizona. In the same spirit San Franciscans used to watch with dread the approaching anniversaries of our morc serious earthquakes. It is as if the study of the heavens had trained the human mind to expect every pbenomena to move in cycles.

THE MICROSCOPE IN ROCK SECTIONS. — M. A. Michel Levy recently contributed to the *Annales des Mines* a valuable paper upon the use of the polarizing microscope, for the determination of mineral species by small sections. The investigations of Rosenbusch, Fouquee, and Descloisseux, altbough all emhraced within the last decade, have already hecome classical. Levy tahulates their conclusions, and gives a complete mathematical analysis of the angles of extinction presented hy the sections of a zone, together with a practical application to the study of the principal monochinic minerals, and of some triclinic feldspars.

MECHANICAL PROGRESS.

Knocking in Steam Engines.

Mr. Stephen Roper, mechanical engineer, gives the *United States Miller* an article on "knocking" in steam engines, which will be interesting to our readers. We condense as follows: The most frequent causes of knocking in steam engines are lost motion in the cross-head, wrist and crank-pin boxes; looseness in the pillow-block or main bearing boxes; looseness of the piston rod or following plate; the crank-pin or crank-shaft being out of line with the cylinder; or the wrist-pin, crank-pin or main bearing journal being worn oval; the slide valve having too much or not enough lead; the exhaust opening too soon or too late; the valve being badly proportioned or the exhaust passage outside of the cylinder being contracted.

Other causes are shoulders being worn in each end of the cylinder, in consequence of the packing-rings not traveling over the counter bore at each end of the stroke; or shoulders being worn on the guides, resulting from the cross-head shoes not overlapping them, when the crank is at the dead center; the piston not having sufficient clearance at either end of the cylinder, in consequence of its being altered by taking up the lost motion in the boxes; there not being sufficient draft in the keys to take up the lost motion in the connecting-rod boxes; the packing screwed too tight round the piston rod; excessive cushioning, resulting from the leaky condition of the piston, which allows the steam to occupy the space between the cylinder and piston head, as the crank approaches the center, thereby subjecting the engine to an enormous strain, as at this part of the stroke the fly-wheel is traveling very fast and the crank moving very slowly; or lost motion in the connection by which the slide-valve is attached to the rod. Engines out of line frequently knock sideways at the half stroke, but most generally at the outward or inward, upper or lower dead center, as these are the points at which the greatest strain is thrown on the bearings, in consequence of the direction of the connecting-rod having to be reversed. The foregoing causes of knocking in engines constitute the principal ones.

The knocks arising from lost motion in any of the revolving, reciprocating or vibrating parts of an engine may be located by placing the finger on the part while the cross-head is being removed back and forth on the guides by the starting-bar. But knocks induced by the valve opening or closing too soon, by a contraction of the exhaust, or by the valve or valves being improperly set, are the most difficult to discover, as they are different from those induced by lost motion, the sound being a dull, heavy thud, in many instances causing the engine building and even the foundation to vibrate at every stroke. While an intelligent and careful search will in most cases result in successfully locating the knock, some will for a time baffle the most expert engineer. Instances are not uncommon in which weeks have been devoted, engines taken apart and put together again to find a knock, which, when finally discovered, perhaps turned out to be caused by a loose crank-pin, follower-plate or key in a fly-wheel. It not unfrequently happens that after every other means have been resorted to, the indicator has to be applied in order to determine the precise location of the knock or "thud."

From whatever causes knocking in engines may arise, they are a nuisance, which sounds harshly, not only to engineers, but to all who have an ear for natural mechanics. Nothing perhaps makes the intelligent engineer feel so cheap as to be found in charge of an engine that knocks, as lookers-on are not always capable of deciding who is the fault, the engine or the engineer.

INTERESTING ARCHÆOLOGICAL DISCOVERIES.—According to a Washington correspondent, Professor Baird, of the Smithsonian Institution, is preparing to send, within a few days, one of the scientific specialists in his employ into Virginia, to prosecute the archæological investigations begun under the auspices of the Institution. The region of the investigation lies in Amelia county, about 50 miles south of Richmond, where there have been discovered quarries of soap-stone, or steatite, which appear to have been worked by the aboriginal inhabitants of the continent. Extensive traces have been found of these ancient quarries, out of which were procured the pots and various domestic vessels used by the aborigines of this region. A great number of specimen articles have been obtained already and brought to Washington. The examinations which have thus far been made prove that the quarries were abandoned at least 400 years ago, there being found in them no vestige of iron or other metal implements.

AN ELECTRIC TARGET.—A target which by means of electricity shows instantaneously upon another target set up at the firing station the exact spot where a bullet strikes, and thus does away with the necessity of employing a marker to signal the result of each shot, has been recently perfected, after years of labor, by a Swiss locksmith. The exact details of the target in its latest form are not yet published, but a description was given a short time ago in a Swiss paper, and also in an Australian military periodical, of a target on the same principle, which was successfully tried last year. In this target the face is divided into a number of concentric rings, and each ring again is divided by two lines drawn right across the faces and crossing each other at right angles at the center. In each of the subdivisions of the target at the firing station a small hole is pierced, and when a bullet strikes the distant target a number at once appears in the hole in the corresponding subdivision of the target near the shooter, or should the ball strike upon one of the lines dividing the face of the target, numbers are shown in both the adjacent subdivisions. In the trials made with the target the apparatus worked perfectly during the eight days for which the firing was kept up; the only accident which happened being that once the electric wire was cut by a bullet.

The Importance of Dipping Vertically in Tempering.

In his articles on the cooling of steel during hardening, in the *Polytechnic Review*, Mr. Joshua Rose calls attention to the importance of dipping vertically and not otherwise. He says: The splitting or cracking of steel occurs during the cooling part of the hardening process, and is to be easily avoided even with the most unfavorable of steels, if the conditions of cooling are made to conform to the form and size of the article. The cooling is, in a large majority of cases, performed by dipping the heated steel in water; and the manner in which the dipping is performed may be made at will to crack, warp, or straighten the article.

The instant the surface of a piece of red hot steel enters the water, a rapid contraction of the submerged portion takes place, and unless this contraction is kept equalized to suit the shape of the article, the side or part most contracted will bend hollow, causing the diametrically opposite metal to bend to accommodate the inner curve. Suppose, for example, we heat a piece of steel, an inch square and 12 inches long, to a red heat, and dip it *slowly* in water, so that one side of the square will strike the surface flat and evenly; then that surface will contract while the diametrically opposite or upper surface will remain expanded; the lower face will curve to a concave, the upper one to a convex. If, then, such a bar were curved during the heating process, we may help to straighten it by dipping it slowly in the water with its convex side downward. If it was bent at one end only, we may dip it at that end first, diagonally and with the convex side downward. If, however, we dip it with its length lying either diagonally or horizontally, we are apt to warp it, no matter how quickly it may be dipped.

From these considerations we may perceive how important a matter the dipping is, especially when it is remembered that the expansion which accompanies the heating is a slow process compared to the contraction which accompanies the cooling (although their amounts are of course precisely equal), and that while unequal expansion can only warp the article, unequal contraction will, in a great many, or, indeed, in most cases, cause it to crack or split.

AN AUTOMATIC ORGAN.—The latest attempt to elicit music wholly by mechanism seems to be the "Needham Musical Cabinet," of which we find enthusiastic descriptions in Eastern exchanges. We are told that "Any child that has the ability to work the pedal of a sewing machine can produce all the music, with the aid of the instrument in question, that can be rendered by the most skilled of professional performers. The instrument is called the 'Needham Musical Cabinet,' and when it is closed resembles an ordinary parlor organ. The register consists of reed action and bellows similar to the ordinary organ, but somewhat smaller. The register consists of 39 reeds, but has no finger board. Rolls of perforated paper, about 18 inches wide, properly placed in position, suffice to shut off all the notes except those which are to be sounded, hence any tune can be played and in all its parts. When a piece is played it must of necessity be rerolled upon the cylinder from which it has been played before it is ready for repetition. The mechanism of the instrument is such that the work of rerolling can be accomplished while another piece is being rendered. It is a marvel of simplicity, and it may be doubted whether human hands can be trained to equal it in producing combinations of harmony."

STEAM BOILERS.—The improvements suggested by Mr. E. de Loriere, of Chelsea, consist in constructing an internally fired boiler, with flues oval at the front and cylindrical behind. This tubular flue is furnished with a number of vertical tubes, diminishing in diameter from the front to the back, so that the size of the tube may be proportionate to the quantity of heat remaining to be taken up. The fire-bars are used slightly inclined from the front to the back of the boiler. The invention was provisionally specified, but the patent was not further proceeded with.

AMERICAN LOCOMOTIVES FOR AUSTRALIA.—The Baldwin Locomotive Works at Philadelphia have received an order for two large and powerful locomotives for the New South Wales Government railways. The Baldwin company turned out one engine daily during June.

SCIENTIFIC PROGRESS.

The Life of the Mammoth.

Prof. Henry A. Ward, of Rochester, who recently mounted the celebrated Stuttgard mammoth, speaks as follows, in a letter to the Rochester *Democrat*, of the habits of the animal: But by far the greater mass of the great herds have left us nothing except their bones, teeth and tusks. The number and volume of these remains, which are dispersed over this entire region, is something almost incredible. Certain islands in the Siberian sea have the soil crowded full of them. This is particularly the case at the Laichovian Isles, north of the mouth of the River Seva. The tusks are so numerous and are in a state of such excellent preservation that they form an important article of commerce and are annually shipped in large quantities to Russia and to England, then to be employed by the ivory turner in the same works as is what may be termed the living ivory of Asia and Africa. The preserver in Siberia of these countless large bones, buried under ground and frozen in the ice, has long been a wonder to the inhabitants of the country, who had no reasonable explanation of their source or origin. With absurd credulity they attributed them to a gigantic mole, which they thought burrowed in the ground, living on roots and only appearing at the surface during the darkest nights. To this creature they gave the name of mammoth, which in their language is a term applied to any burrowing animal. This name has been universally accepted in Europe, but limited to the species studied by Cuvier, and described by his friend Blumenbach as *Elephis primigenius*. Cuvier showed the near relation of the mammoth to the modern Indian elephant, its degenerate successor, while another fossil species called *Elephis priscus* was more closely allied to the African animal. Bones of these and still a third species of mammoth are abundant in nearly every part of Europe from England to Spain and Southern Italy, although, strange to say, they become less and less abundant as we approach southern lands, the present home of the race.

In short, the mammoth was once an inhabitant of northern temperature and frigid zones; now his descendants inhabit the tropics. Its remains occur chiefly in beds of gravel, clay and other loose material of the post-pliocene age. In Europe, at least, it seems to have lived coeval with early man. In the bone caverns of England, France and Germany, those great charnel-houses of early animal life, there are found scores and hundreds of the remains of the mammoth commingled with those of the rhinoceros, hippopotamus, anrochs, cavern bear and other animals now quite extinct, or living in other continents. It is clear that the mammoth did not themselves crawl into these caves, often with an extremely narrow opening, and die there, nor do the surroundings allow the idea that they were brought there by the flow of waters. In many cases the abundant marks of teeth and gnawing of the bones show that they were dragged to the cave by wild beasts who made it their den and fed upon them. But in a few special cases the cavern has been the home of early men, who brought there remains of the animals which they had hunted and killed. In these caves there are found, with those of other animals, many bones of the mammoth, and of these every long bone, as those of the leg, has been carefully split open to obtain the marrow from the central cavity. Mingled with these bones are found here and there the flint knives and stone hatchets which served as utensils at these early feasts. On a tusk of a mammoth found in one of these caves in Dordogna, in Southern France, was a rude engraving of the animal itself, scratched thousands of years ago, with the sharp point of a flint. These troglodytes are now no more. They and their giant neighbor, the mammoth, have perished one after the other in the lapse of infinite ages by those changes of circumstances in the organic and inorganic world which are always in progress.

ANCIENT GEOGRAPHY.—Some stir was lately produced by the discovery, in the Lyons library, of a globe of 1701, in which the Zaire Congo was represented as flowing from a large lake westward to the Atlantic, much in the direction shown by Stanley. M. Costamhert remarks in a recent number of *La Nature*, that not only in this case, but in all old documents from the fifteenth century such representations occur. The knowledge acquired was doubtless due to the Portuguese, who, from the fifteenth century, repeatedly crossed the African continent, both from west to east and from east to west. They went rather as merchants than explorers, and were often, no doubt, ill-informed; yet they were able to give pretty precise information about the center of Africa. In most of those old maps the Congo is shown as flowing in a nearly direct line from Lake Zaire or Zamhra to the Atlantic. On one Spanish globe, however, probably dating about 1530–1540, the river appears as rising from a lake, flowing northward, describing a large curve north of the equator, then turning west-southwest toward the Atlantic, more nearly as Stanley represents. Some of these maps are reproduced in *La Nature*, May 4th, and are well worth examination.

RECORD OF THE YEAR'S PROGRESS.—Prof. Spencer F. Baird's "Annual Record of Science and Industry," lately published by Harper & Brothers, of New York, has been received through Roman & Co., of this city. This publication, which has been issued each year since 1871, furnishes in compact form a record of the leading scientific and industrial achievements for the time under review, and is invaluable to the scientific and general reader, as it enables him to survey the field quickly and pursue any item of progress which interests him. It gives the specialist an opportunity for a hasty glance at what other specialists are accomplishing in the several lines of research. In this volume a change has been made in the plan of the book. The different departments of science and industry are reviewed by eminent men, recognized as authority in their distinctive fields, and thus essentials are rightly chosen and truthfully presented. Among these writers of summaries are Prof. E. S. Holden in astronomy, Cleveland Abbe on terrestrial physics, Prof. G. F. Barker on physics and chemistry, Prof. E. S. Dana on mineralogy, Dr. T. Sterry Hunt on geology, S. H. Scudder and Francis M. Green on geography, Prof. Hamilton L. Smith on microscopy, Prof. Otis T. Mason on antrophology, Prof. A. S. Packard on zoology, Prof. F. G. Farlow, on botany, Prof. W. O. Atwater on agriculture, Dr. W. H. Wahl on engineering and technology, etc. These names are a guaranty of accuracy. The volume is carefully indexed and is a model of condensation.

BOTANICAL STUDIES.—Prof. Meehan, in the *Independent*, remarks that there are few scientific fields that afford more scope for original and interesting observation than the botanical. There is hardly a day but some student strikes on a novel feature, and it will be many years yet before we shall have discovered in it all that is to be known. In an English paper recently we have an interesting account of the productiveness of bulbs. Some yield an immense number of offsets, while others reproduce very slowly. In the case of one variety of tulip, called the "Goldham's Mary," only one new bulb is made every year. Many varieties of tulip "think nothing" of yielding a dozen or more. Among the Gladiolus of our garden the same was found to exist. From one variety, called "Brenchliensis," the observer could get a thousand young bulbs in a half-dozen years, while many will not give half a dozen new bulbs a year. There is, of course, a reason —some law governing this productiveness, and which, when discovered, will throw light on many other problems; but the reason has not been made clear yet.

DISCOVERY OF A SALT MINE.—A New York dispatch, June 25th, says: "A remarkable discovery of pure rock-salt has just been made in this State, near the village of Wyoming, forty miles southwest of Rochester, on the Rochester and State Line Railway. On Tuesday, last week, a laborer, employed by a Mr. Evest, was sinking an oil-well, when, at a depth of 1,200 feet, the drill struck a stratum of rock-salt 100 feet thick. The mine is supposed to cover a large territory, and that the salt marshes of Syracuse drain the bed. The salt has been examined by a scientific gentleman, and he says that it is the best rock-salt. Those familiar with salt say that this salt just discovered is pure enough to be shipped to market directly from the mine without receiving chemical purification. There are but few extensive mines of pure salt in the world. There is one in Valencia, one in Poland, and one in Armenia, near Mount Ararat."

A NEW ANIMAL POPULATION.—The *Polytechnic* announces that Prof. E. D. Cope has recently discovered, in a number of different regions from Illinois westward, the remains of a very peculiar and prolific population of lower animals, which inhabited North America during the Permian period, or that which immediately succeeded the Carboniferous. He has determined some 50 species, mostly reptiles and batrachians, some of which are of large size. They are all peculiar in the imperfection of the vertebral column, which retains a large proportion of the fetal cartilaginous cord and which is segmented in various peculiar ways. Superadded to this were limbs and teeth of a high order of organization. In this fauna were both herbiverous and carniverous forms. An account of these interesting discoveries will appear in the *American Naturalist*.

HATCHING SILKWORMS EXTRAORDINARY.—An extraordinary statement is made by *Galignani*—viz., that M. Duclaux, Professor of Sciences at Lyons, has discovered a method of hatching silkworm eggs at will. If, when the eggs are not more than two or three days old, they are rubbed with a brush, subjected to the action of electricity, dipped for half a minute in concentrated sulphuric acid, or chlorohydric, nitric, acetic, or tartaric acid, they will hatch out, and, as the mulberry is in full leaf, two crops of worms are thus obtained in one season. Immersion for a few seconds in water heated to 122° Fahr. is said to be equally efficacious. The worms from the artificial hatching are said to be hardier than those reared in the ordinary manner.

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

AMADOR.

GOVER.—*Ledger*, July 27: Everything moves along prosperously about the Gover. Superintendent Palmer expects that the new shaft will reach the 700 level within a week. The mill is running on average quartz from the 600 and 700 levels.

BUNKER HILL.—The mill is well supplied with excellent ore from the 230 level. Average output of gold is from $10 to $13 per ton. The shaft has only been explored to the depth of 380 feet. The managers have determined upon the erection of a 20-stamp mill.

VOLCANO ITEMS.—J. Grieshack is putting up hoisting works on his mine near Mace's mill, to he run by the same power that runs the arastra. Another quartz vein has heen uncovered near Volcano, in the vicinity of Robinson's claim. Stewart's mill is running on Downs' rock. The indications point to a splendid yield. Work has been resumed on the McCreevy claim. This consists of a small quartz streak, three or four inches wide, but carrying a heavy perceutage of gold.

VAUGHIN MINE.—*Dispatch*, July 27: The Vaughin (previously the Bismarck) is now in a fair way to be thoroughly prospected and developed. The old shaft is being cleaned out; this done machinery will be put up and the shaft sunk to a depth of about 300 feet, drifts being run in the usual manner.

ITEMS.—During the week several ounces of gold, including pieces worth several dollars each, was washed out from the dirt under a hotel in Fiddletown. The Volcano tunnel is in 1,100 feet; rock hard as steel. Rock estimated at $40 is going to mill from the Downs mine; rock estimated at from $75 to $100 per tou is being taken out.

BUTTE.

MOUNTAIN SPRING TOWNSHIP.—*Mercury*, July 26: Creek and ravine miuing is about suspended for the season for the want of water, but there is much activity in river mining. In the South Fork of the Feather, the following companies are at work: Woodman, Kneen & Co. are putting in a dam and flume at a point where the Mooretown wagon road crosses the river. Craudall & Co. are working the bar just below and opposite Stringtown. At the bend of the river a large company of Chinamen are at work. A. Price is opening a claim about half a mile below the hend, and Mr. Ury has one opened ahout half a mile helow Mr. Price's. These claims are all helow the F. R. &. O. Water Co's head dam. Above the dam are several companies at work, but I do not know their names or the figures they have made. Of the above mentioned companies, Mr. Ury is the only one tbat has his claim opened. The others will be a week or ten days finishing their flumes and getting their machinery in working order. On the South Branch of the Middle Fork of Feather, several large companies of Chinamen are at work in the river hed. There does not seem to be much going on in the Middle Fork. Quartz mining is beginning to attract considerahle attention. Oro company's tunnel has heen driven into the hill nearly 600 feet. The Electric mill is now running ou quartz taken from a newly opened lode with very good success. E. W. Wagoner has re-located the Crystal Hill lode and has found prospects that he considers will justify him in erecting a mill.

CALAVERAS.

ENORMOUS YIELD OF GOLD.—*Chronicle*, July 27: We have returns from the richest quartz we ever heard of being worked. It is on the South Fork of the Mokelumne river, opposite the San Bruno mine at Mosquito. A small lot of it—five tons—was crushed, yielding 63 ounces. The total yield of the five tons is $1,071—an average of $214 per ton.

THE shaft of the Gwin mine has reached the depth of 1,550 feet. It is stated that work is soon to be resumed on the Banner mine at Mosquito. Prospects are favorahle at the Whisky Slide mine. Hoisting machinery has lately heen put on the mine. Contract has been let to sink the shaft 75 feet deeper.

FRESNO.

CARTWRIGHT MINE.—*Expositor*, July 24: We learn that 30 tons of ore from the Cartwright mine was recently crushed at the Champion mill, and $420 cleaned up as a result. This mine has been prospected to a depth of over 100 feet, and a large ledge, over four feet in width, found as far as prospected. The ore seems to be of a low grade, but there seems to he an ahundance of it. The yield per ton, as indicated hy the clean up, as above stated herein, is less hy far than the actual value of the rock, as the product was ouly the free gold contained in the rock, the sulphurets not being worked. The rock also carries cousiderable silver—some of it more silver than gold, and of this a large percentage is lost in working, as the machinery of the mill is only intended for saving gold. With good machiuery there is no doubt but the ore from this mine would yield, as far as prospected, over $25 per ton, and of this class of ore there are thousands of tons in sight.

INYO.

EMIGRANT.—Coso *News*, July 27: The Emigrant mining company, whose works are situated in Lee district, has placed its stock on sale in the stock boards. It was started at $2.25 and closed at $2.50. As this company is entirely out of debt, and will soon have their mill running at the mines, instead of hauling their ore, as heretofore, nine miles, and paying $14 per ton therefor, we may expect to see Emigrant stock appreciate to quite a respectable figure soon. It is the only company operating in Inyo county that is out of debt; it has good men at its head; and as the ores are high-grade, free-milling ores, there is not a douht that Emigrant will soon take high rank among our best ventures.

LOS ANGELES.

BLACK STAR.—*Republican*, July 23, quotes from the *Gazette:* Two large wagon loads of coal from the Black Star coal mine were brought into town yesterday. A dozen eight or tenmule teams hauling silver rock and coal will make things lively. *Republican*, same date, reports that some old miners are somewhat excited at what they think the excellent prospects of the Silverado mines.

BUENA VISTA.—*Republican*, July 24: It is said that a seven-eighths interest in this mine has been bonded to San Francisco capitalists for $10,000. This amouut has already been expended by these gentlemen in developing the mine.

MONO.

BODIE.—Bodie *Standard*, July 24: All are impressed with the steady and healthy appearance whieh this district is assuming, and there is no longer a doubt of its great mineral wealth. The Bechtel has commenced shipping ore to their new mill, which is rapidly approaching completion, and ere long the shrill whistle will announce her readiness to reduce ore into gold bars. Prospecting is still carried on to a considerable degree and many new claims are heiug located, some of which make a very fair return from assays. When all the mills have started up and are running regularly, this section will make a showing which will surprise many who have heretofore paid but little attention to our district.

LAKE.—Arrangements are being made to put up a 20-stamp mill iu this district.

NEVADA.

DERBEC MINE.—*Tri-Weekly*, July 27: The Superintendent reports that the mine is doing very satisfactorily. A place for a station at the bottom of the shaft is being excavated. The main tunnel is in over 30 feet. In about four weeks tbey will he ready to breast out and hoist the gravel ready for washiug. The arrangements for washing are ahout completed at the surface.

NEW ENGLAND MINE.—The lower level has just heen reached and tho prospects are very good. The ledgo is found to be 16 inches wide and looks well.

PLACER.

CLEAN UP.—*Tri-Weekly*, July 20: The lessees of the Deadwood mine had their second clean-up. The average yield was $57 per tou.

SOUTH YUBA CANAL CO.—Nevada *Transcript*, July 23: The South Yuba Caual company will, within a few days, have its system of telegrapbic and telephonic communication completed, the line reaching to every important station on tbe ditches, in all a distance of a trifle over 184 miles. The whole system is perfectly arranged in detail, and works more successfully than even the most sanguine had anticipated.

ITEMS.—Dutch Flat *Forum*, July 25: The Planet Gravel mining company havo levied an assessment of two cents per share upon the capital stock. Another claim at Michigan Bluff is proving itself to be rich. A prospect was struck in the Swiftsure mine, which yielded $6 to the pan. We are informed that the Florence Gravel mining company at Hunt's hill have discharged all their hands and suspended work. We did not learn the cause of the stoppage.

Placer *Argus*, July 27: The Weske and the Hidden Treasure are paying well. The Swiftsure, the Hazard and others are promising very well indeed. The Van Emon brothers had a satisfactory clean-up at the Big Gun last week. We were shown a $50 nugget that was then taken out.

Placer *Herald*, July 27: The great bonauza of Placer county, known as the "Pike-Bell mine," is still upward in its tendency, turning out the gold in great profusion. The work of pumping the water out of the Lincoln coal mine was commenced last Sunday morning.

PLUMAS.

BELL MINE.—*National*, July 27: The ten-stamp mill is steadily at work on good quartz, and already over $3,000 has heen taken from the hatteries for the month of July. Another cleau-up is yet to he made, which will probably increaso the yield for the month to ahout $4,000. The mine looks promising.

BIG NUGGET.—On Monday, July 22d, Mr. J. M. Jackson picked up a nugget weighing 20 onnces, in his claim, near Long valley.

SHASTA.

COPPER CITY.—Reading *Independent*, July 25: The mill of the Extra mining company is running night and day. They expect to ship two 100 pound hars of silver on the 1st of next month. The town is growing rapidly and overybody thereahouts is juhilant.

SIERRA.

ITEMS.—*Mountain Messenger*, July 27: Work on the Pliocene shaft is being prosecuted vigorously. The Savage company is putting down their shaft rapidly. The North Fork company of Forest City are working about 20 men. The Golden Star is prospering finely, having, beyond question, an excellent gravel miue. The Bald Mountain company have let contracts for $6,000 of mining timbers, and we are informed have let a contract to run several hundred feet of main tunnel. The San Juau company has commeuced a tunnel and are in some 30 or 40 feet.

TRINITY.

RICHER THAN EVER.—*Journal*, July 27: A few weeks ago we mentioned the new discovery hy Trotter, Diener & Co., in their mine at Deadwood, which showed much richer quartz than they had previously found. Since then one arastra has heen run on this rock; 26 tons were crushed in 22 days, aud the result, as we are informed by Mr. M. F. Griffin, is $2,308, or at the rate of nearly $100 to the ton. The lode is now well defined and gives every indication of permauence and continued richness.

GOOD.—Wallace & Hughes, on Trinity, opposite Point Bar, made a $1,000 clean-up last week from a run of onlý five days.

THE Altoona quicksilver mining company will make a good report this season. The retorts were fired up about the first of June and 500 flasks produced in six weeks.

BEAUTIFUL GOLD.—We were last week shown an extra nice lot of gold dust from the claim of Junkans, Schafer & Co. on Oregon gulch. In all there were about $3,000 of the "pumpkin seed" variety, bright and beautiful.

TUOLUMNE.

SOULSBYVILLE.—*Independent*, July 27: The Soulshy mine is in good condition—never better. No. 6 drift going north is producing an abundance of quartz, and the boys say it is very good. Tom West & Co. will start the Independent mine next month by letting a big contract to sink the shaft. Boh Raymond's mine is looking well, with a good suhstantial lode all over her long neglected workings. The Wheal Perran mine is turning out good specimens of rich quartz. The Live Oak is a first-class mine. The rock is full of lead and gold. The ledge is from two to three feet wide.

GROVELAND.—The new pumping machinery on the Mt. Jefferson miue has heen started up aud everything works well so far, and there is a fair prospect of soon having the water out, so that the new proprietors can see what they have in the bottom of the mine.

Nevada.

EUREKA DISTRICT.

THE ALEXANDRIA MINE.—Eureka *Sentinel*, July 28: A number of gentlemen yesterday visited the Alexandria mine, situated on the line of the Eureka tunnel on Prospect mountain. The owners are jubilant over the appearance of the mine, the large cave struck a few days since proving to be to all appearances a vast body of ore. Yesterday about 20 tons were shipped to the Richmond furnaces, assaying $150 per ton.

VARIOUS MINES.—The Republic mine has been leased for a year. The San Jose mine has been yielding some fine ore; a shipment will he made by the lessees this week. The time for the redemption of the Orange tunnel expires to-day. Mr. Pat. Moran will probably fall heir to it, as he has a judgment against it for $2,800. A contract of 50 feet on the main shaft of the Bauner mine was finished yesterday. The shaft is now down ahout 300 feet, being the deepest on Prospect mountain. The face of the drift in the Albion mine is in 14 feet from the shaft. The Ruby hill limestone, in which ore is found, has been entered. The drift is seven feet above the 600 level of the Richmond miue. The hottom of the shaft is in limestone.

MOUNT ROSE DISTRICT.

PARADISE MINES.—*Silver State*, July 27: At a meeting of miuers, held pursuant to call, in tho Paradise mines the following laws were adopted: The name of the district shall be Mount Rose miuing district. The district shall be hounded on the west by the summit of the range west of Paradise valley; on the north and east by Martin creek; on the south by a line running due west from the hot springs situated on the Little Humboldt, ahout six miles from Martin creek. Every claim of 1,500 feet shall have $50 worth of work (or improvements) expended on the same within 90 days from the date of location. That $1 shall he the fee for filing notice of location. That 300 feet from the center of the ledge each way shall be allowed hy the laws of this district. The fees for recording shall he $3 for each notice of location. A. L. Washburn was elected recorder for one year.

NYE.

BELMONT.—*Courier*, July 27: The following is from the superintendent's report: During the past year the main shaft has heen sunk 92 feet and timbered complete, and a crosscut run 60 feet east to the ledge from the shaft on 600-foot station, from which point I drifted south 550 feet upon the vein, exploring aud making the necessary work as profitable as possible. The development made in this drift is a decided improvement over anything found below the old works on the 300-foot level. I conuected the 500 and 600-foot levels by an upraise, made several crosscuts and run a drift 50 feet north ou the 600-foot level, which comprises the principal work done in this part of the mine. There is nearly 200 tons of ore on the dumps and ahout 1,200 tons accessible in the mine. The amount of water is gradually diminishing and is easily handled by the pumps. The main shaft and pumps are in perfect working condition. Wire rope, cages, engines and all other machinery necessary for operatious are in good order.

WHITE PINE DISTRICT.

WHITE PINE.—Eureka *Sentinel*, July 26: A gentleman from Hamilton informed us last evening that the mill at Eberhardt is in full blast, and has an abundance of ore to keep it running for the next six months. He also stated that the Eberhardt & Aurora company, who are runuing a tunnel, which, when completed, will be in a distance of 6,000 feet, and a depth of 1,500 feet, have recently come upon a large body of ore, assays from which yield an average of gold and silver amounting to $60 per ton. This is very encouraging news, as the Eberhardt & Aurora company is, and has heen for a long time, the mainstay of Hamilton. If this news be true, and we have no reason to doubt it, coustant employment will be given to a large number of people. Besides, when it has been demonstrated that there is ore at depth in Treasure hill, there are several wealthy companies in England aud San Francisco who will at once commence mining operations on their old claims, when Hamilton will again come to the front as one of the best mining districts in the State.

Arizona.

SENATOR.—Prescott *Enterprise*, July 24: One hundred and four aud one-half ounces of bullion, the proceeds of 80 tons of ore from the Senator, were received last night by Messrs. Bowers & Richards. The mill is runniug well.

SILVER FLAKE.—Mr. Cherry, who has been examining the Silver Flake and other mines, in the interest of Chicago capitalists, is in town, and though not prepared to report definitely on the recent examination, expresses himself much pleased not only with this section, but with Arizona at large. Says that in his opinion we have richer aud more permanent veins of ore here than are to he found elsewhere in the United States, and he has visited every mineral district of importauce. He meets with a peculiarity in the mineral formations of some portions of Arizona and Sonora that exists only in these sections. The mineral bearing veius do not change with the various formations through which they pass, but preserve their valuable character all through.

PECK.—Late reports from the Peck mill and mine are highly encouraging. The mill has lost uo time lately. Mine is now paying well.

AUBREY.—*Sentinel*, July 27: The new placers, 20 miles above Aubrey, are still attracting much attention. Dry-washing machine up there made $350 in four days.

CHIMNEY PEAK.—The old Chimney Peak placers have heeu galvanized into a new spurt of activity hy the same heavy rains that washed away the railroad track week before last. Tbey are dry diggings, from which immense quantities of gold were worked without water, until that ceased to be profitable. The late rains eompletely soaked the country, filled the tanks, and produced runuing water in several places. This induced working the old ground over again. Some claims are paying $4 to $5 a day to the hand. The diggings are but a few miles from the Colorado river, and will some day be extensively worked by hydraulic process.

The Gila Con. miniug company have ordered an engine, steam pump, a lot of piping, and a large gravel-washiug machine.

Colorado.

SHERMAN MOUNTAIN.—*Miner*, July 20: Since the important discovery made on the Frostburg a few weeks ago considerable interest has been taken in some of the adjacent properties, which are principally old locations, though it is not unlikely that such wholesale denudatiou of old lodes as is now progressing in this vicinity may result in tho discovery of new ones. A healthy impetus has been given to mining ou this mountain, and judging from the incipient devclopments already made, we have reason to hope that labor will not be in vain on Sherman mountain.

EAGLE BIRD.—The lessees on the lower level of this miue are taking out from three to four inches of ore, a late run of which milled 208 ounces for first-class and 110 for secoud-class. The ore is fine-grained, galena carrying gray copper.

PAY ROCK.—The developments on the Pay Rock are progressing with their ordinary uniformity and profitable results. A total nnmber of 68 men are employed who are working under lease with a very few exceptious. Four thousand four hundred pounds of T rail is ordered for the lower level of the mine and will he put in immediately. The company are not doing any work except to make improvements of this kind. Some of the first-class ore mills from 700 to 800 ounces per ton. From four to five tons of a high grade of ore were lying in the ore house when we visited tbe mine in the heginning of the present week.

HYDRAULIC MINING AT NORTH EMPIRE.—The expenses, now that the giaut is started, are comparatively light, but six or seven men being employed. The present supply of water comes from Mill creek, aud the ditch constructed for its transit is four miles in length. The supply from this source is not considerod sufficient and the company are bringing in an extra supply from Mad creek through a ditch two and a half miles in length, which is nearly completed. Two giants will he worked as soon as the water supply is sufficient. A clean-up will probably not he made for a month yet.

LEADVILLE.—The Hall & Cooper lode has

heen worked eight months and the mill returns show a product of $80,000. The Iron is said to be the best paying mine in the camp. It shows from one to 10 feet of ore and in one place the correspondent saw 14 feet that will average 175 ounces. The Gallagher was discovered about 15 months ago. It was worked for a short time, $50,000 was taken out and then the mine was sold to the St. Louis Smelting company for $225,000. Last month the mine produced 600 tons of ore. The same company owns the Pine and Adelaide, lately purchased for $75,000. They anticipate putting up new smelting works. Sander's mine, one-half of which has heen recently sold for $50,000, has an ore vein averaging two feet in thickness, consisting of sand carbonate and galena; the former mills $100, the latter $250. The Little Pittsburgh produces 10 tons per day. In one place the mine shows 14 feet of solid ore, mostly galena. The Yankee claim has yielded $15,000 in five months. Lawson's strike cannot bo developed for lack of water. It is bonded for $80,000. The formation of deposits here is so entirely different from anything before discovered in the State that a description is almost impossible. Even the oldest miners are entirely at a loss, some claiming that the ore lays in contact veins, while others think that the whole country is underlaid with one grand contact, though they are willing to allow that in spots it is barren on account of the strikes that are made in the different localities and the little connection one can possibly make with the other.

Idaho.

ALTURAS.—*Avalanche*, July 27: We are glad to learn by a private note from Judge Anderson, of Rocky Bar, that the mining prospects of Alturas are gradually brightening. There is no section of the country which shows up hetter in rich mines than does Alturas, and the day cannot be far distant that will bring that portion of Idaho to the front as one of the leading mineral-producing regions of the Pacific Coast.

FAIRVIEW.—A rich strike has recently been made in the north extension of the Silver Cord mine, near Fairview, I. T. There is a well defined mineral vein, and the parties interested will go to work next week with every prospect of taking out a large quantity of rich ore.

ATLANTA.—Recently a rich discovery was make by Myers, Steve Hooker and Darbs, in the mountain northwest of Atlanta, and distant about five miles from town, on the tributary of Queen's river, there being three well defined and valuable locations made. Mr. Hooker, one of the locators, was here a few days ago and informed me of the exact location of those mines. The largest of these ledges is about 30 feet in width, with stratas of ore, showing ruby and native silver and assaying as high as 138 ounces of gold to the ton. The location undoubtedly is promising in appearance and will excel the celebrated Atlanta lode. The character of the ore proves without a doubt to be the same as that found in boulders from the John Daily ledge. Superintendent Brown, being interested in the locations, will go to work in company with Mr. Hooker and Darbs to develop this marvelously rich strike and add another link of wealth to Alturas.

VARIOUS MINES.—The Florida Mountain honanza still wears every favorable characteristic, and is steadily looming up. The Black Jack is turning out its usual supply of good ore, and from the crushings at the Ellmore the daily bullion yield of several thousand dollars still continues. The Potosi is turning out an immense quantity of rich rock, and is looking better than ever. The Belle Peck, and other mines in the vicinity of the Poorman, reveal the most favorable prospects, and parties interested in them need have no fears for the future of any mining property in that locality. The Newsome Bros. have met with fair success in the working of their placer claims in the vicinity this season.

Utah.

Salt Lake *Tribune*, July 27: Yesterday fourteen tons of ore from the new Pasco concentrator, located at the Jacobs smelter, Stockton, were sold at $174.20 per ton, assay value, gold and silver. The same ore, before concentration, would not assay more than $15 to the ton, and had in fact heen lying upon the Mono dump for a long time past, literally valueless, heing of too low grade to pay for handling. The process is Pasco's own invention.

New Incorporations.

The following compauies have filed certificates of incorporation in the County Clerk's office at San Francisco:

SHAWMUT G. Q. M. Co.—July 25th. Capital stock, $500,000. Directors—S. O. Putnam, J. S. Bacon, Ira P. Rankin, B. J. Berry and Thomas H. Bacon.

CHAMPION M. Co. — July 25th. Capital stock, $10,000,000. Directors—Henry Epstein, A. P. Williams, R. G. Brown, John Wagner and Robert Harrison.

DOAN G. & S. M. Co.—Capital stock, $150,000. Trustees for the first year, G. W. Hepperly, F. S. Diekerson, Robert Doan, Charles Knust and Mark Parish.

THE Southern Pacific railroad company have hored an artesian well uear Tipton, Tulare county, with flattering success. The well is 310 feet deep and yields per day 86,000 gallons of water, containing hut six grains of solid mattor to the gallon.

News in Brief.

PERSIA is to have her first railroad.

PRESCOTT, A. T., has a new theater.

J. A. PHILLIPS has returned from a trip to Washingtou Territory.

ALL the powers except the Porte have ratified the Treaty of Berlin.

UNION COLLEGE has given Edisou the degree of Doctor of Philosophy.

THE Russians estimate their total war expenditure at 988,000,000 roubles.

HON. HORACE DAVIS and Milton S. Latham have returned from tho East.

PROPOSALS will bo made in September to make Sorvia a kingdom.

AT Santa Monica, the 21st of July, a shark weighing 125 pounds was caught.

TWO poets, Tenuyson and Tupper, have grown rich on the England of the present.

ON the 27th of July a hark from Matanza arrived in Florida with yellow fever aboard.

THE Whitworth 38-ton gun, recently experimented upon at Woolwich, proves to be a failure.

AT Lincoln, Placer county, Cal., 300 acres of wheat and stubble were burnt over on the 22d of July.

THE damage done in Tucson, A. T., by the recent flood is estimated at $40,000 and upwards.

YELLOW fevor continues at New Orleans. Total number of cases, 50; deaths, more thau half that.

A BALE of cotton from Memphis was awarded the first premium at the Paris Exposition Saturday.

THREE Sundays in succession, ending with June 30th, London was visited by terrific thunderstorms.

ON July 26th Gen. Garfield, while bathing in the surf at Atlantic city, N. J., was taken with vertigo.

EFFORTS are being made for the establishment of a line of steamers between Cuba and the ports of the Republic of Honduras.

EXPLORER STANLEY is said to have accepted a propositiou, made by the King of Belgium, to defray the expenses of another trip across Africa.

GENERAL SHERIDAN expresses the opinion that a permanent military post will he located at some point between the Spearfish and Rapid Creek valleys.

FOR the first time since 1852 a formidable plague of grasshoppers threatens destruction and desolation to the crops of the husbaudmen in Salvador.

THE first embassy that has ever been sent hy the Republic of Mexico to the sister Republics of South America has passed through Panama on its way south.

SENOR CASSANUEVA, who vouched for the respectability and scientific attainments of M. Paraf, has been removed from his post of Consul-General of Chile in California.

ON the 26th of July 22 tons of fine silver bars, valued at $750,000, were shipped from the assay office in New York to the Philadelphia Mint for coinage into standard silver dollars.

REPORTS coming in from Northern Iowa and Southern Minnesota state that the crops are badly damaged in those sections. Wheat in some counties will not yield over seven bushels to the acre.

GRASSHOPPERS are desolating many districts of Honduras. Crops disappear before them in a day, and the sparsely populated localities are entirely at their mercy. The Government calls upon the people to unite in some systematic way to drive off the destroyers.

THE Argentine explorer, Don Frau. Moreno, claims to have discovered the Patagonian volcano, seen by the U. S. steamer *Omaha*, and named after that vessel, nine months previous to its discovery by that vessel. He saw it in eruption March 3d. It is the most southerly volcano yet discovered.

ISAAC HOWELL, SR., died at his residence in San Luis Ohispo on the 4th of June, aged 80 years. Mr. Howell removed from New York State to California with his family in 1846. In 1848 he settled in Napa county, where he lived 23 years, having moved to San Luis Ohispo with his wife about seven years ago.

ON July 22d a cloudhurst occurred about 40 miles north of Yankton, Dakota, hy which a large portion of the country was suhmerged and seven persons drowned. The west branch of Vermillion river, ordinarily ahout two rods wido, was filled to a width of over a mile and a depth of from ten to three feet. Much destruction of property is reported.

LIEUTENANTS RUCKER AND HENELEY of the Sixth cavalry, highly esteemed for their successful efforts to rid Arizoua of Apaches, were drowned in White river, at Camp Supply, about the 12th. The storm had swollen the river. Lieut. Heneley in crossing was unhorsed and swept down the stream, receiving a death stroke from a stump or log. Rucker went to his rescue hut was overcome hy the boiling current.

ON July 28th Ex-Governor George L. Curry, of Oregon, died, after a long and painful illness. The deceased came to Oregon in 1846, and soon after his arrival there assumed editorial charge of the *Oregon Spectator*, at Oregou City, the first newspaper published in the country. He was, about 1854, appointed Governor of the Territory hy Pierce, and held that position until the organizatiou of the State Government in 1859. His life has heen active in both politics and private husiness; yet he leaves a spotless and honored name—a great thing uow-a-days.

THE Sultan has ratified the treaty of Berlin.

RUSSIAN and Roumanian troops are returning home.

IN the whole territory of Montana there are 24,590 Indians and 2,094 soldiers.

COUNT ANDRASSY'S only daughter is to marry Prince Alfred of Montenneva.

NUBAR PASHA has been summoned from Paris hy the Khedive to aid in reform in Egypt.

ON July 30th a construction train with four flat cars was wrecked near Vallejo by a displaced rail. Nobody hurt.

A SHOCK of earthquake was experienced on July 26th at Los Angeles, San Bernardino, Riverside and other points in Southern California.

A FAMILY in New Orleans of four persons were poisoned by using oxalic acid for sugar in cooking. One died and the rest may probably recover.

SOME extensive placer mines about 240 miles up the river from Yuma lately discovered are worked by dry washing and yield from $4 to $20 per day to the man.

FOURTEEN children and three teachers were drowned by the capsizing of a boat July 26th on the river Blackwater, near the town of Ballieborough, Ireland.

KING ALFONSO has not recovered from the deep melancholy with which he has been afflicted since the death of Queen Mercedes. It is feared he contemplates abdicating and retiring to a monastery for the remainder of his life.

A CHILD was lost on the desert near Moore's station, on the railroad, about the 16th. It wandered about in the hot sun without food or water for four days, when it was tracked and found by its father. When found it was crazy, but soon recovered.

ON the 21st of July a young lady of Sonora picked up a giant powder cap with a hair-pin. The cap exploded. The thumh and fore-finger of her left hand had to be amputated. The third finger is hadly lacerated and a piece of the cap struck her forehead.

THE steamer *City of Tokio* arrived in San Francisco nine days behind time, having heen under sail 13 days during the trip—her crankpin broken. She made the qnickest time on record between Hongkong and Yokohama—4 days, 20 hours, 40 min. The Chinese Embassy came on the *Tokio*. It cousists of 45 persons. Sit Ming Cook is the Chinese Consul for San Fraucisco. He is a very bright and intelligent young man. He has received a thorough English education at New Bedford, Mass.

HIS excellency, the Embassador from China, is upwards of 60 years old, with scanty whiskers about the mouth and chin. His features are regular, his countenance intelligent and pleasing. In fact, all of the members of the suite are well-bred, polite, aud have bright, intelligent faces. He is Lieutenant-Governor of the Imperial family, which, in a measure, is under his jurisdiction. He was Imperial Commissioner to the United States in 1875, and has also heen a Commissioner to England and Spaiu. His own suite consists of 22 persons. His mission to this country is to establish the consulates and to transact some lesser diplomatic business. He will present his credentials at Washington, have the Cousuls recognized, and then go to Spain and Peru to establish consulates there.

Caribou Mines.

EDITORS PRESS:—Please give me an opportunity to correct the statement of my heing employed in the examiuation of the Caribou mines, as I have not heen engaged in that work, notwithstanding much talking, telegraphing aud printiug towards that end, at Caribou, Victoria and San Francisco.

I have, however, just returned from British Columbia, where I have heen engaged for several weeks assaying rock from many sections and examining quartz veins on Vancouver island; and as it was quite novel in incidents and may be interesting to your numerous prospectors I will, with your permission, give them a description in your next issue of my 160 miles' walk through immense forests and thick undergrowth, and some general ideas of the rocks aud minerals of that portion of the island.

J. S. PHILLIPS.

San Francisco, August 1st, 1878.

DRY PLACERS.—Placer diggings are reported to have been found near the Colorado river, in Arizona, and about 240 miles above Fort Yuma. They are worked, as all similar deposits in that region are obliged to he, hy dry washing, and are said to yield fair wages. This is a difficult section of country to reach and a hard one to live in, and unless these diggings should prove to be much more extensive than any others ever found in that part of Arizona, this discovery ought not to create much excitement among our mining population. The La Paz placers, situated ahout 100 miles above Yuma, which caused sueh a stampede across the deserts in the summer of '62, turned out to he of hut limited extent, though they made a great noise at th time.

THE Elephant ore-stamp is a device for crushing ore recently brought out from England, now being introdueed ou this coast. One of these machines may he seen at work at the corner of Main and Harrison streets every day from two to four o'clock, and is well worth examination by the mining community. We will have a detailed description of this new device in our next week's issue.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch from Washington, D. C.

RAILWAY CAR TRUCKS.—Wm. R. Hamilton and G. Canning Smith, Mendocino, Cal.

WINDOW-SCREENS.—John Brizer, Alvarado, Cal.

HORSESHOES.—Hiram M. Clemons, Gold Hill, Nev.

NON-CONDUCTING COMPOUNDS.—Geo. R. Evans, San Francisco, Cal.

SAFETY HOOKS FOR HARNESS SADDLES.—Wm. H. Henderson, San Jose, Cal.

APPARATUS FOR TRANSMITTING POWER AND MOTION.—Carl L. Henrich, San Francisco, Cal.

TURN-TABLE FOR SEWING MACHINES.—Eugene Moreau, San Francisco, Cal.

VALVES FOR WATER CLOSETS.—Wm. Smith, San Francisco, Cal.

SHIELDS FOR THE TOPS OF CRUCIBLES OR MELTING POTS.—Jno Feix, San Francisco, Cal.

REISSUES.

CLACK-VALVES FOR PUMPS.—Wm. C. D. Body, Virginia City, Nev.

TRADEMARKS.

COD FISH.—Lynde & Hough, San Francisco, Cal.

CHEMICAL COMPOUND FOR THE COMPLEXION.—Chas. R. Burrage, San Francisco, Cal.

—The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

VALVE.—Thos. Hennessey and M. H. Dorgan, S. F. The valve is of that class used for regulating the supply of water or other liquids to hasins, tanks, etc. The improvement consists in so constructing a vertically moving valve as to close automatically by the action of the water. The valve has a long stem, extending upward into a recess in a spindle projecting through the top of the chamber, so that when it is desired to allow the water to flow the spindle is forced down by a screw lever or other means, thus hurling the valve clear of its seat hy means of the stem. By raising the spindlo and relieving the downward pressure, the water in the supply tube, by its upward pressure, forces the floating valve into its seat and shuts off the water. This form of valve will be specially useful in cold climates, where water in the house pipes is apt to freeze at night. In such places it is customary to disconnect the house pipes from the mains and draw off the water from the house pipes, by opening a faucet in the lower part of main supply pipe. Thus all the faucets in the house have to he opeued to admit air above, so the water can flow out. With the improved valve, as soon as the water below is turned off and pressure released, the valve drops from its seat and all the water in the house pipes runs off. When the water is again turned on the valve is forced to its seat, thus acting automatically in each instance.

VINEYARD PLOW.—Milton Ross, San Jose. The inveution is in connection with that class of vineyard plows in which the rear end of the plow heam is adjustable, so as to throw the forward end of the heam either to or from the land side for the purpose of clearing the douhletrees from the vines or other growing stalks, near which it is desired to plow, and it is especially applicable to a device previously patented hy the samo inventor. It consists of a novel application of adjustable handles, swiveled to a movahle har in combination with an adjustable heam mounted on a crank pin, or post, and iu comhiuation with a draft har. It also consists of a method of locking and holding the various parts in proper position for ordinary or vineyard plowing, aud whenever it is desired to plow close to the growing vines, trees or plants, etc. By using the peculiar locking devices the plow may he used for ordinary work also. The workman is always in a position to guide the plow while he can also walk clear of the vines. The handles can be raised or lowered to suit varying hights of men or to pass under limhs.

THE attention of our readers is directed to the advertisement of Messrs. Anderson & Randolph, jewelers, in the clock tower huilding, formerly occupied by Tucker, the pioneer jeweler of this city, No. 101 Montgomery, corner of Sutter. These gentlemen have, in addition to their magnificent stock of watches, diamonds, jewelry, etc., a fine assortment of Vienna goods, art novelties, bronzes, statuary, clocks, etc. A specialty is made of fine quartz jewelry of their own manufacture in unique patterns and elegant finish. No house ou the Pacific coast can show so large and varied a stock of choice goods in this line. A call at their store will not be amiss, especially hy those not already acquainted with the firm and their manner of doiug business.

A COMMERCIAL treaty betweeu Frauce and America is under consideration.

Men and Machines.

Several notable advances made of late in the design and manufacture of agricultural machines, have awakened anew the discussion of the effect to be expected from the growth of labor-saving machinery. The question is an old one, and we do not see that anything has occurred which should change the old verdict that, though the introduction of a new labor-saving implement may, for a time, work to the disadvantage of certain bodies of citizens, there soon follows an adjustment of affairs to meet the innovation, and the stream of progress and prosperity pours along just as deep and wide as ever. Just now there is the louder outcry because agriculture seems to be enjoying unusual favors from the inventor. People generally have come to falsely look upon agriculture as a dull, plodding and intensely conservative industry, and they are the more surprised and alarmed when their eyes are pried open by the lovers of some new machine and they behold the lifeless occupation alert and moving forward, rapidly forward. The people affect to be alarmed because the self-hiuder has excited the threats of a few men whom their owu State has justly pronounced outlaws. They peer into the future through clouded eyebrows, because the header and thresher have been successfnlly combined and the farmer's power over his field has been increased many fold. We do not see why these improvements should excite greater alarm than other just as great improvements which have aided the manufacturer, the miner and other producers iu their work. Is the self-binder a greater advance from the sickle than the power loom is over the cloth-making apparatus of our grandfathers? Is the combined header and thresher more effective iu labor-saving over the old swinging cradle than the many-stamp quartz mill is over the primitive arastra? It is common to cite the indignant protests of the London pressmen over the introduction of the power press as an example of mistaken zeal, because the increased demand for printed matter afterward kept them all fully employed, even with the best machinery which could be devised to aid them. Nor has the progress ever halted for an instant. The people now demand such a number of papers upon their breakfast tables that they must be snpplied by a press which helps itself from a continuous roll of paper, makes its impressions, cuts and folds its sheets ready for the carrier—turning out, without humau aid, its thousands of impressions, where its forerunner issued hundreds, with the aid of many hands.

It is time that the progress of labor-saving machiues in agriculture may not find its beneficial effects wrought out in just the same way that they have heen in the progress of other industries, but this gives no reason to distrust their ultimate coming. There is every evidence to argue by analogy that the results will be ultimately good. There is no welfare of the race which demande that one industry should be speeded forward and another held stationary or restricted to sluggish growth. This theory has prevailed to a certain extent, it is true, and it has been held by other people than politicians that farmers should occupy the back seats in the car of progress, but such an idea is false to every sound theory of political and industrial advancement.

It is a plain fact that without labor-saving machinery the agriculture of all the newer States would remain undeveloped to this day, and the rapid increase of people in this country would be swarming, shirtless and supperless upon the Atlantic seaboard. Without labor-saving agricultural machinery California could never have exported a pound of grain; her few farmers would have done well could they have fed themselves and the miners. With such a history of results attending the progress of agricultural machinery, why should we distrust its further advancement? With leagues of uncultivated land in our own State, why should we malign the very agency which is to bring it into profitable production? With the great unoccupied northwest, which can yet be carved up into prosperous States, with climate and fertility which the world cannot surpass, why ehould agriculture be called upon to halt in her advancement when she alone holds the key which can unlock these treasures?

It is true, perhaps, that the growing application of machiuery to agriculture will work hardship to some of our laboring population, as successive improvements are first reached. This is to be regretted, but it seems unavoidable. This seems to be the price at which the nation buys every step in industrial progress, but as this hardship has always heretofore been followed by compensations, why should it now come without attendant rewards? It is not given to the most farsighted to penetrate the future, except as the past indicates its probabilities. This method of forecasting the future certainly gives assurance, not ground for alarm, in the special line which we are considering.

We cannot see how help will come to the thousands whose work the new machines are doing. Agriculture has so long heen looked upon as the kind mother who shall feed and clothe all the broken and distressed from all other occupations, that it is little wonder that her reduced dependence upon manual labor is viewed with anxiety. It is easy to say that, as an abstract proposition, it is plain that men must enter agriculture more as masters than as journeymen; that those who are thrown out by the progress of agricultural machinery must go upon the new fields at a distance and huild themselves up as those bave done who are now profiting by the use of the machines that laid tbe fouudations of their prosperity. How shall they who are now tramping from kitchen to kitchen around the State be embued with the disposition to move into the open lands aud to do there what tbey fail to do here, uamely, to labor. And how are they who have the disposition, but cannot find work, to get start enough to get to promising fields and obtain food, seed and implements with which to maintain themselves and put in their crops. This we acknowledge we do not know. To restore the qualities of manhood in those who are heartless, homeless, ambitionless, is perhaps a problem in mental, moral and social science which the doctors in those philosophies can solve; we cannot. To provide material for those who have the will to use it is a question of finance and political economy which is beyond our pocket and our brain. And yet while stumbling on these blocks hewn from the impossible, we are strong in the belief that other causes than the progress of labor-saving machinery are to blame for much of the evil and lack which are iu these men's minds and stomachs. So far as mechanical progress is concerned we believe it will be, as it has heen, one of the chief agencies in the world's advanccment. None can stop its course. Those are safe who can climh into its car; those in danger who sport beneath its wheels.

Names of Mines.

Why the Boys are so Peculiar in Their Selections.

Names of mines, like one's emotions when eating Limburger cheese for the first time, are peculiar.

The locator of Dry Hash prohably showed his preference for a dish which is a prominent feature of boarding houses, and has a large circle of acquaiutauces. Mooubeam, indeed, is more poetic but not so euphonious, nor so suggestive of Utah as Boss Bedhug. Little Bilk leaves one to infer that there is a Big Bilk; in fact, on consideration, we'll concede that there are a great many of them. Mollie Darling shows that, although she is getting to be quite an old maid, she still has admirers. The Fraud is an exhibition of human nature; the locator wanted to prick the pride of the vein and spur it to belie its name.

On inquiring of one miner why he had named his claim "I Know All" he explaiued:

"When I left the East, left my girl there, and—and some trouble I had with another lady. When I got out here, wrote to my girl that I was doing bully. That wasn't so, but you know how a fellow will write. Wrote that I expected to return soon and cage her in a palace. She answered: "I know all. Yours no more, Jane."

Asking another why he chose to name his mine the Terror, he replied:

"For a lady."

"How? Didn't know that was a female name."

"Well, you eee, that's my wife; she's a holy terror. Left her in Gold Hill."

The owner of Damn the Luck said;

"Two of us started out prospectiu', and had two mules. On the mornin' after the first night we had one—other choked hisself to death with the rope. Next day t'other mule went over a precipice—we had noue."

"Lost your tools?"

"No," sadly and respectfully.

"Grub?"

"Worse."

"What?"

"The hig canteen, qnarter full of whiskey, went over with that mule. Damn the Luck was located soon after that."

Tom Pike, being questioned as to his naming a location Joab Johnson, said:

"That—that—was my name in the States."

"I asked the proprietor of the Last Chance if he really considered that his Last Chance for a fortune; if he failed would he try it again?"

"No, sir; no, sir; will go to robbin' the stages!"

Ever of Thee seemed to whisper of an absent object of love. Said I to the owner:

"That name was coined by your heart; she comes to you in sweet dreams?"

"Yes."

"And by day your thoughts turn fondly to her?"

"Yes."

"Ah, fond hearts sundered by cruel circumstances. Are you long parted?"

"Very."

"Her name, good man. Perchance I may meet her in my travels and tell her of thee."

"Nancy."

To the man who was showing me his two claims, I remarked:

"From the name, the Treasury, you must have high bopes of this?"

"That isn't why I named it that."

"Why, then?"

"There's nuthin' in it."

"And this second one, Hector; you admired the valiant Trojan?"

"Named for my dog, Hector. He's dead. Buried over thar; come and see his grave."

"No, I was just passing."

Saying to a miner, one of a family: "What fancy led you to name this claim Tim Finnegan?"

He replied:

"Well, stranger, it was at Prescott, an' me an' Tucson Jake was a playing a game of kersock, jess fur the drinks, you know, when in comes one of them crazy, hlood-thirsty hell-hounds that turn loose in mining camps sometimes, ripped out his six-shooter, shoote the barkeeper dead, then, turnin' on me and Tucson Jake, said:

"'Now, either of you move an inch an' I'll blow the top of your d——d heads off!'

"We knew he'd do it. Thar was the harkeeper dead, and thar was the' pistol pointing right at us. It was fearful, we dasn't take a full hreath. Jake's feelings worked on him so powerful that he could not keep still; he hitched around a little. Quick as lightning a bullet laid him at my feet! Now the pistol was turned towards me, with the muzzle within three feet of my face, an' the eyes of the scoundrel fairly hlazed as he said:

"'Move, move, damn you, jes' the hundredth part of an inch!'

"It was the most horrible time of my life. The sweat stood on my face like cobblestones. I knowed he'd kill me if I moved an inch, an' it seemed all the time as if I was going to move in spite of myself. I even wished he'd shoot me an' have it over with. Jus' then a pistol shot flashed behind the wild beast an' he fell dead in his boots.

"Tim Finnegan had got too much whiskey early in the evening, an' stretched out on come barrels in the corncr an' went to sleep. The shots that had killed the barkeeper and Jake waked him. An' unbeknownst to me an' the murderer, easily and gradually got out his pistol and sent the bloodhound to kingdom come."

"You fled from the scene of horror?"

"I hugged and kissed Tim."

"What is the name of this prospect in front of us?"

"Tim Finnegan, No. 2."

"The one to the right?"

"Tim Finnegan, No. 3."

"Aud this on the left?"

"Tim Finnegan, No. 4."

"How many locations have you ou this hill?"

"Sixteen."

"The name of the last one?"

"Tim Finnegan, No. 19."

"How is it that you have No. 19 and only 16 locations?"

"My boy an' my horse an' my dog is Tim Finnegan, Nos. 16, 17 an' 18."

"You havn't named your wife that?"

"No, hut if I die before her an' Tim—he's a hachelor—I want her to be Mrs. Tim Finnegau."
—*Salt Lake Tribune.*

The Lake Dwellers.

One thing is abundantly clear, that the tribes who huilt and inhabited these lake dwellinge were not the rude savages they are sometimes said to he. The earliest settlers appear to have heen not ouly fishermen and hunters, they were also shepherds and agriculturists. No doubt the idea of such buildings arose out of the necessity of securing the lives and properties of the people from the attacks of enemies. The large number of skeletons of fish, aud especially the skulls of very large pike, which have been found buried among the piles, prove that they were expert and skilled fishermen; the bones, which lie about in the lake dwellings iu astonishing numbers, of stags, roes, wild boars, beavers, otters, squirrels and other animals, are an evidence of the abundance of game, and of the ability of the settlers to bring down even the higher description of wild animals. They, however, did not depend on the precarious and uncertain produce of hunting and of fishing. Many of the animals which are still the companions of man, such as cows, sheep, goats and pigs, had already been domesticated by them; aud the keeping of cattle necessitates an amount of forethought and of provident care for the future which raises those who are capable of it above the level of the savage. A great variety of seeds and plants were also cultivated for their own use and for the use of their cattle. They possessed and cultivated flax of excellent quality, and the state of the industrial arts among them showed considerable proficiency and skill, and proves that even their society was so far advanced and settled as to demand a division of labor and fixed lines of occupation. They were in the habit of housing their cattle and swine in the winter time, of laying up stores of acorns, beechnuts and fodder for their use.

Virchow bas declared that as regards man himeelf, the skulls of the lake dwellers might pass muster with the average skulls of the present generation. A question full of interest to science is, Who are these ancient people? Of what race were they? Were they one people through the successive ages of stone, bronze and of iron, or was each age heralded hy a new invasion? The evidence goes to prove that it was one race who successively advanced from one stage of civilizatiou to another, who, when by accident their houses were burnt down, again rebuilt them on a higher level. Were they Celtic or were they of the nou-Aryan race, said to be represented by the small, dark Basques, the swarthy Iberian? Other questions also arise which cannot yet receive a positive answer. By what meaus were the weapons and implements of bronze suhstituted for those of stone, and how did iron supersede the inferior by the slow results of trade, or were they discovered by the lake dwellers themselves?—*Lond. Spec.*

Metalliferous Mines of Great Britian.

The annual reports of the mine inspectors recently published contains a summary by which it appears that in the aggregate in the year 1877, 57,395 persons were employed in and about the mines of Great Britian and Ireland under the Metalliferous Mines Regulation Acts, exclusive of those employed at the mines, which are classed under the Coal Mines Regulation Act. Of the total number of persons employed in Great Britian 32,954 were underground, and 22,396 above ground, and in Ireland 1,141 under ground, and 904 above ground. A summary of the mining produce for 1877, given either in districts or counties, shows that in the aggregate the following quantities of minerale were produced:—Arsenic (ohtained at the mines), 4,110 statute tons; arscnical pyrites, 5,341; barytes, 19,161; hauxite, 2,763; brick earth, 2,411; building stone, 331,101; calc spar, 5,353; cement stoue, 2,304; chert, 3,290; copper ore, 2,217; copper precipitate, 628; dross spar, 142; fireclay and brick earth, 756; flagstone (dressed), 1,830; undressed, 250-2,080; fluor spar, 77; gannister, 439; gold 61 lbs. 11 oz.; gold ore, 1 cwt. 3 qrs.; gold sulphurets, 2 tons 19 cwt.; gypsum, 73,908 statute tons; iron ore, 2,815,-848; iron pyrites, 17,794; jet, unknown; lead ore (dressed), 76,471; lead ore (undressed), 3,-938; limestone, 528,010; manganese, 3,038; ochre and umber, 2,867; phosphate of lime, 6; potters' clay and other clays, 41,819; Purheck stone for paving, kerbs, etc., 13,228; rock salt (exclusive of the white ealt made from brine), 207,942; silver ore, 142; slate and slabs (dressed), 172,130; slate (undressed), 80; steatite, 68; tamping stone, 100; tin ore, dressed (black tin), 12,665; tin ore, partially dressed (white), estimated to contain 34 tons of black tin, 1,022; tin ore undressed (tin stuff), estimated to contain 595 tons of black tin, 11,511; uranium ore, 2 cwt.; whinstone, 18,308 statute tons; wolfram, 15; zinc ore, 24,227. In the year 1877, at the mines classed under the Metalliferous Mines Regulation Act in Great Britain and Ireland, the fatal accidents amounted to 87, and the deaths (some of the accidente causing more than one death) to 97. Of these, 86 deaths occurred underground and 11 above ground. Thue, in the year 1877, there was one fatal accident among every 651 persons employed in and about the mines, and one death among every 587 persons so employed.

The Murchie Mine.

We yesterday, says the Grass Valley *Union*, paid a flying visit to the Murchie mine, but were there long enough to see that things presented a very healthy aspect. This mine is situated on Deer creek, about a mile above Nevada, and is worked at good profit. It is one of the oldest mines at present working about Nevada, having been in operation some 15 years. The shaft is down 400 feet, with a good ledge. The rock is raised by steam hoisting works, situated on the hill-side, some distance above the mill, and is from there run on a tram-way down to the mill. This tramway has a double track, and is so arranged that the full car going down to the mill hauls the empty one up. The mill is at present a small one, having in it only ten stamps, hut men are at work putting in eight additional stamps, that being all there is room for in the mill building. We were informed by Mr. Perkins, the Superintendent, that the company also intend to put in a number of additional pans, conceutrators, etc., pieces of apparatus which are somewhat lacking at present. The mill was originally run by a large water wheel, and its present location so far below the hoisting works was determined by that fact, it being necessary to put it down there in order to get enough fall; but some time ago steam power was suhstituted, on account of the water supply being uucertain at times. There is wood enough on the company's grounds adjoining the mill to last many years. The rock at present coming from the shaft looks very fiue.

A Heavenly Phenomenon.—A very curious and interesting phenomenon was observed on the night of the 11th instant, at McKeesport, in the system of the planet of Jupiter. It was first seen at about 10 o'clock, and appeared like a notch or indeutation on the eastern edge of the planet. Five minutes past 10 o'clock, and in the eastern margin of the disc of Jupiter was seen a very dark round spot, just above the northern belt. It soon moved rapidly westward, just touching the belt and parallel with Jupiter's equator, and passed off the face of the planet at 1:24 o'clock A. M. of the 12th. Its appearance while passing across the disc of Jupiter was that of a perfect sphere or globe much larger than any of Jupiter's satellites. It appeared to etand out in space between the planet and the observer, was well and shapely defined, and most intensely hlack. It reflected no light, and was not seen either hefore or after its passage across the planet. Now, what was it? It was not a spot on the globe of Jupiter, for it passed over its disc from first internal contact to last external contact of margins in three hours and 19 minutes, too little time for the passage of a spot. It was not a satellite, nor the shadow of one, because all the four satellites were in full view all the time. One of them went into transit at 11:15 o'clock, and presented no unusual appearance; its shadow followed the dark object westward. At last accounts only two observers, and both of these at the same place, have been heard from.—*Pittsburgh Chronicle.*

New Mexican Mines.

A correspondent of the Georgetown (New Mexico) *Herald*, writing of that camp says:

We have in our mining camp two things particular to complain of. The first is milling capacity to reduce our ores in anything like decent time after they are extracted from the mine. 'Tis true we have two quartz mills within three miles of here, but one of them runs exclusively on their own ore, and the other nearly half the time in the same way, and the capacity of the last is only about three tons per day, which gives very little time for working custom ore. Now, our camp certainly turns out not less than ten tons ore per day, and would with a very slight increase of working force more than double this number, if we shall include low grade ore, which will run from 30 to 50 ounces per ton. But of the amount actually taken out at present, say that each mill has a capacity of 3½ tons, this leaves three tons surplus ore which is being piled up on the dumps waiting to be worked. Formerly a great deal of ore went to Silver City to be worked—of late none has been taken there and the consequence is that it is fast accumulating for want of mill capacity. This is certainly a draw-back to the prosperity of our camp in more ways than one. In the first place the poor lessor who has been working hard for a month or two or three months, and has in the meantime gone in debt, strained his credit and has been lucky enough to take out a few tons of ore, has to wait two or three months to have it reduced. This fact staring in the face deters poor men from taking leases and causes those who have the means of assisting them to refuse to do so, knowing as they positively do that they will have to wait from four to six months for their money. On the other hand if we had the necessary milling capacity there would be no necessity for delay longer than 30 days in any instance, in the way of payment. When parties might require assistance the merchants would therefore be able to extend short credit to miners in the way of furnishing provisions, powder, fuse, steel, etc., knowing that they would not have to wait always for their pay. It is not the fear of losing that causes our merchants to refuse credit to the miner, but it is the actual certainty of having to wait several months for their pay. The consequence is, that if a man has not a few hundred dollars in his pocket, be cannot take a lease, and be is compelled to work for wages if he is lucky enough to get work, or travel to some other camp.

That we have a good and paying mining camp, no one will pretend to deny, the fact that there has never been a dollar brought into it for mining purposes, and that hundreds of thousands have been taken out of it, proves this beyond a doubt; and that under a thousand difficulties, ore that now pays 200 ounces per ton formerly brought the miner, we well remember, out in debt. When John Wood, of your city, and S. S. Brannin, former owners of the "Sunshine," took 40 tons of ore to the mill that would now pay them nearly 200 ounces per ton, and brought them out $40 in debt. This was at the time that Burlingame had charge of the Tennessee mill.

This difficulty of having ore worked brings about another cause of complaint, and that is this store order system that our miners have been compelled to resort to, to pay their laborers. In a camp like this which employs nearly 200 men, there should be paid out some $500 or $600 daily in cash, but on account of this order system we hardly ever see a dollar in money.

Now our only remedy for those evils is more mill capacity. A mill right here in Georgetown is what we want most of all, with capacity of eight or ten tons. It is true water is not overly plenty, but a sufficient supply could easily be had by means of tanks and dams, and I have no doubt that by sinking 50 feet in the bottom of the gulch permanent water could be had sufficient for a ten-stamp mill.

To show something of the importance of our camp in a mining point of view, we will state that there is now being taken out not less than ten tons of ore daily, which is a low average estimate. This ore will average $125 per ton, making a total annual product in round numbers of 3,000 tons; at $125 makes the annual product of $375,000; and with capital and good management the product would double this amount very readily.

Messrs. Kennedy and Harper are to bedrock with their shaft and have made connection with the old drift, and will shortly be taking out plenty of good metal.

Lynch & Farrell are through the slate and into the talc, which shows that they are near the bedrock, so they will soon strike the ore that they could not get at on account of foul air.

Sullivan brothers are now working in the deep shaft sunk by Rusty and Moulton, and they are taking out good ore and considerable of it. They intend to force air into their shaft by means of a fan.

John and Murdoch McGregor and McLaughlin are taking out good ore in large quantities on their lease on the "McGregor."

Chick Hughes & Co. are still taking it out fast and to all appearances of good quality. If it lasts over two or three weeks I suppose they will turn over to some one else, as they say they will have enough to do them by that time.

Wm. H. Wray is taking about four tons a week out of the "Uncle Sam," good ore, working two hammers and has about 20 tons on the dump. He thinks it will average 100 ounces.

Useful Information.

Hints to the Users of Belting.

The following hints on the use of belting are drawn from recent writers on the subject. Many of the hints will be found familiar to experienced shop men and will serve as verification of their practice:

Belts stuffed with tanners' dubbin on the flesh side will become as smooth as the hair side, and will outlast six belts which are run on the hair side exclusively.

Three times the adhesiveness is gained by softness and pliableness of belting leathers over those which are dry and husky.

Long belts are preferred to short ones, but care must be taken that the length be not too great.

Horizontal, inclined, and long belts give a much better effect than vertical and short ones, and those that have the driving side below than otherwise.

Belts of coarse, loose leather will do better service in dry, warm places; for wet or moist situations the finest and firmest leather should be used.

Experience says the hair side of a belt put next to the pulley will drive 34% more than the flesh side.

The strongest part of belt leather is near the flesh side, about one-third the way through from that side.

Leather belts must be well protected against water, and even moisture.

Short belts require to be tighter than long ones. A long belt, working horizontally, increases the tension by its own weight, acting in the curve formed between the pulleys.

Sufficient care is seldom taken to let belts run free and easy, and it has been one of the greatest errors, more or less prevalent in all cotton or woolen mills, to run the belts so tense as greatly to injure the belts and rapidly increase the wear of the bearings.

In many instances the tearing out of lace holes is often unjustly attributed to poor belting, when, in reality, the fault lies in having a belt too short, and trying to force it together by lacing, and the more the leather has been stretched while being manufactured, the more liable it is to be complained of.

To obtain the greatest amount of power from belts, the pulleys should be covered with leather; this will allow the belts to run very slack, and give 25% more durability.

A careful attendant will make a belt last five years, which, through neglect, might not last one.

It has been found in practice that belts must not run faster than 30 feet per second, nor have a tension of above 300 pounds per square inch of section.

The friction of a belt is double on wood what it is on cast-iron.

Long belts are less liable to slip than short ones.

The softer woods are better for pulleys than the harder kinds, but pear-wood and nut-tree are best for cord-wheels. Grease must not be put on wooden wheels on which belts run.

Tightness by tightening pulleys must be applied to the slack side of belts.

The belts should be cut from the center of the skin.

Thickness of belts does not always give strength.

If too great a distance is attempted, the weight of the belt will produce a very heavy sag, drawing so hard on the shaft as to produce great friction in the bearings, while at the same time the belt will have an unsteady, flapping motion, which will destroy both the belt and the machinery.

The connected shafts should never, if possible, be placed one directly over the other, as in such case the belt must be kept very tight to do the work.

It is also desirable to locate the shafting and machinery so that belts shall run off from each other in opposite directions, as this arrangement will relieve the bearings from the friction that would result where the belts all pull one way on the shaft.

If possible the machinery should be so planned that the direction of the belt motion shall be from the top of the driving to the top of the driven pulley.

The diameter of the pulleys should be as large as can be admitted, provided they will not produce a speed of more than 3,000 feet of belt motion per minute.

In punching a belt for lacing, it is desirable to use an oval punch, the longer diameter of the punch being parallel with the belt, so as to cut out as little of the effective section of the leather as possible.

Begin to lace in the center of the belt, and take much care to keep the end exactly in line, and to lace both sides with equal tightness. The lacing should not be crossed on the side of the belt that runs next to the pulley.

Never add to the work of the belt so much as to overload it.

A good leather belt, one inch wide, has sufficient strength to lift 1,000 pounds.

A Government Ruling on Steel.—Secretary Sherman has sent a letter to the Collector of Customs at Boston, Mass., in which the vexed point of how Simens-Martin metal is to be taxed, is disposed of. He writes: "The Department has again had the matter under consideration, and has submitted the question of the character of the metal to experts, metallurgists and the most prominent manufacturers of and dealers in iron and steel in the United States. A careful consideration of the reports and opinions of these persons satisfies the Department that the Martin-Simens process was intended to be, and is essentially, a steel-making process, and that the product of such process must consequently be steel or an article possessing the general characteristics of steel, and used for the purposes to which steel is applied. In confirmation of the correctness of this view, it may be stated that the classification at the port of New York of the metal in question as steel has been accepted without dissent by importers of that city, and that protest against payment of duty exacted on such classification has in no case been made. After a full examination and consideration of all the facts and information bearing upon the question at issue, the Department is of opinion that the classification as iron, of metal produced by the Martin-Simens process, is erroneous, and that all metal produced by that process should hereafter be classified as steel, and assessed with duty accordingly. The decision of the Department of the 14th of July, 1876, hereinbefore referred to, is therefore revoked, and decision 2,025 will be regarded as in full force."

Corrosion of Cast and Wrought-Iron Water Pipe.—The Hessen *Gewerbeblatt* remarks that it is well known that iron rich in carbon is less subject to oxidation than iron poor in carbon. Wrought iron, therefore, exposed to influences which promote oxidation, wrusts more rapidly than cast iron. The very simple experiment of laying samples of both sorts in damp earth and leaving them there for a sufficient time will show the difference in their rates of rusting. The duration of wrought pipe when laid is thus likely to be less than that of cast pipe, and this is proved to be the fact in practice. Commonly speaking, the temperatures of water running through pipes in use is lower than that of surrounding bodies, and the walls of the tube are constantly condensing moisture, which powerfully promotes rusting. In houses or in masonry conduits, where the pipes can be got at and kept protected, by tarring, painting or otherwise, from rust, wrought-iron tubing can be used with advantage; but in earth it is otherwise. An experienced engineer, who has often had to lay wrought-iron pipe in short lengths below ground, has always found them before long more or less destroyed.

Cement for Kerosene Lamps.—The cement commonly used is nothing but plaster of Paris. But this is porous and quickly penetrated by the kerosene. Another cement, says the *Polytechnic*, is highly recommended, which has not this defect. It is made with three parts of resin, one of caustic soda and five of water. This composition is mixed with half its weight of plaster of Paris. It sets firmly in about three-quarters of an hour. It is said to be of great adhesive power, not permeable to kerosene, a low conductor of heat and but superficially attacked by hot water. Zinc white, white lead or precipitated chalk may be substituted for the plaster, but they harden more slowly.

Good Health.

Prevention of Disease.

In a paper read at the Conference of Charities connected with the meeting of the American Social Science Association at Cincinnati, May 22d, by Dr. Nathan Allen, of Lowell, Mass., he made the following observations on a subject of great importance: "By discoveries in anatomy and physiology; by the use of the microscope and the application of chemical science; by careful observation and experiment, a flood of light has been shed upon the nature and causes of disease. Amid all these discoveries and improvements, the main inquiry has hitherto been how to *cure* disease. Scarcely any thing can be found in medical books and journals till within half a century on the subject of *preventing* disease. The first two writers (living in advance of their times) who started some important inquiries in this direction were Dr. John Forbes, in Great Britain and Dr. Elisha Bartlett, in the United States—men distinguished for their independence and originality of thought. Both of these writers predicted with much positiveness that a great reform was soon to take place in the treatment of diseases, and their predictions have proved true. At no period in the history of medicine have there been such discoveries and improvements as within the last thirty years.

"Great advances have been made in ascertaining the primary causes of disease, as originating in filth, bad air, impure water, foul gases, poison from decaying animal and vegetable matter, etc. It has been found, moreover, that the spread and fatality of infectious and contagious diseases can be very much controlled by isolation, by disinfectants, and by a resort to sanitary laws. To carry out these measures in a community, or extensively among a people, it becomes necessary to employ some public agency, and enlist legislation for enacting laws and establishing boards of health. In this way has arisen what is called 'Sanitary Legislation,' or 'State Medicine,' the chief object of which is to *prevent disease*."

Artificial Light and the Eyes.

The *Medical Examiner* discusses the question of what is the best source of artificial light as affecting the eyesight. Very little knowledge of an absolute description is available on this branch of the subject, but it may be laid down as a general rule that flickering lights, and those of great intensity, are the most trying to the eyes. The Argand form of burner affords the steadiest and best light, and perhaps the arrangement which is least trying to the eyes is to be obtained by the interposition of a shade so placed as screen all direct light-rays from the eyes, at the same time that sufficient illumination is obtained as the place required for work. A medium should also be chosen between too little light, on the one hand, and too much light on the other; for, in the first case, the eyes become strained in endeavoring to obtain correct vision, and, in the second place, they become dazzled by the excessive glare. The color of the object to which the eyes are directed is also a consideration. In the pursuit of literary work, for instance, a tinted paper will be found less fatiguing to the vision than if the paper is of a pure white color. Dr. Croft has recently called attention to the question of color as affecting weak or deficient eyesight. He is of opinion that in some cases spectacles fitted with yellow glass afford more relief to the patient than the ordinary provided with blue glass. Much remains to be done in the study of the physiological action of various colored lights, and there effects on health and disease, and a careful investigation would, no doubt, be attended with results which would certainly be of the greatest interest, if not of the greatest practical value.

The Philosophy of Wet Feet.—The *Herald of Health* says that if the feet were habituated to being washed every night in cold water and rubbed thoroughly, and if they were housed in airy boots, which did not cramp them, we should have less of the injury coming from wet feet. Still it is better to keep them dry, and to toughen them by bathing and friction. Otherwise the most serious injury will sometimes result. Laboring men get their feet wet more frequently than any other class, and no doubt while many of them have often done so without harm, yet others are able to point out frequent instances of harm which has come from it, especially when tired, or when very hot and the water cold. The injury comes from closing the pores of the skin, from contracting the vessels and preventing a free circulation, and from abstracting too much heat. Perhaps also the reflex action on the nervous system, and through it on the lungs and other organs, is one of the causes of injury. Our advice, then, is to keep the feet warm and dry, but not to cramp them, and not to make them tender by neglect of bathing or other means.

Adulteration of Cod Liver Oil.—Mr. Khrohn, of Norway, an authority on cod liver oil, says, in an article contributed to the *Pharmaceutische Handelsblatt*, that in Norwegian oils of the first grade there is a liability to substitution of the oil obtained from the so-called hoakjarring, *Seymnus borealis*, a fish sometimes attaining the length of twelve or fifteen feet. As much as two hundred or three hundred pounds are obtained from the liver of a single specimen, and consequently there is a great deal placed upon the market. The oil is bright and free from stearine, and somewhat cheaper than cod liver oil. It is, however, very difficult of digestion, and possesses a peculiar and disagreeable odor. Its low price and good appearance sometimes attract purchasers, who, in turn, pass off the oil for the genuine article.

Water Gas for Heating Purposes.—The *Journal of Gas Lighting* says: An old idea, it seems, has been revived, and it is again proposed to distribute water gas for heating purposes. There can be no doubt that, if a really practicable method for its production on a large scale could be devised, some economy might result from its use; but it would be at great risks. Everybody knows that carbonic oxide, which constitutes a large portion of the gas, is a deadly poison. It is, moreover, odorless, and consequently an escape would not be noticed. There is, therefore, the double risk of asphyxia from its presence, and of explosion in consequence of the mixture of hydrogen.

Injury from Alum in Bread.—The almost general use of alum by English bakers is one of the most fertile sources of dyspepsia, liver and bowel complaints in adults, and of debility and rickets in children. Bad teeth, and their early decay, is another consequence of the daily use of alum in the food. The bone matter (phosphate of lime) of bread, instead of being assimilated by the system, is either wholly or in part converted into a salt of alumina, which is useless and incapable of appropriation.—*Cooley's Cyclopedia*.

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The Week.

Wars and rumors of wars, famines, pestilences, fires, cloud-bursts and terrific heat have been the order of the week. To the Indian war is added further fears of a conflict with Mexico. Seward confirms the reports of the horrible famine in China. Tidings come of yellow fever, increasing with alarming rapidity in the South, and of cholera in Japan.

The most important California event of the week has been the arrival of the Chinese Embassy. Next in importance is the opening of the great mining debris trial. In the United States, the total eclipse is most worthy of attention.

In Europe the farce of the Russo-Turkish war is fast drawing to a close. The Russian and Roumanian soldiers are, many of them, going home. The Sultan has signed the Berlin treaty, and Austria is showing herself no laggard in seizing the advantages held forth to her through it. Signs of reviving friendship between Germany and France have been noticed, but perhaps by too sanguine peace lovers. In England Disraeli has, it may be, reached the "full meridian of his greatness," and Hartington, upon whose shoulders the robe of Gladstone seems to have fallen, is urging lack of confidence in the ambitious Premier. The latter has a desperate charge to answer. Disraeli said to the Sultan: Give me Cyprus and I will defend you against Russia, should she claim too much. But Disraeli did not tell the Sultan that Russia had already agreed not to claim that too much. So England pocketed Cyprus, and the price she paid was a promise to defend Turkey against an evil which England, but not Turkey, knew very well would not arise.

The San Francisco Gold Placers.

We noticed in our last issue the reported discovery of gold placers on the Ocean Beach, near Lake Merced. There have been a great many gold "discoveries" made in San Francisco. Gold has been reported to have been found on nearly every hill of any size in the county. Telegraph, Russian, Mission and Potrero hills have at different times been reported to be auriferous and excitements of greater or less amount have been generated at different times. But in no case has any find of value been made. Some 15 years ago the ocean beach was thoroughly prospected, and although gold was found in the black or magnetic sands, it was not in sufficient quantities to pay for working.

Since then, of course, an immense amount of hydraulic mining has been done in the State, and it is not impossible that the out-going tide has so enriched the beach sands as to make them valuable, or it is possible that some sub-ocean quartz ledge has been so acted upon by the breakers as to produce the same effect.

The present discovery was made by John Frazer, an old miner and prospector, who has worked such placers in New Zealand and on the Pacific Coast at various places. Some four weeks ago he began prospecting the sands and found what he regarded as valuable deposits. Since then the whole beach from a mile north of the "Ocean Side House" to some three or four miles south of it has been taken up by various prospectors, among which appear the names of the more prominent of the labor agitators, Kearney, Wellock, etc.

The ocean beach, as most of our readers are aware, is bounded on the shore side all the way from the Cliff House south to about a mile beyond the creek, which forms the outlet to Lake Merced by the sand dunes and hillocks which extend for something over a mile inland. At the point where the cliffs begin again is situated the most thoroughly prospected of the claims. From this point extend high cliffs of soft sandstone whose strata pitch inland at an angle (with the horizontal), of about 30° to 45°. These sand-stone strata are interspersed with occasional layers of a flint-like rock, and sometimes with streaks of a very useless lignite. The apparently richest part of the placer is from the mouth of Merced creek for a mile to the south.

At the prospect hole spoken of before, we took about a handful of the black sand last week, which showed the "color" on washing very distinctly. The gold was in very thin scales, very bright and rounded, and did not present the appearance of having come there by "salting." Much of it was so fine as to float upon the surface of the water used in washing it. It was very difficult to separate from the magnetic sand by washing alone, as the latter had so great a specific gravity (about five), and the gold was so leaf-like that it was practically more easily removed than the sand itself, which was in rounded grains and presented little surface to the water. The gold present amalgamated very readily and completely. Part of the above sample, which had not been concentrated by washing, was assayed by Mr. Reese, of Falkneau & Reese, State Chemists, and gave $25 to the ton.

For the last three days there has been at work, under the direction of Mr. Frazer, a blanket sluice for the purpose of determining whether it will pay to work or not. At the place spoken of, in a little ravine sheltered from the winds, a hole of three or four feet deep and six feet square has been sunk in the sand; this has filled with water. Into this is placed the end of a primitive pump, consisting of a galvanized iron pipe about six feet long and three inches in diameter, in which works a wooden piston rod, with a conical leather bucket attached to one end, and at the other a cross piece for a handle. This pumps a good stream into a wooden box at whose side near the bottom a slit is constructed, letting a continuous shut of water play upon the perforated iron plate of about two feet square, upon which the magnetic sand is placed; this as it is washed through runs down a blanket sluice for about six feet, the tailings are deposited below and the water runs back into the sump to be used over again. It is claimed that the blanket saves nearly all the gold, as the tailings show only a trace of gold. It is expected that to-night (Wednesday) a clean-up will be made, the blanket washings will be amalgamated, and it will be determined whether or not the claim will justify further labor. If it pays two dollars a day it will be continued, if not, it will be abandoned.

The prospect hole has been dug four or five feet to "bedrock," the sandstone mentioned. It seems to pay best along the bottom, in little shelves and patches wherever there is an indentation in the bed.

Since the above writing we have seen the result of the clean-up for three day's work with the blanket sluice. Four tons of the magnetic sand were put through in this time. The blanket washings were amalgamated and the retorted gold was shown us by Mr. Frazer. The little pile looked to be quite fine ($00 or 900), and was about $24 worth. This was the result of the labor of four men for three days, and as this gives them their $2 a day for the first rude prospecting, they intend to secure a better supply of water and more extensive sluices, and mean to go into the affair on a larger scale.

The Mining Debris Trial.

The case of James H. Keyes against the Little York Gold Washing and Water Company, limited, and others, has been on trial in the District Court of Sutter county, at Yuba City, before Judge Keyser, during the past week. The plaintiff was represented by George Cadwalader, P. Van Clief and J. H. Craddock, and defendants by S. M. Wilson, A. B. Dibble, James K. Byrne and I. S. & W. C. Belcher. The plaintiff is the owner of about 1,000 acres of land on Bear river, about six miles above its junction with the Feather, and the complainant prays for a perpetual injunction to restrain the defendants, who are engaged in hydraulic mining on Bear river and tributaries above plaintiff's land, from discharging debris from their mines into those streams, to the damage of the plaintiff. The complainant does not ask for damages. The suit is against about 20 mining companies. The complainant alleges that during the last three years said miners have deposited over 20,000,000 cubic yards of tailings into said streams; that the depositing continues at the rate of 8,000,000 cubic yards per annum, and that the deposit will be carried down the channels named to the agricultural lands in the valley, to the destruction of said lands. The answers, which are 17 in number, deny that defendants have damaged the plaintiff at all, and claim that they have acquired the right to discharge their tailings into the streams by reason of custom, usage and prescription. They also claim under the Act of Congress of July, 1866, the right of way for flumes, roads and dumps, and the use of streams for mining purposes.

The case is one of the most important that has been brought in California, and is regarded as a test case as to the question of mining debris. The only similar case heretofore tried in the State was that of Atkinson against the Amador and Sacramento Canal Company, which came up at Sacramento in January, 1877. On appeal, the case was reversed on a side question, and none of the main points were determined. Consequently it can be said that the case now on trial is the initial one of the kind. There is a great deal of interest manifested in the trial. The court-room has been daily filled with persons who are directly or indirectly interested in the proceedings, and the case promises to be lengthy and ably contested. At the opening of the trial, the defendants moved for separate trials. The Court denied the application. The plaintiff then offered his title papers and produced several maps showing the situation of the land in controversy and the adjacent country. The following is in condensed form the testimony of the various witnesses for plaintiff.

J. H. Keyes:

I have known Bear river generally since 1850, and in front of my place since 1856. It was then clear, with abrupt banks about 12 feet high and gravelly bottom. The land was rich, alluvial and productive. There were two classes of bottom land, and higher up was red land. The river at very high stages overflowed the bottom and for a short time, about 12 hours generally. The first perceptible change in the river was in 1862, and it has been continual ever since, so that the original channel has become extinct, and a new one formed in another place. The old channel filled entirely in the winter of 1867-68, and broke across the high red land in Placer county, and ran into Yankee slough. Another channel, called new Bear river, was also formed, commencing at a point where the river leaves the foothills. The river has widened out and changes its position in the channel. My land has suffered from damaging overflows four times in the last three years. The deposits in the house and on the land did not dry for two or three months so that I could walk on it. The deposits affected the value of the land materially and destroyed its productiveness. I have not been able to use the land successfully for two years. I formerly raised 50 or 60 bushels of barley to the acre, and 30 or 40 bushels of wheat. Last year it raised less than 10 bushels of wheat and this year not over five.

The land covered by heavy material failed to produce wheat. About 300 acres of the land is covered deeper than I plow—about 10 inches.

Bear river runs promiscuously all over the bottom, shifting around and overflowing land formerly high. I made an effort to protect my land, and have spent $12,000 or $15,000 in leveeing. The overflows have rendered the land disagreeable to live upon. The water which came on in 1875-6 was tested and found to contain about one-third of its bulk sediment. Some of my land was filled above the fences, and they had to be raised and reset. The water in the river has been growing muddier, and the deposit of sediment in its bed greater each year, and, consequently, the danger to the valley lands is increased. The levees have to be increased in height about two feet each year. They are now about four and a half feet above the sediment, and I do not consider them safe if they are not heightened. I will probably be overflowed next winter, and my entire levee destroyed. It should be made about three feet higher than high water mark to be safe. The railroad bridge over the river has been raised about two feet. The town of Wheatland is on red land, and I judge that the river channel is now three or four feet higher than the land at Wheatland. There has been a quantity of small stones deposited on my land. They are about the size of shot. When the mines above are shut down the water of the river is comparatively clear at my place. I attribute that to their stopping work. When their operations are resumed the water becomes muddy again. I have noticed that fact several years. This comparatively clear water can be used for irrigating and stock, but the muddy water is destructive to vegetation when used for irrigation and unwholesome for stock. The first freshet that comes each season is of clear and useful water, but the succeeding ones are muddy. I have noticed that fact for ten years. The sediment is productive alone of willows. Water of the river above the mining dumps is clear.

In cross-examination Keyes testified that, this year 100 acres of wheat planted on the sedimentary land will not yield five bushels to the acre. Have corn planted on the same land. It promises big stalks, but no ears. Potatoes produce large tops, but small potatoes. The average depth of deposit on the corn patch is two and one-half feet. Have other corn patches on thinner deposit, but it is unsuccessful. Planted it six or seven years and got nothing. Last year raised 18 tons of potatoes on 12 acres of sediment land. The land was not good for potatoes originally, and is worse now. Two years ago raised some beans, and have some in now. They are not very successful. Have 14 acres of alfalfa on land with three feet of sediment. Pastured 7 cows, 20 sheep, about 40 hogs, and about 3 horses on it one season; but the top roots rotted—too much water—and it died out. Think mining debris absolutely destroys the productive quality of agricultural land. When it is covered so that the plow will not go through it, I consider it worthless. I rented some of my sediment land for $8 an acre this year, but the tenant will lose $75 or $100. Think that the failure of the land to mature corn is because of a lack of moisture. Put in some in grain in 1875, after it got dry enough. The barley produced 8 or 10 bushels to the acre, and wheat was almost a total failure. The sedimentary land has a tendency to become foul with willows. It is difficult to keep them down, and hardly anything else will grow.

C. P. Berry, Speaker of the last Assembly, testified: Have resided about four miles from the mouth of Bear river since 1857. Am engaged in farming. Am familiar with Bear river up to the railroad crossing. Have known Keyes to be occupying his land since 1858 or 1859. He has been farming it like the rest of us. Think the Bear river has run over pretty much all his land, as it has over the other lands in the Bear river valley. When I first knew Bear river, in 1857, the water was clear and run in banks of natural earth 10 or 12 feet high. The channel was clear and well defined. Keyes' land was overflowed in 1875. The filling of the river caused the water to flow over a ridge into a slough. The bed of the river became filled with slickens. It left in places sand banks, and in others fine mud. Do not think the deposit is at all calculated to add to the fertility of the land. Have the same character of slickens on part of my land, and I have never since tried to use it. I deem it almost worthless. The deposit dries and cracks, and the land could not be used unless it was pulverized. Have abandoned my sediment land since 1862. Have run a levee to leave it out, since it benefits me only by producing willow and cottonwood for firewood. It overflows every year. I consider the deposits very deleterious. Think between 8,000 and 10,000 acres of land have been destroyed in Bear river valley by deposits. Have observed that in summer after overflows we have more sickness; think it is caused by the deposits.

A. L. Chandler testified: I have farmed near Bear river since 1855. Have been familiar with that river since 1852. Was at Keyes' house just after the water went down in 1875. Found mud two feet deep there. The mud was nearly up to the floor of the house. Know that the soil had been very fertile prior to the overflow, and had raised from 40 to 50 bushels of barley per acre and 30 to 40 of wheat. It was black, alluvial, first-class land. Consider it almost entirely ruined by the deposits.

James Harrison testified that he resides in Placer county, near the junction of Bear river and Greenhorn, and has lived there 22 years. He mined on Bear river from 1856 to 1861; then took charge of a portion of Bear river ditch, about 14 miles long. Up to 1862 there was no sediment of consequence in the water. About two years ago he tested the water and found about one-fourth solid matter in suspension. He knew that large quantities of sand, etc., pass over the ditch dam down the river. The water of the ditch is settled by several reservoirs in the mountain gorges. Reservoirs about 180 feet long by some 90 wide, and 25 feet deep. The reservoirs have sluice-ways at the head of the ditch to remove deposits from the water. He sluiced out the reservoirs about three times a week. The reservoirs would fill up with slickens in one day, and heavy sand would sink through to the bottom. The water in the river gets low and clear comparatively about August. I have seen heavy stones in Bear river 12 or 14 miles below Greenborn, which came down since 1861. The water in the early freshets carries down more sliekens, but is by no means clear. It could not be used for domestic purposes or for animals. There is very little difference in the water of succeeding freshets.

D. A. Ostrom, Assemblyman from Yuba, testified: Have been a farmer since 1852; now reside in Yuba county; lived from 1853 to 1867

in Sutter county, a mile above plaintiff. Worked the land in controversy at times till 1860. It was originally first-class sandy alluvial; cut 80 bushels of barley to the acre on Keyes' ranch in 1860. Noticed a large deposit made in 1875 and 1876; when on the ranch last week noticed that land formerly the most productive was now entirely destroyed; several hundred acres are destroyed. Think the deepest deposit 10 or 12 feet deep; have seen sand drifted up like snow; have never raised a good crop on the land with any considerable sediment. Where we cannot plow things will not produce; think the effect disastrous, to put it mildly, to Keyes' land. Have seen poor crops on his ranch since 1875—hardly worth cutting. I attribute this result to the debris. The population outside of Wheatland has decreased on the Bear river about one-half since 1862. There are now about 150 persons living on the river, and 200 or 300 in Wheatland. River water has been muddy since 1862; the water was origiually clear; it is becoming muddier annually; never noticed extensive filling till 1861-62. The river banks at first were from 10 to 14 feet high, with a pebbly bed. The channel in 1867-68 at Johnson's crossing filled about 10 feet, and six miles lower down two to five feet. It is bottom land a mile and a half wide at Johnson's crossing; the deposit there is from high land to high land. Keyes' land is nearly destroyed for grain raising. The water of the river is unfit for use for house and stock; never tested it for irrigation. Do not think it good, as it would leave a sediment poisonous to vegetation. Very few trees in Keyes' orchard are left. His corn looks very well. Don't know how it will produce.

Thos. Brewer, Sr., testified as follows: Have been engaged in farming on Bear river since 1852; have known the land owned by Keyes since 1856. When I went there the water in Bear river was clear; debris and sand have covered most of Keyes' land; before his land was covered it would produce from 30 to 40 bushels of grain per acre; it had been damaged by overflow and sediment three-fourths of its value. The water was more clear in November, when the first freshets came; the channel has been filling gradually every year, and the deposits of sediment prevent successful cultivation of the land. The crops grown by Keyes during the past few years have not been good; Keyes and myself built the levees to keep the water and debris off our lands; we commenced building them at the foothills, and continued along down; first built them seven feet high; without them our land would be of no value to us for farming. Keyes and myself bought land to get the right of way along the river above us to build our levee on; the owners would not join us and we had to buy them out. In the first year of my residence on Bear river I saw hundreds of salmon in the water, and killed 17 in two hours with a shotgun. During the past 16 years have not noticed any at all. We paid between $18,000 and $20,000 for the right of way for levees. The old levees would not answer the purpose, and we had to build new ones.

W. D. Armisted did little more than corroborate previous testimony.

Henry Haile testified that he was a farmer by occupation; lives on Bear river; knows the Keyes land and the condition of the crops at the present time; they were very poor crops; have tried to grow crops on similar land, but with poor success. The road along Keyes' land in 1876 was almost impassable on horseback; knew a man to get down in mud in January, 1876, and could not get out; he cried for help and I went to his assistance; think he would have died if he had not been assisted, as he was nearly exhausted.

Dr. D. P. Durst said: I live on my farm on Bear river. Have seen the deposit on Keyes' land made in 1876. This debris has the effect to destroy the crops and plants.

William Singer, an officer in the United States Land Office at Marysville, was called to produce a letter and the record of the office as proof of the listing of a certain part of Keyes' land by the Department of the Interior at Washington. Wilson, of defense, objected to receiving it, as not being an original document, but a copy. The question was argued at length by both sides, when the Court decided that it should be received for what it was worth, subject to a conditional objection in the future.

S. D. Wood, a farmer on Bear river, repeated the same story as the previous witness, Durst. He had tried the water for irrigating his land, but it left a crust on the soil and closed the pores, doing more damage than good.

R. H. Huff, a farmer on Bear river, told his story, which did not vary much from those preceding him.

C. A. McCullough said he had worked about four years as a miller at McDonald's mill, on Bear river, about six miles above Wheatland. The sedimentary deposits filled up the ditches carrying the water to the mill, and sluices had to be constructed in several places to clean them out. They run the mill several years until about 1876, when the old wheel had to be cut out. The deposits had filled up around it so as to make it impossible to run longer.

Cyrus Stoddart corroborated the main points of the evidence of the previous witness.

P. E. Drescher testified that he was a farmer and surveyor, and was well acquainted with Bear river, and gave his observations and figures of measurement taken at different points along the river, and also of borings on different sections of Keyes' land. The testimony occupied much time, but really did not throw much new light on the subject. In cross-examination he stated that he thought the bed of Bear creek at Steep Hollow had raised from 60 to 75 feet since 1849.

Col. T. B. Ludlum testified: I am here in the interest of defendants. I know the hydraulic mines on Bear river, described in the complaint. The gravel bed of the mines is from three-quarters of a mile to a mile and a half wide from the outer edges of side wash. This auriferous earth is composed of sand, quartz, slate and trap boulders. Some sections have pipe clay.

Ludlum said he had seen the various claims mentioned in the complaint which dump into Bear river or its tributaries. The Cedar creek claims use about 2,400 inches of water. He described the points at which the claims dumped. More water was used at times, which did not go through the pipes. The Polar Star had two pipes, with about six-inch nozzles, and used about 1,500 or 1,600 inches of water. The Elmore claim used 850 or 1,000 inches. Staples Bros. used about 800 inches; the Pine Top mine, about 500; Dekamp, about 300 or 400; the Boston claim used the same amount. Do not know how much other claims use. They all run from four to nine months of the year, between March and September. Most of them are hydraulic mines. Never estimated the amount of earth moved in a day by one inch of water, but it is from two to six cubic yards—that is, in 24 hours. The companies named worked from 5 to 24 hours daily.

Van Clief asked from what source the water used in the mines came, and proposed to show that it really all came from sources whence naturally it never would reach the river. The Court ruled the testimony out, on objection.

Witness—The river is about one-third of a mile wide opposite Dutch Flat. The two claims farthest removed are nine miles apart. The several claims spoken of in the testimony are worked independently of one another, and the companies are not connected. Do not know how much matter any mine has discharged. Many days no water is used in the several mines. About three yards of heavy material is removed daily at the Polar Star in the washing season. The water is comparatively clear above that mine. All the mines mentioned in the complaint dump their tailings on land possessed by them.

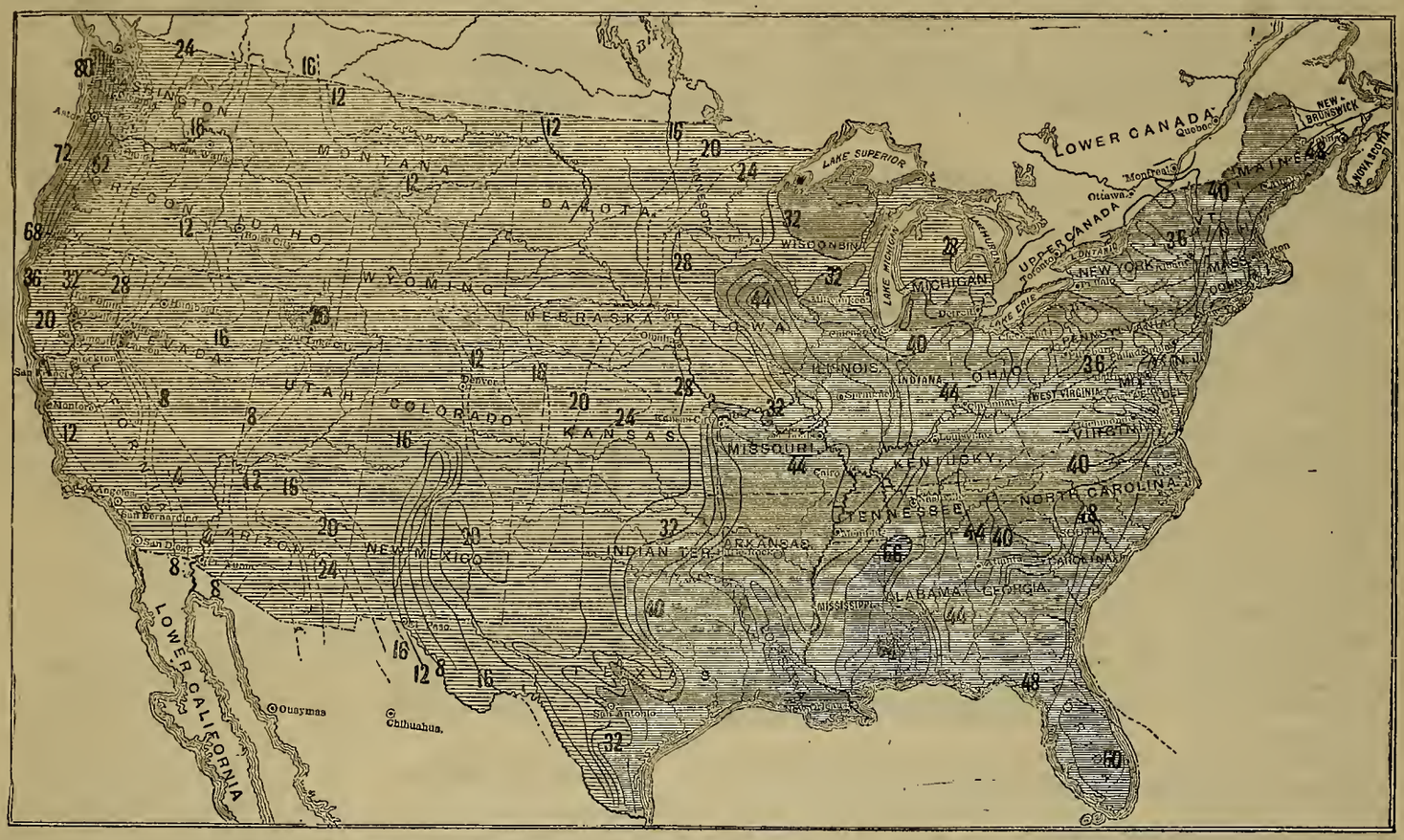
W. F. Peck testified that he was a surveyor. He was with the Drescher party which explored the river recently. He produced 14 bottles of water taken from the river and tributaries at different points; also sediment from plaintiff's land. His testimony was generally the same as that of Drescher.

METEOROLOGICAL SUMMARY FOR JULY.—The report of the U. S. Signal Service officer, of San Francisco, for the month of July is summarized as follows: The mean hight of barometer for the month was 29.90; mean temperature, 57.8; mean humidity, 76.09; prevailing winds, southwest; highest barometer, 30.027; lowest, 29.38; highest temperature, 73°; lowest 51°; monthly range, 22; greatest velocity of wind, 32 miles per hour; total number of miles traveled by wind, 9.183; total rainfall, .01 inches. Rainfall in July during former years: 1872, .01 inches; 1873, .01 inches; 1874, .00 inches; 1875, .00 inches; 1876, .01 inches; 1877, .02 inches.

AN AGENT IN WISCONSIN.—Mr. W. D. White, who has been agent of the PRESS in San Bernardino, has gone to Appleton, Wisconsin, where he will remain for several months. Mr. White will represent our publications in Wisconsin, and we recommend him to the reading public who may desire information concerning California industries.

The Distribution of Water in the United States.

Although we are in the midst of summer's drouth and have neither fear of rain nor desire for it, it may not be improper to present a few general remarks on a moist subject. We give on this page a map of the United States, drawn to represent different conditions of rainfall in the different parts of the Union. It will be seen that there are all quantities from almost nothing up to perpetual drenching, and that in the same latitude there are most wide differences in the rain supply. It has always been a stumbling block in the way of the encyclopedia writers to describe the climate of the United States, and naturally so, for, as says a writer in Johnson's, to speak of the climate of the United States would be misleading. Nothing can be said of the United States, as a whole, in respect to temperature, humidity or force of the winds. The United States, owing to its vast extent in latitude and to the influence of great longitudinal chains of mountains, has many climates. The annual rainfall ranges from 72, 80 and even 100 inches upon the upper Pacific slopes, to 12, 8 and even 4 inches only on the great interior basin, between the Rocky mountains and the Sierra Nevada. The annual precipitation of rain and melted snow is greatest on the Pacific slope of the Sierra Nevada and on the Coast range above the 42d degree. Below this the annual precipitation is reduced to a low average and occasional drouths result. Speaking generally the entire Atlantic slope is well watered, the average rainfall ranging from 32 to 56, and more, inches. Of the Mississippi valley, the eastern side receives an abundance of rain, though the southern portion, especially in Mississippi, is the most liberally watered. From the Mississippi westward the rainfall runs down from an average of 44, 40 or 36 to an average of 20, 16 or 12 along the 100th degree of longitude.



MAP OF THE UNITED STATES, SHOWING THE AVERAGE RAINFALL IN INCHES AT DIFFERENT POINTS.

The differences in amounts of precipitation, aside from the general laws of rainfall, are obviously occasioned by local conformations of the surface and their relation to moisture-bearing winds. These affect not only the times of rainfall, but also its aggregate amount. Thus while southern California has but an average of about 10 inches, the lower States of the Mississippi valley, under the same latitude, has no less than 50 or 60 inches. San Francisco has an average of 23 inches, while Atlantic States in the same parallel have 42 inches.

Of the special causes producing a different condition of rain fall on this coast and in the Mississippi valley, Prof. Arnold Guyot remarks as follows: "The amount of rain on the Pacific coast increases northward and the regime of winter rains goes far beyond its natural limits to the 40th degree of latitude; while in the east the amount of rain decreases toward the north according to the general law. This remarkable anomaly in the rains of the Southern States is explained by that vast indentation forming the

(Continued on page 77.)

The Mechanics' Fair Daily.

By authority of the BOARD OF MANAGERS OF THE MECHANICS' INSTITUTE FAIR the publishers of the MINING AND SCIENTIFIC PRESS will issue a large edition of the NINTH VOLUME of the MECHANICS' FAIR DAILY during the THIRTEENTH INDUSTRIAL EXHIBITION, which opens in San Francisco, Thursday, August 13th, 1878.

It will be of large size, printed and circulated FREE in the Pavilion, and contain the day and evening programme, a list of exhibits, and official bulletin of the Institute.

Its columns will embrace a large variety of important industrial and scientific information, illustrations and well written descriptions of the general features and most deserving and novel exhibits in the Fair, a record of the Fair and incidents of its daily progress—gay, serious and comic—as they occur.

The best of editorial, reportorial and corresponding talent will be employed, with a view to make the paper of live interest in all its departments and of standard value as a full record of the great exhibition, the wonderful inventions, rich resources and rapid progress of our great Western community.

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The Managers have granted us the exclusive advertising and printing privileges, and will receive no advertising in the official catalogue and reports.

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Its columns are more closely examined throughout than those of any ordinary publication.

By past experience, ample facilities, and a fair reputation of doing business in our line, we expect, with the reasonable support of all naturally interested in the success of our enterprise, to make the coming volume superior to its predecessors, and eminently satisfactory to the Institute, to our patrons and to the general public, who are more or less benefited by such an advocate of the substantial advancement of the grand and worthy industries of our Coast.

DEWEY & CO., Publishers.

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IONE VALLEY, Cal., January 20, 1878.

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W. W. CARLILE.

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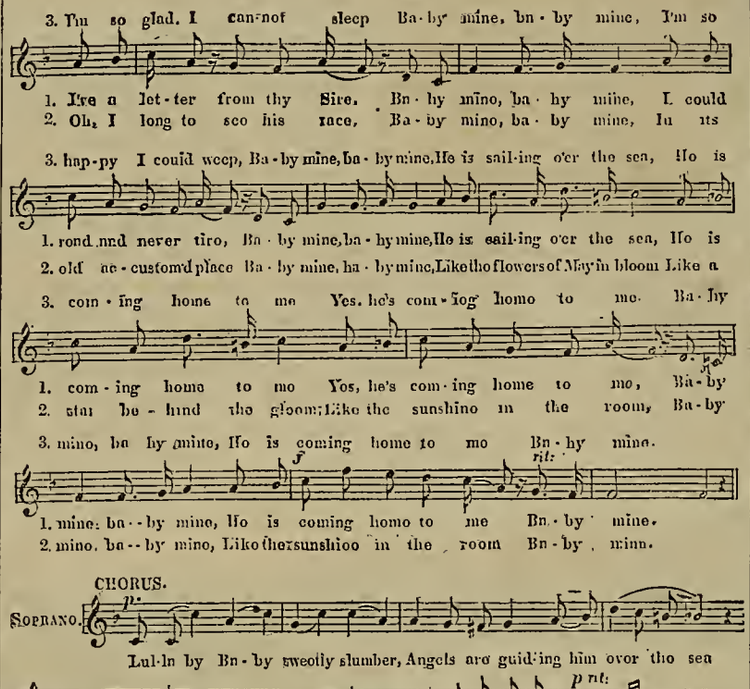
"BABY MINE." *—By Herbert Smith.


3. I'm so glad. I can not sleep Ba-by mine, ba-by mine, I'm so
1. I've a let-ter from thy Sire. Ba-by mine, ba-by mine, I could
2. Oh, I long to see his face, Ba-by mine, ba-by mine, In its
3. hap-py I could weep, Ba-by mine, ba-by mine, He is sail-ing o'er the sea, He is
1. rond and never tire, Ba-by mine, ba-by mine, He is sail-ing o'er the sea, He is
2. old ac-custom'd place Ba-by mine, ba-by mine, Like the flowers of May in bloom Like a
3. com-ing home to me Yes, he's com-ing home to me. Ba-by
1. com-ing home to me Yes, he's com-ing home to me, Ba-by
2. star be-hind the gloom; Like the sunshine in the room, Ba-by
3. mine, ba-by mine, He is coming home to me Ba-by mine.
1. mine, ba-by mine, He is coming home to me Ba-by mine.
2. mine, ba-by mine, Like the sunshine in the room Ba-by mine.
CHORUS.
SOPRANO.
Lul-la by Ba-by sweetly slumber, Angels are guid-ing him over the sea
Lul-la by Ba-by sweetly slumber. Angels are guiding him o-ver the sea.

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Copp's Hand-Book of Mining Laws.

Henry N. Copp's hand-book of mining laws, just issued, contains the United States mining laws and instructions thereunder, a digest of decisions, forms, list of mining patents issued, etc. The digest of decisions alone is a very valuable thing, giving, as it does, in brief form; all the decisions of the Secretary of the Interior and Commissioner of the General Land Office in relation to mining matters. These are all under proper headings for easy reference. Forms are given for notice of location, proof of labor, notice of forfeiture, miners' lien, application for survey, patent, etc., affidavit of improvements, etc. There is also a list of patents issued for mining claims from July 26th, 1866, to August 1st, 1877. The book is of pocket size and very convenient for all who are interested in mines. It will be sent post-paid for $1, on application to Dewey & Co., 202 Sansome street, San Francisco.

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The University year begins August 8th. By order,

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Fig. 1

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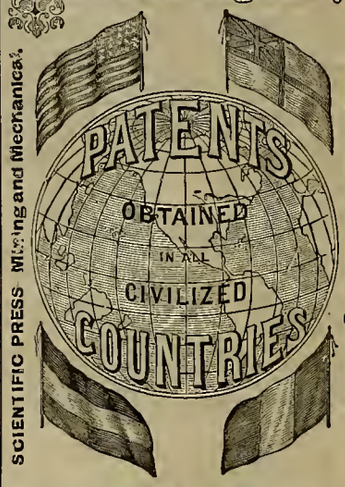

Office—202 Sansome St, N. E. Cor. Pine, S. F

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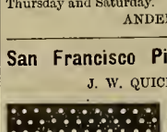

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The Only SAFE BOILER.

SAVES One-half the FUEL Consumed by Others.

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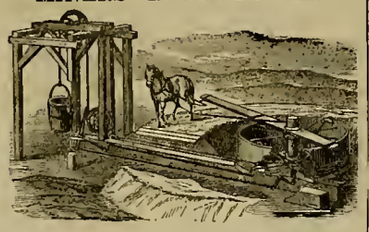

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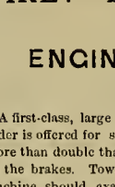

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Name of Company.	Week Ending July 11.		Week Ending July 18.		Week Ending July 25.		Week Ending Aug. 1.	
Alpha	10½	8½	13¾	9.75	10½	9	11	9½
Alta	7⅞	6½	8¾	6½	7⅞	7⅛	9¼	7½
Andes	40c	35c	40c	35c	40c	35c	35c	25c
Alps	....	....	65c	....	60c	....	....	....
Argenta	40c	....	45c	40c	50c	45c	50c	45c
Baltimore Con	....	....	....	....	....	....	....	....
Belcher	4½	3.80	4½	3¾	4.45	3.95	4.60	4.05
Belmont	50c	35c	1	45c	1	70c	1	65c
Best & Belcher	15½	12½	15	13½	15⅞	14½	14⅝	13¾
Bullion	4.60	3¾	5½	3.80	5½	3.80	5⅝	4.60
Bechtel	1¼	1¼	1.20	90c	1.40	80c	1.50	1¼
Bodie	7¼	6	7¾	5½	10½	7	17½	10
Benton	2	1¾	2½	1.90	2.15	1.90	3.40	1.90
Caledonia	2.15	1.95	2½	12	2.15	2.05	2.15	1.85
California	14½	12¾	13⅝	10½	10⅞	7½	10	7¼
Challenge	....	....	....	1	75c	1	75c	75c
Chollar-Potosi	26	25	26	25½	32	25½	30	28
Confidence	4¼	....	4¾	4¼	6	5	5⅝	5½
Con Imperial	70c	55c	70c	60c	75c	65c	70c	60c
Con Virginia	10¾	8¾	9¾	8½	6⅞	7	9	7
Crown Point	6½	5¼	7	6	7⅞	5¾	8¾	6¼
Dayton	....	....	....	....	20c	....	....	....
DeFrees	25c	20c	50c	15c	25c	15c	15c	....
Day	50c	....	50c	45c	40c	....	50c	40c
Eureka Con	57	55	55½	53	34	43¾	44	....
Exchequer	2.85	2.65	2.90	2.70	3.40	2¼	4.15	3.20
Endowment	75c	65c	70c	65c	70c	50c	95c	65c
Gen Thomas	....	....	....	....	....	....	....	....
Grand Prize	3.60	3.30	3.60	3.20	3.85	3¼	3.55	3¼
Gila	65c	55c	55c	50c	60c	50c	60c	35c
Golden Chariot	....	....	30c	25c	25c	20c	30c	20c
Gould & Curry	7	6	7	6¼	8	6¾	7¾	6¾
Hale & Norcross	7¾	7	7¾	7	7¾	7	7¾	7
Hussey	200	....	225	100	55c	40c	50c	45c
Julia	6¾	5½	6¾	5½	7½	6	8¾	7
Justice	4.60	4.05	5¼	4.05	5¼	4.95	5¾	4.40
Jackson	3½	2½	....	....	....	....	5	4
Joe Scates	....	....	....	....	....	....	....	....
K K Con	....	....	....	....	....	....	....	....
Kentuck	3.10	2¼	3½	2.90	3.60	3	5½	3.40
Kossuth	....	....	....	....	....	....	....	....
Lady Wash	....	....	....	....	....	....	3	....
Leopard	50c	45c	1.45	85c	1.10	80c	1	75c
Leviathan	50c	....	45c	35c	45c	35c	45c	40c
Leeds	....	....	....	....	1	....	90c	....
Moloc	1	70c	70c	50c	35c	25c	35c	25c
Manhattan	6	....	....	....	6¼	6	6	5⅝
Meadow Valley	....	....	....	....	....	....	....	....
Mexican	15¾	14⅜	16¼	14¼	18¼	14⅜	13⅝	12½
North Con Virginia	....	....	....	....	....	....	1.30	75c
New York	65c	60c	60c	50c	60c	40c	1.10	50c
Northern Belle	12	11½	11	10½	11	10½	10¾	10¼
New Coso	50c	25c	45c	40c	40c	....	45c	40c
Navajo	40c	35c	60c	35c	55c	40c	50c	40c
Occidental	50c	....	....	....	....	....	....	....
Ophir	48¾	47	53¾	47¾	50	42	45	36
Overman	11¾	10	11	6¾	11¾	10¾	12¼	9¾
Panther	....	....	....	....	....	....	....	....
Raymond & Ely	3¼	3	3	....	3	....	3	....
Rock Island	....	....	....	....	....	....	....	....
Savage	12¾	11¾	11¾	10¾	11¾	10¾	10¾	9¾
Sag Belcher	24	....	24	....	....	....	....	....
Sierra Nevada	8¼	5¾	7¾	6¼	9¾	7¼	12¾	7¾
Silver Hill	1.10	60c	1.05	70c	90c	75c	1¼	60c
Succor	1.15	1	1.05	1	1.20	1	1.05	90c
Solid Silver	2.80	2¾	2.65	....	2¾	2¼	2¼	25c
Star	1¼	1.20	1.05	40c	1¼	1	2¼	....
Trojan	60c	45c	55c	35c	50c	40c	50c	45c
Union Con	7¾	6¾	7¼	6¾	9¼	7	9⅝	6¾
Utah	9¼	8¾	10¾	9	11¾	9¾	11¾	8¾
Wells-Fargo	15c	10c	15c	5c	10c	5c	10c	5c
Woodville	35c	25c	35c	30c	90c	35c	60c	35c
Yellow Jacket	8¼	7¾	9	8¼	11¾	9¼	10⅝	9¼

Sales at S. F. Stock Exchange.

Friday A. M., July 26.

450 Alta ..... 7¼@7⅜
70 Alpha 10
250 Andes 30c
230 Best & Belcher ..... 14½@14¾
815 Bullion ..... 4.65@4.70
550 Belcher ..... 4.40@4.30
350 Benton ..... 3.90@1.95
870 Con Virginia ..... 7@7⅜
1905 California ..... 7⅝@8
250 Chollar 29
1385 Crown Point ..... 7@6¾
190 Caledonia 2
2800 Con Imperial ..... 70@65c
180 Challenge ..... 75@80c
40 Confidence 5
500 Crown Point Rav 20c
3430 Exchequer ..... 3@3.35
230 Gould & Curry ..... 6¾@6¾
145 Hale & Nor 7¼
120 Justice ..... 4.80@4.90
1270 Julia ..... 7¼@7¼
310 Kentuck ..... 3.40@3½
300 Leviathan 40c
2770 Mexican ..... 17@16¾
330 Overman ..... 10@10½
1435 Ophir ..... 38@41
3105 Sierra Nevada ..... 7¾@8
420 Savage ..... 10½@9¾
215 Silver Hill ..... 80@75c
150 Succor 1
225 Trojan 45c
1370 Union Con ..... 7¼@7½
250 Utah ..... 9½@9
385 Woodville ..... 50@55c
200 Ward ..... 1½@1.55
490 Yellow Jacket ..... 9¼@9½

AFTERNOON SESSION.

20 Alta 7½
230 Best & Belcher ..... 14¾@14¾
1910 Bechtel ..... 1.20@1.15
1040 Belle Isle ..... 11@10
255 Bullion ..... 4.70@4.80
2460 Belmont 1
430 Con Virginia ..... 7¼@7½
830 California ..... 9@8¾
800 C on Imperial ..... 70@75c
570 Chollar ..... 45@50c
115 Chollar 28
450 DeFrees 15c
100 Day 40c
600 Endowment 65c
1520 Eureka Con ..... 44@43
495 Exchequer ..... 3.40@3.30
450 Grand Prize ..... 3.40@3.55
100 Golden Terra 2
155 Gila ..... 50c@60c
160 Gould & Curry 7
150 Golden Chariot 20c
100 Hillside 2
1480 Hussey ..... 45@50c
300 Homestake 1
610 Independent 1.40
1105 Jackson ..... 40@41
250 Leopard ..... 90@75c
665 Mexican ..... 13¾@13¾
600 Manhattan 6
1110 Modoc ..... 30@25c
200 Martin White 4
470 Northern Belle ..... 10@10½
300 Navajo 45
935 Ophir ..... 41@42
60 Overman 10
75 Raymond & Ely 3
200 Star 1
995 Sierra Nevada 7¾
275 Silver Prize 15c
100 Silver Hill 75c
260 Savage 10
600 Tiptop ..... 85@80c
50 Utah 9
300 Union Con ..... 7¾@7
200 Ward 1½
115 Yellow Jacket ..... 9¼@10

Saturday A. M., July 27.

300 Andes 35c
180 Alpha ..... 9¼@9¾
225 Alta ..... 7¼@7½
200 Argenta 50c
1740 Bullion ..... 4.60@4.70
370 Benton ..... 2@1.95
340 Best & Belcher ..... 14½@14¾
100 Belcher ..... 4.15@4.05
1155 Bodie ..... 10¼@11
2160 Bechtel ..... 1.45@1.40
236 Day ..... 45@50c
375 Eureka Con ..... 45@46
2250 Endowment 70c
320 El D South 15c
550 Exchequer ..... 3.60@3.65
355 Grand Prize 3½
300 Gila 50c
220 Gould & Curry ..... 6¾@6¾
100 Golden Chariot 30c
1250 Hussey 50c
400 Hillside 2
590 Independent ..... 1.40@1.45
1250 Julia ..... 4.65@4.70
345 Julia ..... 7¼@7¼
950 Jackson ..... 5@4¾
675 Leopard ..... 80c@90c
120 Leeds 45c
825 Modoc 35c
1800 Mexican ..... 12¾@13
230 Manhattan ..... 5¾@6¼
145 Martin White ..... 4@3.85
90 Northern Belle ..... 10¾@10½
100 New Coso 40c
1005 Navajo ..... 45@50c
450 Yellow Jacket ..... 9¼@9½

Tuesday A. M., July 30.

290 Alpha ..... 10¾@10½
310 Alta 7⅛
300 Andes 30c
190 Best & Belcher ..... 14½@14¾
1665 Belcher ..... 4.20@4.30
2305 Bullion ..... 4.95@5
950 Benton ..... 2.20@2
640 California ..... 9@9⅛
695 Con Virginia ..... 8@8¼
1870 Con Imperial ..... 65c@60c
1205 Crown Point ..... 7¼@6¾
320 Caledonia ..... 1.95@1.90
35 Chollar ..... 28¾@28
100 Challenge 75c
2380 Exchequer ..... 4@3.80
355 Gould & Curry 6¾
260 Hale & Nor 7¼
1065 Justice ..... 4.25@4.80
1645 Julia ..... 7¾@7⅝
640 Kentuck 3.60
20 Lady Wash 3
1755 Mexican ..... 13¾@13⅝
750 New York ..... 55@60c
500 N Con Virginia 75c
600 Ophir ..... 46¾@47
160 Overman ..... 10¼@10⅜
2595 Sierra Nevada ..... 8¾@9
50 Savage 10½
395 Succor ..... 90c@1
800 Silver Hill 70c
225 Solid Silver 2
30 Trojan 45c
1110 Union Con ..... 7¾@7⅞
80 Utah ..... 9¼@9⅜
1175 Ward ..... 1.70@1.80
400 Yellow Jacket ..... 9¼@9⅜

AFTERNOON SESSION.

130 Alta ..... 7¾@7⅞
200 Argenta 45c
620 Belmont ..... 65c@70c
2240 Bechtel ..... 1¼@1.35
260 Belcher ..... 4.15@4.20
615 Bodie ..... 10¾@11
50 Bullion 4.90
150 Bentou ..... 2.35@2⅛
1550 Boyle ..... 40@50c
1755 Con Virginia ..... 9@8¾
1160 California ..... 9¾@9⅝
330 Coso Con 40c
5 DeFrees 15c
200 Day ..... 45@50c
355 Eureka Con ..... 44@46
250 El Dorado S 15c
590 Exchequer 3.30
2400 Endowment ..... 70@75c
1165 Gila 50c
240 Gould & Curry 6¾
100 Grand Prize 3½
200 Golden Chariot 20c
350 Hussey ..... 90c@1
35 Hillside 1.90
550 Independent 1.40
160 Julia ..... 7¾@7¾
25 Justice 4½
735 Jackson ..... 5@4¾
180 Kentuck ..... 3.65@3.70

SALES OF LAST WEEK AND THIS COMPARED

Thursday A. M., July 25.

210 Alpha ..... 10¼@9¾
850 Alta ..... 7¼@7⅜
320 Andes 35c
65 B & B ..... 15c@15½
5160 Bullion ..... 4.40@5¼
100 Belcher 4.45
355 Chollar ..... 31c@32
2270 Con Virginia ..... 7¼@7¾
1065 California ..... 9c@8¾
460 Caledonia 2.10
425 Crown Point ..... 7¼@7⅝
250 Con Imperial 70c
170 Challenge ..... 90c@1
195 Confidence ..... 5¼@5
1610 Exchequer ..... 3.20@3.40
440 Gould & Curry 7¼
280 Hale & Nor ..... 7¼@7⅜
865 Justice ..... 5c@5½
2160 Julia ..... 7¾@7
955 Kentuck ..... 3.60@3.65
150 Leviathan 45c
645 Mexican 15¾
450 New York 55c
465 Overman ..... 11@10¾
690 Ophir ..... 45¼@46
1315 Sierra Nevada ..... 8c@8¼
1140 Succor ..... 1@1.05
160 Savage 10¾
285 Silver Hill 80c
725 Union Con ..... 7¼@7⅝
90 Utah ..... 10c@9
400 Wells Fargo 5c
1285 Woodville ..... 50@55c
1200 Ward ..... 1.55@1¼
245 Yellow Jacket 10

AFTERNOON SESSION.

300 Argenta 50c
560 Alta 7¼
60 Alpha 10
2300 Belmont ..... 90c@1
200 Belle Isle 15c
1330 Bechtel ..... 1.20@1.30
665 Bullion ..... 4.70@4.65
1160 Belcher ..... 4.40@4.30
1165 Con Virginia 7⅝
30 Chollar 31
1570 Crown Point ..... 6¾@6½
1220 California ..... 8@7¾
715 DeFrees ..... 20c@15c
165 Eureka Con ..... 44@45c
900 Endowment 70c
735 Exchequer ..... 3¼@3.35
170 Gila 50c
200 Golden Chariot 20c
200 Gould & Curry 6¾
300 Hussey 50c
635 Independent ..... 1.40@1.35
700 Jackson ..... 3½@3.85
410 Julia 7¼
300 Justice ..... 5c@4.95
503 Leopard ..... 90@85c
980 Leopard ..... 85@80c
220 Modoc ..... 35@30c
2570 Mexican ..... 12¾@12¾
10 M White 3½
10 Manhattan 5½
100 Navajo 45c
3075 Ophir ..... 36¾@41
150 Raymond & Ely 3
200 Star 1
2260 Sierra Nevada ..... 8@9
2 750 Silver Prize ..... 15@20c
695 Tiptop ..... 1.40@1.35
60 Union Con 7¾
100 Utah ..... 9½@9⅜
300 Ward ..... 1½@1.70

Wednesday A. M., July 31.

380 Alta 8
320 Andes 35c
180 Alpha ..... 10¼@10⅛
1155 California ..... 9¼@9⅜
320 Con Virginia ..... 8¼@8¾
410 Crown Point ..... 6¾@6¾
135 Caledonia ..... 1.95@1.90
1470 Chollar ..... 28¾@29
1285 Bullion ..... 4.90@4.85
227 Benton ..... 2.00@2.10
1165 Belcher ..... 4.15@4.20
200 Challenge 1
800 C P Ravine 20c
1365 Exchequer ..... 3.70@3.90
470 Gould & Curry ..... 6¾@7
1140 Hale & Nor ..... 7@6¾
1160 Justice ..... 5@4¾
1090 Julia ..... 7¾@7⅞
270 Kentuck ..... 4@4¾
100 Leviathan 40c
965 Mexican ..... 12¾@12⅝
430 Ophir ..... 44@38
120 Overman ..... 10½@10⅜
3000 Sierra Nevada ..... 9¼@9⅜
625 Savage ..... 10½@10
695 Silver Hill ..... 75c@80c
140 Succor 90c
310 Trojan ..... 45c@50c
1215 Union Con ..... 7¾@7¾
308 Utah ..... 9½@9⅜
640 Ward ..... 1¾@1.70
100 Wells-Fargo 5c
50 Woodville 50c
370 Yellow Jacket ..... 9¼@9⅜

AFTERNOON SESSION.

950 Alta 8¼
615 Bodie ..... 17@17¼
1720 Bechtel ..... 1¾@1.55
1760 Justice ..... 5@4¾
1130 Julia ..... 7¾@7⅞
695 Silver Hill ..... 75c@80c
140 Succor 90c
310 Trojan ..... 45c@50c
1215 Union Con ..... 7¾@7¾
308 Utah ..... 9½@9⅜
640 Ward ..... 1¾@1.70
100 Wells-Fargo 5c
50 Woodville 50c
320 Belcher ..... 4.20@4¼
135 Best & Belcher 14½
2250 Benton ..... 3.20@3¼
1010 Crown Point 7¼
50 Con Virginia 8¼
1195 Day 35c
650 Endowment ..... 75c@70c
600 Eureka Con ..... 49@48¾
805 Exchequer 3.80
660 Grand Prize ..... 3.55@3½
200 Gila 50c
270 Gould & Curry ..... 7¼@6¾
500 Golden Chariot 20c
1820 Hussey 50c
130 Hillside 1.90
950 Independent ..... 1.35@1.30
760 Julia ..... 7¾@7½
1000 Justice ..... 5c@5¼
1745 Jackson ..... 5@4¾
610 Kentuck 3.60
570 Leopard ..... 85@80c
150 Manhattan 5½
1785 Modoc ..... 35@30c
415 Mexican ..... 13¾@13¾
250 New Coso ..... 40@45c
100 Northern Belle 10¾
525 Ophir ..... 43@41¾
35 Raymond & Ely 3
790 Silver Hill ..... 90@95c
500 Savage 10¼
3315 Sierra Nevada ..... 10½@11
100 Silver Prize 15c
230 Tiptop 1.30
1345 Union Con ..... 8¼@8
10 Utah 10
385 Yellow Jacket ..... 9½@10

Pacific Board—Latest Sales.

Wednesday A. M., July 31.

20 Alpha 13¾
20 Alta ..... 8¼@8⅜
20 Best & Belcher 14½
130 Bullion ..... 4.85@4¾
100 Belcher 4.10
50 Benton 3
100 Boyle 70c
165 California ..... 9¼@9⅜
240 Crown Point 8
155 Con Imperial ..... 62@61c
160 Con Virginia ..... 8¼@8⅜
40 Caledonia ..... 1.95@2
20 Chollar 29
260 Exchequer 3.70
200 El Dorado S 15c
100 Gould & Curry ..... 6¾@6¾
170 Hale & Nor ..... 7@6¾
150 Julia 7.60
120 Justice ..... 5¼@5⅜
50 Mexican 13¾
40 Mexican ..... 12¾@12½
145 Ophir ..... 39¼@39½
50 Savage ..... 9¼@9⅜
390 Sierra Nevada ..... 9¾@9.45
10 Succor 1
400 Silver Hill ..... 80@85c
350 Trojan ..... 45@48c
2200 Union Con 7.55

AFTERNOON SESSION.

10 Utah 9¼
50 Ward 1.65
100 Yellow Jacket 9¼

AFTERNOON SESSION.

50 Alpha ..... 10¼@10⅝
120 Alta ..... 8¼@8⅜
100 Bechtel 1.70
100 Boyle ..... 3.15@3.40
525 Bullion ..... 5c@5.05
110 California ..... 9⅝@9¼
50 Con Virginia 8⅜
375 Con Imperial ..... 65@64c
140 Crown Point ..... 6¾@7
200 Crown Point Rav 20c
105 Exchequer 3.90
10 Grand Prize 3½
25 Hussey 45c
50 Julia 7⅝
70 Justice ..... 5.20@5¼
120 Kentuck ..... 3.60@3.55
50 Mexican 13¾
10 M White 3¼
175 New York 60c
75 Ophir ..... 41¾@42
10 Overman 10½
10 Savage 9¼
775 Sierra Nevada ..... 10¼@11
50 Union Con 8⅛
500 Woodville 50c

California Board—Latest Sales.

Wednesday A. M., July 31.

20 Alpha ..... 10¼@10⅜
40 Alta ..... 8¼@8⅜
135 Bodie ..... 17@18
30 Bullion ..... 4.90@4.95
70 Belcher ..... 4¼@4.20
30 Best & Belcher ..... 14¾@14½
40 California ..... 9¼@9⅜
1 Chollar ..... 29@29½
60 Caledonia ..... 2@1.95
60 Con Virginia ..... 8¼@8⅜
400 Con Imperial ..... 64@62½
200 Comstock 50c
260 Coso Con ..... 40@37½
30 Crown Point ..... 6¾@6¾
270 Exchequer ..... 3.90@3.85
30 Gould & Curry ..... 6¾@6¾
20 Hale & Nor 7
10 Justice 5¼
75 Julia ..... 7¾@7⅝
185 Leviathan ..... 37½@40c
30 Mexican ..... 12¾@12½
20 Ophir 39½
60 Sierra Nevada ..... 9¾@9⅝
40 Savage ..... 10¼@10⅜
10 Silver Prize 16c
200 Trojan 48c
750 Twin Peaks ..... 22¼@24c
50 Union ..... 7¾@7¾
100 Ward 1.60
150 Woodville 55c
1000 Wells-Fargo 6c
20 Yellow Jacket 9¼

AFTERNOON SESSION.

20 Alpha 10¼
40 Alta ..... 8¼@8⅜
125 Alexander ..... 6¼@6
100 Andes 32½c
20 Best & Belcher 14¾
33 Belcher ..... 4.10@4.05
70 Bullion ..... 4.95@4.90
50 Caledonia 2
30 Chollar 29
20 California 9⅜
30 Con Virginia ..... 8¼@8⅜
200 Con Imperial ..... 65c@66c
200 Dayton 25c
20 Exchequer 3.90
50 Gould & Curry ..... 6¾@7
30 Hale & Norcross 7¾
30 Justice ..... 5¼@5½
30 Julia ..... 7¾@7⅝
10 Kentuck 3½
60 Mexican ..... 12¾@13
300 Monumental 12c
30 Ophir ..... 40½@40¾
30 Savage 10¼
90 Sierra Nevada ..... 10¼@9¾
30 Union Con ..... 8¼@8¾
30 Yellow Jacket 9¼

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS—STOCKS ON THE LISTS OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt. Sale.	Secretary.	Place of Business
Alps S M Co	Nevada	13	1 00	May 21	Aug 14	Sept 10	O DiSquire	331 Montgomery st
Alta S M Co	Washoe	12	1 00	July 18	Aug 9	Sept 10	W H Watson	302 Montgomery st
Belcher S M Co	Washoe	15	1 00	July 17	Aug 20	Sept 10	Jno Crockett	419 California st
El Dorado South Con M Co	Nevada	13	25	July 27	Aug 30	Sept 23	C A Sankey	331 Montgomery st
Grand Prize M Co	Nevada	1	1 00	July 9	Aug 15	Sept 5	R H Brown	327 Pine st
Hussey Con G & S M Co	Nevada	5	15	June 21	July 24	Aug 14	R H Brown	327 Pine st
Justice M Co	Washoe	25	1 00	June 4	July 13	Aug 3	R E Kelly	419 California st
Leopard M Co	Nevada	7	30	June 10	July 15	Aug 5	R H Brown	327 Pine st
McCracken Con M Co	Arizona	1	50	July 10	Aug 24	Sept 28	H Aug Whiting	211 Sansome st
Modoc Con M Co	California	5	50	July 17	Aug 26	Sept 16	J W Pew	310 Pine st
Martin White M Co	Nevada	3	1 00	July 23	Sept 3	Oct 1	J J Scoville	309 Montgomery st
Ophir S M Co	Washoe	32	1 00	June 12	July 18	Aug 8	C L McCoy	419 California st
Prospect G & S M Co	Washoe	6	25	July 13	Aug 20	Sept 10	Warner Craig	320 Sansome st
Silver Hill M Co	Washoe	3	50	July 18	Aug 22	Sept 12	W E Dean	419 California st
South Standard M Co	California	2	25	July 23	Aug 27	Sept 17	C A Sankey	331 Montgomery st
Sierra Nevada M Co	Washoe	55	1 00	July 31	Sept 4	Sept 25	W W Stetson	309 Montgomery st
Seaton M Co	California	11	75 00	June 26	July 30	Aug 21	J H Lightner	58 Nevada Block
Tiptop S M Co	Arizona	3	50	July 15	Aug 21	Sept 18	D F Verdenal	327 Pine st
Utah S M Co	Washoe	20	1 00	June 12	July 15	Aug 2	C O Pratt	309 Montgomery st
Wells, Fargo & Co	Washoe	10	10	July 22	Aug 23	Sept 9	W M Helman	308 California st
Young America M Co	Nevada	10	20	June 27	Aug 1	Aug 21	R H Brown	327 Pine st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Almaden Quicksilver M Co	California	1	25	July 30	Aug 31	Sept 21	W J Forde	207 Sansome st
El Tesoro S M Co	Lower California	5	5	May 29	July 13	Aug 3	W H Chickering	330 Pine st
Eagle S M & M Co	Nevada	7	15	June 24	July 9	Aug 19	R H Brown	327 Pine st
Excelsior S M Co	Nevada		25	July 16	Aug 20	Sept 6	Francis P Devine	304 Post st
Father De Smet G M Co	Dakota	1	1 00	June 17	July 22	Aug 19	J A Quinan	404 Montgomery st
Gover M & M Co	Califoruia	36	50	May 24	July 10	Aug 1	W O Wilson	402 Front st
Gold Mountain M Co	California	8	1 00	June 22	July 24	Aug 15	Charles Dore	410 Pine st
Golden Rule M Co	California	7	75	July 15	Aug 17	Sept 9	J B Russell	432 Montgomery st
Henrietta G M Co	California	3	10	June 7	Aug 12	Sept 6	F Kleeman	309 California st
King M & S Co	Nevada	1	25	June 24	July 29	Aug 20	Chas K Clark	111½ Leidesdorff st
Moore's Flat B G M Co	Califoruia	7	25	June 14	July 19	Aug 12	J M Buffington	309 California st
Morgan M Co	California	4	50	June 1	July 8	July 29	John J Raphael	533 Kearny st
Marchie G & S M Co	California	1	20	July 2	Aug 7	Sept 6	S D Rogers	Merchants' Exchange
Union Con M Co	California	2	10	July 23	Aug 28	Sept 17	Lewis Lillie	519 Montgomery st
Mariposa Land & M Co	California	14	1 00	July 10	Aug 12	Sept 9	Leander Leavitt	309 Montgomery st
Newton H & D M Co	California	1	08	July 21	Sept 2	Sept 20	G W Cummings	330 Sansome st
Nevada Gravel M Co	California	2	10	July 8	Aug 10	Aug 28	J Pentecost	511 California st
Oroville G M Co	California	1	10	June 14	July27	Aug 22	Ph D Auh	417 California st
Orion M Co	California	2	70	July 9	Aug 9	Aug 24	P Conklin	28 Sansome st
Panther M Co	Nevada	1	8	June 21	July 27	Aug 19	J W Pew	310 Pine st
Real Del Monte M Co	Nevada	3	1 00	July 18	Aug 26	Sept 16	A Baird	304 California st
Summit M Co	California	4	05	July 17	Aug 19	Sept 10	J W Clark	318 Pine st
S F Sulphur M Co	Nevada	3	5	June 14	July 18	Aug 13	P M McLaren	310 Pine st
Tiger M Co	Arizona	1	30	July 16	Aug 26	Sept 20	W H Lent	309 Montgomery st
Telegraph C & S M Co	California		03	July 17	Aug 19	Sept 9	I T Milliken	526 California st
Watt B G M Co	California	2	10	June 10	July 16	Aug 6	R Wegener	414 California st

MEETINGS TO BE HELD.

Name of Company.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Europa G M Co	Washoe	R B Noyes	419 California st	Annual	Aug 3
George Douglass M Co	Nevada	Frank Mayer	408 California st	Annual	Aug
Independence M Co	California	R H Brown	327 Pine st	Annual	Aug 8
Julia Con M Co	Washoe	A Noel	419 California st	Annual	Aug 19
Lucky Rock G M Co	Nevada	Chas S Healy	45 Merchant's Exch	Annual	Aug 14
Moore's Flat B G M Co	California	J M Buffington	309 California st	Annual	Aug 26
Navajo M Co	Nevada	R H Brown	327 Pine st	Annual	Aug 15
Occidental M Co	Washoe	Alfred S Burbrow	309 Montgomery st	Annual	Aug 12
Sutro Comstock G & S M Co	Washoe	J M Buffington	309 California st	Annual	Aug 12
Steptoe Con M Co	Nevada	Ed F Stone	306 Pine st	Annual	Aug 19
Tolo M Co	California	Frank Mayer	406 California st	Annual	Aug 5

LATEST DIVIDENDS—WITHIN THREE MONTHS

Name of Company.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
California M Co	Washoe	O P Gordon	Nevada Block	1 00	July 15
Con Virginia M Co	Washoe	A W Havens	Nevada Block	1 00	June 15
Eureka G M Co	California	R Wegener	414 California st	25	April 25
Excelsior W & M Co	California	Geo F Thurston	315 California st	50	July 15
Eureka Con M Co	Nev	W W Traylor	309 Montgomery st	3 00	July 20
Empire M Co	California	David A Jennings	401 California st	25	June 15
Georgia S M Co	Washoe	R Wegener	414 California st	3	April 16
Independence M Co	Nevada	R H Brown		25	July 20
Mullen S M Co	Arizona	A C Mcleans	Safe Deposit Bldg	50	June 20
Silver King M Co	Arizona	Wm H Boothe	320 California st	50	May 30
Standard G M Co	Cal	W Willis	309 Montgomery st	1 00	July 12

Mining Share Market.

The mining share market for the past week has been pretty active, as compared witb recent operations. Attention has principally been turned to Ophir and Sierra Nevada. The Ophir has been opened to stockholders, some of whom bave examined the mine, and great interest is manifested in expected developments. Mr. Patton was present and escorted the visitors through the undergrounnd regions of the mine. The route was by the vertical sbaft and cages to the 1500 level, thence by the incline and giraffe to the 2000 level, crosscut No. 2 being at present the graud point of interest. Our route laid through the drift rnn from the main incline to the bottom of the winze that comes down from the 1900 level, and now known as crosscut No. 1, at a point 50 feet west of wberc the ore body was cut. At tbe bottom of the winze just mentioned a drift was started to the northeast, known as the northeast lateral drift. This drift extends to the northeast a distance of 100 fect in a direction supposed to be parallcl with the ore body. Tbe feeder or cross-bourse contains some good ore, and is richest where it is about one foot in width, a short distance before reaching the main ore body. The main ore body is reached at a distance of ahout 75 feet from the northwest lateral drift. The whole length of crosscut No. 2 is about 80 feet. Therefore, it has penetrated the ore body a distance of about seven feet, that is, measuring on the south side. The course of tbe ore body is northeast and southwest, though it seems now to be bearing considerably to the east. The appearance presented at the face of the drift is that they are just now in the west side of the ore body. The ore is still of low grade and much mixed with porphyry, but it is likcly to be found much bctter as the crosscut is advanced. An evidence of this is the fact that in the south side tbe ore is best, and is the least mixed with porphyry. Altbough presenting all the characteristics and mucb the same appearance as when cut by crosscut No. 1, the ore bere as far as explored is of much poorer quality. From wbat was to be seen not much more is known of what the ore body really is at crosscut No. 2 than was known before. It is still to be cut through, the west side having been but fairly entered into. Opinions expressed are said to be favorable.

Our usual summary of news from the Comstock did not come to hand in time for this week's issue, and is therefore omitted.

Continued from page 73.

Gulf of Mexico, which, like a great boiler, supplies the return trade winds that prevail throughout the summer with a large amount of vapors. These fall in copious showers on all the eastern portion of the United States, increasing considerably the total amount of rain and entirely obliterate the dryness of the summer, which usually characterizes the climate of these latitudes. If the regime of winter rains extends farther than usual in California, it may be traced to the influence of the great heat generated by the south western plateaus, which rotards the condensation of the vapors from the Pacific until tho winds have reached a higher latitude, and to the absence of polar winds, which are turned away by the Rocky mountains." Of the special influence exerted by mountain ranges on this coast, it may be said that the high border chains from Oregon to the Alaska Peninsula, which bend like a gigantic arm, catching the retnrn trade winds of the Pacific, receive an amonut of rain greater than any part of the continent, while tho east side of these mountains has but a stinted share of the precious element. It is a remarkable fact, noted by Guyot, that tho Appalachian system does not increase thu condensation of rain, as mountains usually do. This is doubtless due to their extending parallel with and not transversely to the winds bearing rains.

We have thought that a map like tbo ono on page 73, showing approximately the amount of rain in different parts of our country, would be of valuo to our readers in any comparisons which they may desire to mako. Therefore, we have drawn and engraved tho one which appears on this page, compiling it from the official drawings of the Smithsonian Institute. It will be noticed that tbe map is shaded somewhat, according to tbe weight of tbo rainfall, and that the figures give the average annual amount in inches within each area enclosed by the dotted lines. Of course it does not follow that amount of rainfall is aloue the test of the productive power of a region. "Euough is as good as a feast," and our California average in some parts of the State is far preferable to the excess and unreasonableness which embraces agricultural operations iu somo other parts of the Union.

Government Surveying on this Coast.

Among the overland passengers we notice tbe names of Lieut. Wheeler's engineering corps, who are now arriving to begin a system of accurate surveys of different portions of Pacific coast territory. From exchanges we learn that the main stations to be occupied astronomically are Fort Seldon, N. M.; Fort Bliss, Texas; Tulare, California, on the Southern Pacific railroad; the Dalles, on the Columbia river, and Walla Walla, in Washington. Party No. 2. of the Utah section, instead of continuing its labors from Fort Hall to the north and westward as was at first intended, has been transferred to California, along the Sierras to tbe Coast Range southward from Bakersfield, and from Los Angeles toward San Diego. Party No. 3. of this section will continue the triangulation from an astronomical station at or near Visalia, through the Sierras, to join the triangulation brought from the base of Virginia City, and that developed in 1875, from the base of Los Angeles, to the north and eastward.

The astronomical parties carry out their observations in pursuauce of the methods adopted by the survey at the given poiuts. The total area proposed to be occupied during the season of 1878 will be approximately 40,000 square miles. The whole work is in pursuance of plans proposed by Lieut. Wheeler, in April, 1872, approved by the Chief of Engineers and Secretary of War, and adopted by Act of Congress in June of that year. This plan had for its object the prosecution of a thorough detailed and economic topographical survey of the territory of the United States west of the one-hundredth meridian, embracing 1,443,360 square miles.

BULLION SHIPMENTS.—Since our last issue shipments of bullion from the prominent mines have been as follows: Standard, July 22d, $37,221.77; Northern Belle, 22d, $8,199.98, 24th, $8,067.15; Star, 22d, $2,821—total to date, $20,222; Manbattan, 22d, $2,851, 24th, $12,300; Tybo Con., 22d, $4,794.20, 24tb, $4,409.04—total to date, $45,121.25; Christy, 29th, $4,394.00; Modoc, 25th, $2.259.78—total to date, $22,079.59; Stonewall Jackson, 27th, $17,000; Independence, 29th, $8,000; Leopard, 26th, $6,844.86; California, 27th, $183,637.78; Cou. Virginia, 27th, $66,049.83; McCracken, 27th, $25,955.21.

IN Minnesota on July 30th a hail storm did much damage to crops. Stones four inches in circumference fell, covering the ground to a depth of three inches.

Woodward's Gardens were never more attractive than at present. Besides three lions already mentioned, six monster living alligators, several iguanas and a boa-constrictor have just been added. New stars are constantly engaged for the Pavilion exercises. Rates of admission as usual.

EXAMINE the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.04. Lewis C. Grover, President; L. Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

MODEL MAKER AND MACHINIST.—I. A. Heald, No 514 Commercial St., San Francisco, (fourth floor).

GENERAL MERCHANDISE.

[WHOLESALE.]

WEDNESDAY M., July 31, 1878.

BAGS—Jobbing.

Eng Standard Wheat,12½@—	
Neville & Co's Hand Sewed, 22x36..13 @—	
24x36..... —@—	
23x40..... 13½@—	
Machine Swd, 22x36..12½@—	
Flour Sacks, halves....10½@11	
Quarters..... 6 @ 7	
Eighths..... 4½@ 4½	
Hessian, 60 inch.....15 @—	
45 inch..... @10½	
40 inch..... 9½@—	
Wool Sacks, Hand Sewed, 3½ lb..47½@50	
4 lb do.....52½@—	
Machine Sewed.....50 @—	
Standard Gunnies....14 @15	
Bean Bags..... 7 @ 8	

CANDLES.

Crystal Wax.....	17 @ —
Eagle.....	12 @ —
Patent Sperm.....	30@—

CANNED GOODS.

Assorted Pie Fruits, 2½ lb cans.....	2 25 @2 50
Table do.....	3 00 @3 25
Jams and Jellies..3 50 @3 75	
Pickles, hf gal.....	3 25 @—
Sardines, qr box...1 67½@1 90	
Hf Boxes.....	2 50 @2 75
Preserved Beef, 2 lb. doz.....	4 00 @—
do Beef, 4 lb,doz.6 50 @—	
Preserved Mutton, 2 lb. doz.....	4 00 @—
Beef Tongue....6 50 @—	
Preserved Ham, 2 lb. doz.....	6 50 @—
Devilled Ham, 1 lb, doz.....	5 50 @—
do Ham, ½lb doz.3 00 @—	

COAL—Jobbing.

Australian, ton..	8 00 @—
Coos Bay.....	6 50 @ 7 00
Bellingham Bay.	6 50 @—
Seattle.....	6 00 @ 6 50
Cumberland....	14 00 @—
Mt Diablo.....	4 75 @ 6 00
Lehigh.....	13 50 @—
Liverpool.....	7 50 @ 8 00
West Hartley...10 50 @—	
Scotch.....	10 50 @—
Scranton.....	11 50 @—
Vancouver Id...	7 00 @—
Charcoal, sack...	75 @—
Coke, bbl....	60 @—

COFFEE.

Sandwich Id, lb.	—@—
Costa Rica.....	18 @ 18½
Guatemala.....	17 @ 18½
Java.....	22½@ 23
Manila.....	18 @—
Ground, in sa...	25 @—

FISH.

Sac'to Dry Cod..	5 @ 5½
do in cases..	6½@ 7
Eastern Cod....	7@— 7½
Salmon, bbls....	9 00 @10 00
Hf bbls.....	5 00 @ 5 50
1 lb cans.....	—@1 35
Pkld Cod, bbls..22 00 @—	
Hf bbls.....11 00 @—	
Mackerel, No. 1. Hf Bbls.....	9 50 @10 50
In Kits.....	1 85 @ 2 10
Ex Mess.....	3 25 @—
Pkld Herring, bx	3 00 @ 3 50
Boston Smkd H'g	70 @—

LIME, Etc.

Lime, Sta Cruz, bbl.....	2 00 @ 2 25
Cement, Rosendale.....	2 75 @ 3 50
Portland.....	4 75 @ 5 50
Plaster, Golden Gate Mills....	3 00 @ 3 25
Land Plaster, tn	10 00 @12 50

SAILS.

Ass'ted sizes, key	3 00 @ 4 00

OILS.

Pacific Glue Co's Neatsfoot, No 1	1 00 @ 90
Castor, No 1.....	1 10 @—
do, No. 2.....	1 05 @—
Baker's A.....	1 25 @1 30
Olive, Flagnlol....	5 25 @5 75
Possel.....	4 75 @5 25
Palm, lb.....	9 @—
Linseed, Raw, bbl.	72 @—
Boiled.....	75 @—
Cocoanut.....	55 @—
China nut, ca.....	75 @—
Sperm.....	1 40 @—
Coast Whales.....	40 @—
Polar.....	45 @—
Lard.....	90 @1 00
Oleophine.....	—@ 27
Devoe's Brill't....	22 @ 23
Photolite.....	—@—
Nonpariel.....	30½@—
Eureka.....	18 @ 42½
Barrel kerosene...	20 @—
Downer Ker.....	57½@—
Elaine.....	37½@—

PAINTS.

Pure White Lead.	9 @ 9½
Whiting.....	1½@—
Putty.....	4 @ 5
Chalk.....	1½@—
Paris White.....	2½@—
Ochre.....	3½@—
Venetian Red.....	3½@—
Averill Mixed Paint, gal. White & tints...2	00 @2 40
Green, Blue & Ob Yellow.....	3 00 @3 50
Light Red.....	3 00 @3 50
Metallic Roof...1	30 @1 60

RICE.

China, No. 1, lb...	7½@—
Hawaiian.....	7½@—

SALT.

Cal. Bay, ton....15	00 @22 50
Common.....10	00 @12 00
Carmen Id.....13	00 @22 50
Liverpool fine...19	00 @—

SOAP.

Castile, lb.....	10 @ 10½
Common brands...	4½@ 6
Fancy brands.....	7 @ 8

SPICES.

Cloves, lb.....	45 @ 50
Cassia.....	22½@ 25
Nutmegs.....	85 @ 90
Pepper Grain.....	15 @ 17
Pimento.....	15 @ 16
Mustard, Cal., ½ lb glass.....	1 50 @—

SUGAR, ETC.

Cal. Cube, lb.....	11½@—
Powdered.....	11½@—
Fine crushed.....	11½@—
Granulated.....	11 @—
Golden C.....	9½@—
Cal. Syrup, kgs...	70 @—
Hawaiian Mol'sses	26 @ 30

TEA.

Young Hyson, Moyune, etc....	35 @ 50
Country pckd Gunpowder & Imperial.....	50 @ 60
Hyson.....	30 @ 35
Fooo-Chow O.....	53 @ 60
Japan, 1st quality	40 @ 60
2d quality.....	25 @ 35

METALS.

[WHOLESALE.

WEDNESDAY M., July 31, 1878.

IRON.—	
American Pig, ton..	28 00 @30 00
Scotch Pig, ton..	28 00 @30 00
White Pig, ton..	28 00 @—
Oregon Pig, ton..	—@—
Refined Bar..	2½@ 3
Horse Shoes, keg..	5 00 @—
Nail Rod..	—@ 7
Norway, Oval..	—@ 7
COPPER.—	
Sheathing, lb..	34 @ 35
Sheathing, Yellow..	21 @—
Sheathing, Old Yellow..	12 @—
Composition Nails..	24 @—
Composition Bolts..	24 @—
STEEL.—	
English Cast, lb..	13 @ 14
Anderson & Woods, ordinary sizes..	15 @—
Drill..	15 @—
Flat Bar..	14 @ 19
Plow Steel..	8½@ 12½
TIN PLATES.—	
10x14 I C Charcoal..	7 50 @ 8 50
Banca Tin..	23 @— 24
Australian..	17 @ 17½
ZINC.—	
By the Cask..	9 @—
Zinc, Sheet 7x3 ft, 7 to 10, lb..	9 @— 10
7x3 ft, 8 to 14..	10 @—
8x4 ft, 8 to 10..	11 @—
8x4 ft, 11 to 10..	11 @—
NAILS.—	
Assorted sizes..	3 15 @3 25
QUICKSILVER.—	
By the lb..	43 @ 45

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & Co.]

SAN FRANCISCO, July 30, 3 P. M.

LEGAL TENDERS in S. F., 11 A.M., 93¾@99.90. SILVER, 1½@2. GOLD in New York, 100¼.

GOLD BARS, 890@910. SILVER BARS, 8@15 ₱ cent. discount.

EXCHANGE on New York, ½% on London bankers, 49@49½. Commercial, 50; Paris, five francs ₱ dollar; Mexican dollars, 94@95.

LONDON Consols, 95⅜; Bonds, 103¼.

QUICKSILVER in S. F., by the flask, ₱ lb, 41@42c.

Signal Service Meteorological Report.

Week Ending July 30, 1878.

HIGHEST AND LOWEST BAROMETER.

July 24	July 25	July 26	July 27	July 28	July 29	July 30
30.03	29.96	29.86	29.80	29.97	29.89	29.86
29.98	29.84	29.80	29.83	29.90	29.79	29.81

MAXIMUM AND MINIMUM THERMOMETER.

61	63	64	62	61	72	62
54	53	53	52	51	51	52

MEAN DAILY HUMIDITY.

81.7	81.7	74.3	83.7	79.7	69.3	78.7

PREVAILING WIND.

SW	SW	SW	SW	SW	SW	SW

WIND—MILES TRAVELED.

329	250	206	279	318	185	294

STATE OF WEATHER.

Fair.	Fair.	Fair.	Fair.	Fair.	Clear.	Fair.

RAINFALL IN TWENTY-FOUR HOURS.

Total rain during the season, from July 1, 1878, .01 in.

To Mining Secretaries.

An amendment to Section 336 of the California Code, taking effect July 1st, 1874, provides that in addition to the regular publication, daily or weekly, of the assessment and sale notices as heretofore.

PERSONAL NOTICE

Must be served as provided in the following quotation from the law:

"The notice must be personally served upon each stockholder, or in lieu of personal service, must be sen through the mail, addressed to each stockholder at his place of residence, if known, and if not known, at the place where the principal office of the Corporation is situated."

The above refers to the ASSESSMENT NOTICE only. Advertisers in the MINING AND SCIENTIFIC PRESS will be furnished with copies of assessment notices printed on slips suitable for personal notice under this law at short notice.

DEWEY & CO., Publishers.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the sams.

Excelsior Silver Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Potosi District, Lincoln County, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the Seventeenth day of July, 1878, an assessment of Twenty-five Cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary at the office of the Company, 304 Post street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 20th day of August, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, the Sixth day of September, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

FRANCIS P. DEVINE, Sec'y.

Office, 304 Post street, San Francisco, Cal.

Mariposa Land & Mining Company of California.—Location of principal place of business, San Francisco, California. Location of works, Mariposa County, California.

Notice is hereby given that at a meetiug of the Board of Directors, held on the Tenth day of July, 1878, an assessment (No. 14,) of One Dollar per share was levied upon the capital stock of the corporation, payable immediately in U. S. currency, to the Secretary, at the office of the company, Room 33, Nevada Block, No 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary, at the office No. 2 Nassau street, New York City, N. Y.

Any stock upon which this assessment shall remain unpaid on the Twelfth day of August, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the Ninth day of September, 1878, to pay the delinquent assessment, together with costs of advertising and the expenses of sale. By order of the Directors, LEANDER LEAVITT, Sec'y.

Office, Room 33, Nevada Block, 309 Montgomery street, San Francisco, Cal.

Orion Mining Company.—Location of Principal Place of business, San Francisco, California. Location of Works, Iowa Hill, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 9th day of July, 1878, an assessment, No. 2, of 70 cents per share was levied upon the capital stock of the Corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, No. 28 Sansome Street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 9th day of August, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Saturday, the 24th day of August, 1878, to pay the delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors.

P. CONKLIN, Sec'y.

Office, No. 28 Sansome Street (up-stairs), San Francisco, Cal.

Seaton Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Drytown Mining District, Amador County, California.

NOTICE.—There is delinquent upon the following described stock, on account of Assessment (No. 11) levied on the 26th day of June, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Thompson, W., Jr.....	72	15	$1125 00
Thompson, W., Jr.....	70	10	750 00

And in accordance with law and an order of the Board of Directors, made on the twenty-sixth day of June, 1878, so many shares of each parcel of such stock as may be necessary will be sold at public auction, at the office of the Company, Room No. 58 Nevada Block, northwest corner Pine and Montgomery streets, San Francisco, California, on Wednesday, the twenty-first day of August, 1878, at the hour of one o'clock P. M. of said day, to pay said delinquent assessments thereon, together with costs of advertising and expenses of the sale.

JOEL F. LIGHTNER, Sec'y.

Office, Room No. 58 Nevada Block, Northwest corner Pine and Montgomery streets, San Francisco, California.

Office South Comstock Gold and Silver Mining Company. Notice.—The annual meeting of the stockholders of the South Comstock Gold and Silver Mining Company, for the election of Trustees and the transaction of such other business as may be presented, will be held on Monday, the 19th day of August, 1878, at two o'clock P. M. of that day, at the office of the Company. Transfer books will be closed on Saturday, August 12th, 1878, at the hour of 12 M. of that day.

J. M. BUFFINGTON, Secretary.

Office—Rooms 3 and 4, second floor, No. 309 California street, over Aetna Insurance office.

Summit Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the Seventeenth day of July, A. D., 1878, an assessment, (No. 4,) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of said Company.

Any stock upon which this assessment shall remain unpaid on the 19th day of August, A. D., 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the Tenth day of September, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors. J. W CLARK, Sec'y.

Office, No. 313 Pine Street, San Francisco, Cal.

Telegraph Copper and Silver Mining Company. Principal place of business, City and County of San Francisco, California. Location of works, Gopher Mining District, Calaveras County, State of California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 17th day of July, 1878, an assessment of three (3) cents per share was levied upon the capital stock of the Corporation, payable immediately in United States gold coin, to the Secretary, at his office, Room 2, 528 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 13th day of August, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the Ninth (9th) day of September, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

I. T. MILLIKEN, Sec'y.

Office, Room 2, 528 California street, San Francisco, Cal.

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Also, numerous other engravings of mines and scenes, comprising Mineral Park, Fort Whipple, Castle Dome, Oatman Flat, the Rio Verde Valley, Montezuma's Well, the Salt River Ruins, Indians, Public Buildings, Ancient Ruins and Remains, etc. In addition to these illustrations, the Hand-Book will contain

An Old Spanish Map of Arizona

And contiguous Territory, never before published; a copy of the famous Father King Map, and profile maps of the Mining District of Mohave County, in which the McCrackin mine is located; of Castle Dome District, Yuma County; of the Bradshaw District, near Prescott, where the Peck mine is worked; of the Pioneer, in which the famous Silver King is located; the Globe, where the Wheatfield, Stonewall Jackson and Miami mines are found; and of the extraordinary rich Santa Rita Districts, the Aztec and Tyndall.

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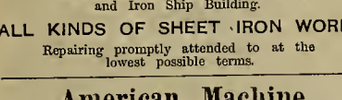

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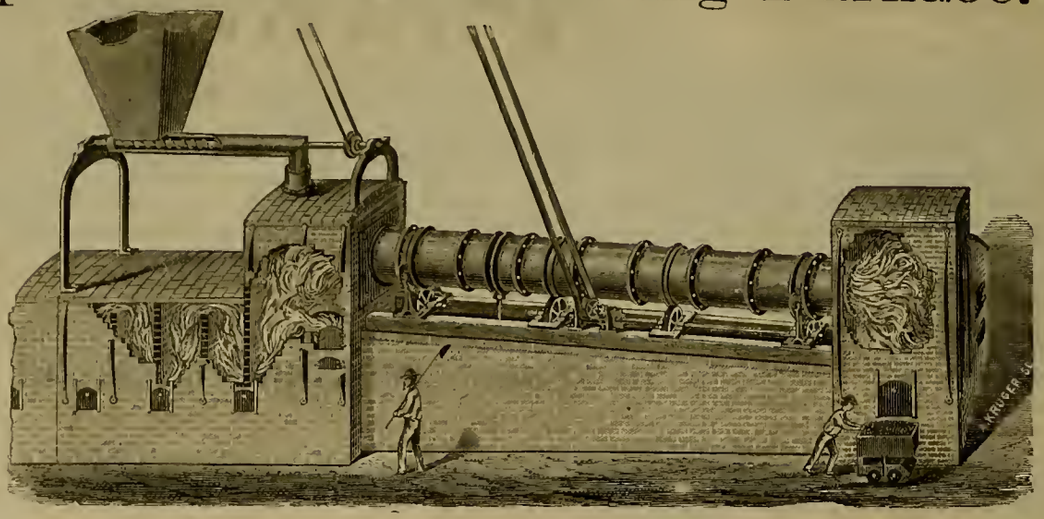

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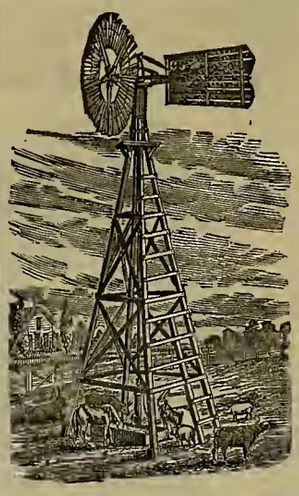

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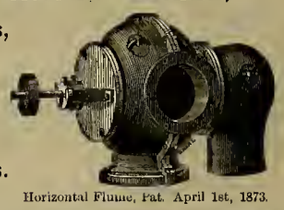

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BY DEWEY & CO., Publishers.

SAN FRANCISCO, SATURDAY, AUGUST 10, 1878.

VOLUME XXXVII Number 6.

The Mining Debris Trial.

[Continued from Last Week.]

G. F. Allardt, an Oakland civil engineer, had made last month observations for plaintiffs. He had examined Bear river at various points, finding its velocity at one point great enough to carry rocks weighing from 60 to 70 ponnds, and calculating, by the evaporation method, the amount of sedimeut carried to vary from ahout 1¼ to 6 % of the weigbt and volume also. He had never seen slickens anywhere but in hydraulic mining localities. Had seen good corn on debris land.

A. T. Arrowsmith corroborated Allardt's testimony.

The prosecution having finished, the defense moved for a nonsuit on the ground that the injuries alleged in the complaint had not been proved, and that if damages did exist, the damaged parties had ample remedy at common law. The prosecution argued in reply, that this was a leading case, that the matter should be tested, and that the agricultural is the paramount interest of the land and should be protected. The defense in turn argued that the miners had a right to deposit their tailings in Bear river, that they were pursuing a lawful occupation in a lawful way, and had been doing so from the earliest history of the State. The Court, after reviewing the arguments, denied the motiou for uonsuit.

The defense then proceeded. An official map, representing the whole of Bear river valley and the watershed, also all the claims named in the complaint, was accepted as evidence. Senator Sargent gave a history of mining in Nevada county, the number of inhabitants in 1852, and since then, the amount of gold in their claim, and other points in detail. He said that hydraulic mining had been carried on ever since they owned the claims; that its stoppage would throw half the inhabitants out of employment and hankrupt the county.

E. H. Gaylord estimated the population near these mines at from 5,000 to 6,000. The miuing property, exclusive of quartz claims, assessed in Nevada county, is about $2,500,000. To stop the mines would injure the county greatly.

George F. Jacobs, a resident in the county for 27 years, and at one time an owner in the Quaker Hill claims, testified that their claim had been hydraulicked since 1857, and that, during the past 19 years, the gross yield of gold from them had been about $60,000 per annum.

J. S. Stone, a Gold Run miner, and Superintendent of the Cedar Creek mining company, testified to the universal employment of the hydraulic process in the districts in question. The Budsey Creek mine he estimated at $500,000. The company have been in possession of the same since 1871. The Cedar Creek property was worth $500,000; income during the past year ahout $50,000; not one-tenth of the material taken out yet, he thought. The quantity of gold taken from the district amounts to $40.000,000 or $50,000,000. There is much yet to he taken out. There are hetween 450 and 500 people supported by these mines. A stoppage would work great injnry.

J. B. Hunter, from San Juan ridge, familiar with the working of hydraulic mines since 1855, testified to the universality of the hydraulic process. It was, he said, the only proper and reasonahle method. They employed meu to a greater extent now than in early times, and these men had their families there, and subsisted on the working and income of the mines. He said the Blue Lead channel was 30 miles long, 30 feet wide, and 100 feet deep, and would pay ahout 30 cents per yard. Necessity regulates the working of the claims. North Bloomfield is among the most profitable mines in the county. Did not think one-tenth of the hlue lead had hecn worked out. Could not call to mind a claim that had heen ahandoned on this range, and would not pay.

V. A. Bell knew from observation that all hydraulic claims were worked on the same hasis; they must have a place to deposit their tailings in order to work their mines to advantage. He said the old bue lead was 28 to 30 miles in length, and ranged from 300 to 400 feet wide, and from 150 to 300 feet deep. The average worth of this land or lead is $150,000 to $200,000 per acre. There are prohably 150 to 200 claims located on this lead. Did not think one-tenth part of the grounnd had been worked out. He said the product of that mine last year was about $380,000, and this year they had taken out, up to the present time, $305,000. Witness said the population of Nevada county depended almost entirely on the working of tho mines. Did not think it would be worth while to keep up a county organization, if the mines stop work. There have heen large and extensive ditches constructed to bring water to these mines. Considered the sediment from these mines, where used in small quantities, a good fertilizer, and where put on land, had produced clovor, corn, and beans. The cereals had grown well there. Witness said he belonged to an association of miners, whose purpose was to contest this suit.

Abraham Neece, of Santa Rosa, brought out no new points.

George T. McLean gave no further eulightenment.

Gen. A. M. Dohbie had hcen familiar with miuing since 1849. The custom of dumping tailings in the ravines and streams was general, and was the only way thcse mines could he worked to advantage and profit. Mining districts were not all governed alike. Did not know of any law compelling miners to work in a certain way. Witness said he was interested in the North Bloomfield company. Was not a member of the organization to coutest this suit. Said the North Bloomfield company had tried drifting, hut it would not pay to work by that process; the hydraulic was the only process that would pay.

E. L. Bradley, of San Jose, formerly of Dutch Flat mining district, was interested in a claim in that district. Was at one time owner of nearly 20 claims. Sold them to an Englisb company for $480,000.

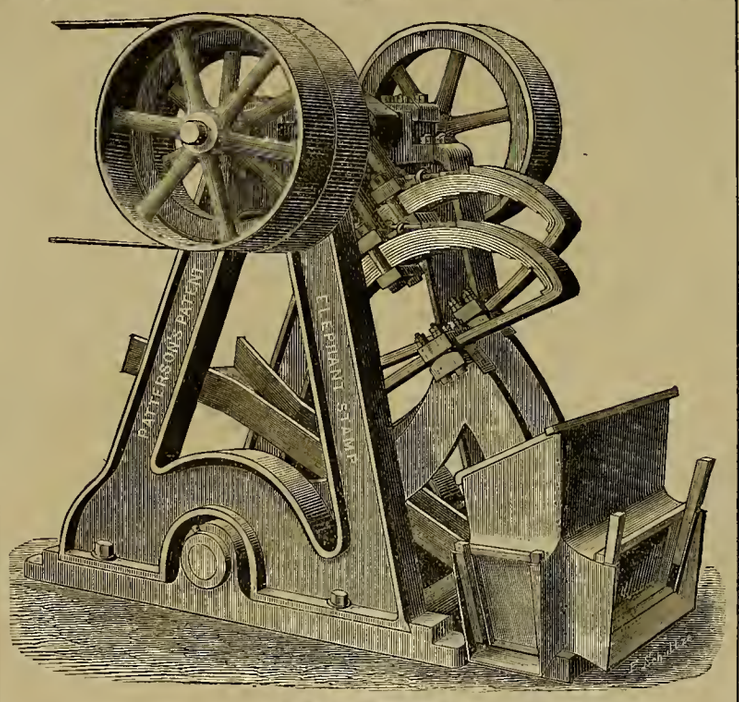
Nothing new was developed from the testimony of Andrew Laisen, O. H. Lee, S. B. Harriman and J. H. Lekamp.

Hamilton Smith had been manager of the North Bloomfield company's works for several years. He estimated the product of hydraulic mines in the State at hetween twelve and thirteen millions in 1876, and between eleven and twelve millions in 1877, and thirteen millions or more in 1878. That the mines uow being worked hy the hydraulic process would not pay to work by drifting or other process. The North Bloomfield company tried the experiment of drifting, and it cost them $2.25 per cuhic yard to get the deposit worked, while by the hydraulic system it only cost ahout five cents. He said the hydraulic mines represented about one-fifth of the taxahle property of Nevada county. Had examined the Bear River country, and the land of plaintiff. He gave a description of the sedimentary deposits and the levees built. Witness said the present levees would protect the land against ordinary floods, and they could further protect them hy increasing the size of the levee. Early mining had washed down lighter material than that coming now, and much of the old deposits would continue to wash down with each freshet. Did not believe much of the sediment or sand would pass the dams in the river hereafter. Witness said the drainage area of the Bear River valley is 350 square miles, and the rainfall ahout 54 inches. In 1861-2 there was 22,000,000 inches of water discharged by Bear river into the plains. Computed the amount of gravel and sedimentary deposit in Bear River valley at 86,000,000 cuhic yards. He was clearly of the opinion that to stop working the mines would not stop the flow of sediment. He did not consider the method of Mr. Allardt in computing the amount of solid matter in the water correct.

Prof. Wm. Ashhurner said hydraulic mines must have pressure and dumping ground to work successfully. There was no difference between the sediment in the Bear river and that in the Yuha and other similar streams. He thought sand and soft clay would make a good fertilizer. Thought most of the deposits in Bear River valley came from winter freshets and storms. He gave the amount of debris deposit in Bear River valley at 86,160,360 cuhic yards. Witness said he thought Mr. Allardt, in his estimate of solid material carried in the water, was ahout five times too much.

On cross-examination, Ashhurner gave the requirements of good soil, and his theory of the formation of the old river beds now being worked for gold.

Additional testimony will he presented in our next issue.



THE ELEPHANT STAMP.

The "Elephant Ore Stamp."

The engraving on this page represents a new ore stamping machine now heing introduced on this coast by Mr. Edmund White, and which we had the pleasure of seeing at work, on the corner of Main and Harrisou streets, in this city.

The principal novelties in the Elephant stamp are the suhstitution of hammered scrap iron levers instead of guides and rods, and the intervention of a semicircular spring between the crank and lever.

As will he seen from the engraving, the power is belted to a pulley in the crank-shaft on top of the frame work. There are two cranks on this shaft, one opposite the other. Suitahly journalled to these cranks are two heavy semicircular springs having helting across their lower ends, to which is attached the top of the stamp head. There are two stamps as shown, each heing pivoted at its rear end in a shaft. As the crank-shaft revolves, the stamps are alternately drawn up and thrown down hy the springs attached to the shaft, their forward end being supplied with shoes which strike on the dies in the usual manner.

The hlow given is a peculiar springy one, very effective in its action. The several thicknesses of leather straps connecting the ends of each spring, after the manner of the string on a how, seem to hold each stamp in such a manner that as the spring comes down a swinging kind of hlow is given to the stamp. The engraving shows how the leather springs on hoth the downward blow and return. Economy of power is claimed hy the spring storing up within itsslf the force of the recoil from the hlow of the stamp, which force is given out on the next return of the crank.

The particular advantages claimed over the present system are as follows:

"As to wearing power, the Elephant having hut two pairs of shoes and dies, the wear on the eight extra pairs which would he used in a 10-stamp mill is done away with. There are no cams, tappets or cam shaft, such constant source of wear and annoyance used, and heyond the leathers which unite the spring with the stamp head, and which would certainly not require replacing in less time than one year and may easily be replaced, the wearing parts are none."

"In the matter of power, a 10-stamp battery requires an 18 horse-power engine to drive it, while this can he run hy a seven horse-power engine. This alone is a great item, which will enable mines containing low-grade ore, which the present high cost of milling prevents being worked, to be turned into paying properties.

"As to portability, the Elephant only weighs from five to six tons, the heaviest piece not weighing over one ton. So it has a great advantage over a 10-stamp mill, the weight of which is in the neighborhood of 16 tons. On this account the Elephant is particularly adapted for new mining countries, and camps, such as Arizona, Mexico, Bodie, and Cariboo, and other places remote from the line of railroads, and where freight is necessarily high. Although the machine is comparatively light, and easily handled, yet, in case of severe handling while on the road, there are no parts which could possihly get hroken, or injured in any way, thereby securing the mine-owner against any delay in starting it up immediately on its arrival. As no wood-work is required, heyond an ordinary shed to shield the machine against the inclemencies of the weather, it requires hut little time to place the machine in working order."

As the head of the machine wears, no alteratiou in the length of the connecting rod is neccessary, the peculiar action of the spring and the flexihle connection allowing for the varying distances hetween the face of the head and the die, consequent hoth on the wear of shoes and dies, and the quality of material in the mortar. We have heen shown a numher of testimonials from Cornish firms, who have used other stamping machines, all of whom agree as to its efficency.

Mr. White, the agent, may he addressed, care of Mr. A. B. Grogan, 705 Sansome street, The machine may be seen at work at the corner of Main and Harrison streets every day from two to four, where it has heen lately examined by a numher of gentlemen connected with the mining interests.

COBALT AND NICKEL ORES.—J. S. Phillips has been appointed agent for a London firm, to huy cohalt and nickel ores. Persons having any such ores may communicate with him, through our address.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—EDS

Iodine Manufacture on the Pacific Coast.

The following is an abstract from an article prepared by W. B. Jones, of the University of California. The subject is: "The Probability of Profitable Iodine Manufacture on the Pacific Coast." His work is based upon an analysis of a new variety of sea weed which occurs in great abundance on our coast. It may be of some interest to capitalists.

Iodine is an element, the history of which dates back but comparatively a few years. It was first discovered by M. Courtois, at Paris, in 1812. Its discovery was the result of a careful scientific investigation into the cause of the rapid corrosion of the copper pans used in the process of manufacturing saltpeter from kelp.

Sea water contains considerable quantities of iodine and is, through the agency of the sea weeds which concentrate that element, the principal source of the commercial supply of iodine.

The manufacture of iodine is at present carried on to no great extent, except in Scotland and upon the northwestern coast of France, and although not such an extensive industry as some others in the domain of "applied chemistry," yet it is quite an important one. Moreover, there is an increasing demand for the product of this industry, as the following, taken from the drug trade report of D. C. Robins, will show:

Average quantity of iodine imported per year during the three years ending June 30th, 1877, 33,698 pounds. Quantity imported during the years ending June 30th, 1876 and 1877, respectively, 24,913 pounds and 50,123 pounds, showing an increase for year ending June 30th, 1877, of 25,210 pounds. These figures take no account of the immense amount consumed by the chemical manufactories and laboratories of Europe. They give us, however, an idea of the increase in the American market.

The investigation I have conducted consists of a complete chemical analysis of the ash of a species of sea weed, which grows quite abundantly in the neighborhood of Santa Cruz. The species of this sea weed has not been definitely determined, but it is being at present botanically investigated by Prof. Farlow, of Harvard University. It seems quite certain that it is distinct from the *Laminaria digitata*, which is the source of the kelp used in European iodine manufacture. If the species is a distinct one, it will probably receive the name of *Laminaria Andersonii*, after Dr. Anderson, of Santa Cruz.

This weed grows in great abundance upon the shelving rocks at low-tide mark, and some of the plants reach a length of four to five feet, the average, however, being shorter. The analysis is therefore one of considerable interest, not only on account of the special investigation for iodine, but also because of the fact that the species is a newly discovered one, of which no complete chemical analysis has been made before.

Mr. Jones then explains some of the difficulties of the analysis and the details of the methods employed by him. The results of his analysis are as follows:

Amount of ash contained in the dried plant, 15%.

Result of qualitative and quantitative analysis of the ash:

Iron	traces
Aluminum	0.093
Calcium	9.870
Magnesium	5.320
Silica	1.210
Sodium	8.11
Potassium	15.580
Iodine	0.99534
Sulphuric acid	26.2750
Phosphoric acid	3.2400
Carbonic acid	16.67
Chloride	5.7
Bromine	traces
Total	93.06334
Loss	6.93666
Total	100.00000

Comparing the amount of iodine found in this analysis with that found in similar analyses of the dry plants of other species, we find that this species contains over twice as much iodine as any of the plants from which iodine is manufactured.

	Sarphati.	Stanford.
Fucus Vilum	0.0894	
Laminaria Digitata	0.1350	0.4788
Laminaria Saccharina	0.2300	0.1583
		Jones.
Laminaria Andersonii		0.99534

The method of iodine manufacture is quite simple, no complicated machinery or apparatus being necessary. It seems evident that if it can be profitably produced from kelp containing only 0.1350% and 0.4788%, it could certainly be manufactured with profit from a kelp containing almost 1%. Of course in deciding the question as to whether iodine can be profitably extracted from *Laminaria Andersonii* and other sea weeds growing upon our shores, we must take into consideration the increased cost of production due to a higher rate of wages.

The season for collecting the sea weeds is only of short duration in Europe; beginning in June and ending in September in Scotland, and in March and October only in France. On this coast the season would undoubtedly be of longer duration, since the winter storms which sweep away the weeds do not begin until December; and on this account the manufacture would be more continuous and therefore more profitable. Again, the market for the product and its price would have considerable influence in determining the profitability of the industry.

The market would of necessity be confined to our own country. There is at present no duty levied on the importation of crude iodine, but this fact would make no difference in the price which the product would bring, since dealers would be as willing to pay for a home product as for a foreign one, since the kelp proves so very rich in iodine, and since the profits from the extraction of the potash salts from the kelp would undoubtedly be sufficient to make up for the difference in the cost of labor between this coast and the coasts of Scotland and France. The manufacturer could afford to expel the imported product entirely from the American market.

The market value of iodine at the present time is somewhat high, it being from $4.25 to $4.75 per pound in New York, and resublimized iodine at an advance of 75 cents per pound (equivalent to the duty upon it) on these prices.

"According to Mr. Stanford's method of preparing kelp, one sample of *Laminaria digitata* produced 32 pounds of iodine per 20 cwt. of kelp." Accordingly our species, *Laminaria Andersonii*, ought to produce at least 60 pounds per ton of kelp. The ash, moreover, is very clean and free from silica, whereas in most of the other species which have been used in iodine manufacture, the silica varies from 2% to 11%. The weed grows abundantly, and during the season each cutter could easily gather at least a ton per day.

The facilities for transportation of the product are much greater than in the European localities, and this is another great factor in determining the cost of production.

Taking all these considerations, we may safely conclude that if it can be profitably manufactured in Europe from a kelp containing only one-half as much iodine, that it can be produced with equal if not greater profit on this coast, and that it might be made a source of profit to whoever should undertake the enterprise, provided of course that he possessed sufficient knowledge of the business to carry it on successfully. The occupation of cutting the weed and preparing the kelp might give employment to a considerable number of men, and thus the industry if established would prove one source, though perhaps small, of benefit to our State. W. B. JONES, Ph. B.

Benicia, Cal.

Notes on Chile.

EDITORS PRESS:—Having just arrived in this country from Chile, where I have resided for the last seven years, I have thought that a few notes from that country might be interesting to your readers. This South American Republic is well-known to be ahead of all similar States on that continent. In climate and products it closely resembles California, and I think only requires a stream of industrious and intelligent immigrants in order to have a future progress resembling that of this wonderful State. In geographical position and extent, it is of course far below California. As may be seen from the map, it is but a long narrow strip of territory from about 23° south to the Straits of Magellan, bounded on the east by the range of the Andes and on the west by the Pacific ocean. The breadth is nowhere, I think, more than 100 miles and as a great part of this width is taken up with mountainous land, the area of the plains is rather limited. The general formation of the country is that of a central valley, lying between a coast range and the main chain of the Andes. This valley, from the province of Aconcagua down to Concepcion, is very fertile, and resembles in many respects the valleys of the San Joaquin and Sacramento rivers. This is the grain-growing district of Chile, which in the beginning used to feed the California diggers. The northern provinces of Chile, from Coquimbo to Atacama, are altogether mining districts, if we except some few patches of irrigated land on the valleys of the rivers near Coquimbo and Copiapo. These are almost rainless districts, and are, consequently, dry and sterile, though they have not always been so, as is evident by the dried-up river beds and water-worn stones. And in those rare years when a shower or two of rain falls, the plant life springs up from seeds lying dormant amongst the stones, and the "desert blossoms as the rose." I am unable to say the causes or time of this change of climate, but it must have been in remote antiquity, as no historical record alludes to it. Barren as are these provinces, they are a great source of interest to the miner and revenue to the country. Here are found those rich mines of copper, which have for many years been the chief supply of the world. Here also are some rich silver mines. The chief silver mines, however, in this quarter, are those of Caracoles, in the desert of Atacama. This desert was considered so valueless that scarcely any trouble was taken by the neighboring governments of Chile and Bolivia to determine where the boundary of their respective territories lay. So that when the discovery of the rich silver mines of Caracoles first startled the world, it was a question as to which country they belonged. I believe that it has since been settled in favor of Bolivia. Mejillones-de-Bolivia is another similar case. Here is a vast field of guano, which is laid claim to by both nations; but the amicable agreement has been come to by them to divide the revenues equally. This is one of the best harbors on the west coast. The guano is brought down to the bay by a suspended wire tramway, constructed some years ago for Mr. Henry Meiggs. Last year extensive fields of nitrate were discovered on Chilean territory, which the government resolved to explore and work. They should be now in course of development. Hitherto gold has not been produced in large quantities. But that there is gold is certain. I have seen a good many specimens of gold dust and scales about the eighth of an inch or more, and once met a man with over 12 ounces.

These results have all been attained by the roughest appliances, such as the pan, and by peasants and Indians, untutored in the arts of "prospecting." So I would think that there ought to be a good show for some experienced diggers from this country. Hydraulic mining is about to be started now on a pretty large scale in the province of Valparaiso, one large company at Catapilco, all by capital collected in the United States. There were three native companies started for this purpose when I left in May last. There are legends of silver mines in the Indian territory, and I have observed that the Indians always have heavy silver ornaments of their own fabrication, so that these tales may have some foundation.

I have no wish to deceive any one with false hopes, but it is my opinion that there should be yet some great discovery of the precious metals, for the ravines and slopes of the mountains have never yet been properly surveyed nor explored to find the source of the gold dust.

The principal cities in Chile are Valparaiso, Santiago, Talca, Concepcion, Coquimbo and San Felipe. Valparaiso is a city of 150,000 inhabitants. It is the principal seaport of the country, and the commercial capital. As a port, it is rather unsafe in the winter months, being exposed to the "northers" which occur during that season, often doing much harm to the shipping. The city is built on a narrow strip of flat land at the foot of a range of high hills, and also extends for a considerable distance up the slopes. In appearance it is picturesque, only like San Francisco during the summer the hills have a dusty and dried-up look. In the principal streets the buildings, shops, tramways, and traffic all have quite a European air, and from the number of foreigners met with it is difficult to recollect that one is in South America.

Santiago, the capital, is situated in the central valley in sight of the Cordilleras. It is of about the same size and population as San Francisco. The streets are regular, and there are many buildings of great beauty and richness. The city is traversed by a long alameda or avenue of poplars, which is about 100 yards wide and serves as a promenade. Most visitors to Santiago are much surprised at finding it so much better than they anticipated in a South American town. The other cities mentioned are only large country towns, containing nothing of note.

Messrs. Clark & Co. are now engaged in getting up the capital necessary to complete their trans-Andine railway scheme to unite the systems of Chile with those of the Argentine Republic. When this work is finished, it is hoped that it will be preferred as a route from Australia to Europe.

The railroad system of Chile has advanced much during late years. Valparaiso has been connected with Santiago since about 1863 by a railroad of considerable difficulties, brought to a successful issue by the late Mr. Henry Meiggs. In 1875 the last rail connecting Santiago with Conception was laid, so that the government now owns over 500 miles of railroad. The chief engineer for these railroads is M. E. D. Poisson, a Frenchman of much talent. The contractor has been Mr. John Slater, one of the self-made men of America, who aims to be a second Henry Meiggs.

It is impossible in a brief article for me to say all that I could about Chile, but I will be glad to give any information to those who may feel interested in this country. And there is much to interest. In the scenery, history, products, present condition and prospects. I have seen a good deal, too, of the famous Araucanian Indians, the only aboriginal race who have never been conquered.

I do not think that there will ever be much commerce between California and Chile. The countries are too much alike in their products. The ruling merchants in Chile are foreigners and their descendants. There are many immigrants of all nations settled there in various occupations. It is probable that English-speaking people will always prefer to go to the United States or Australia, but there is no reason why the Germans or others who have to learn a new language should not prefer Chile. The government will treat them liberally. There are two colonies of Germans doing well. Wages and living are about the same as in California. There are no Chinese to compete with in the labor market, and hands are often scarce. At present business in Chile is depressed, owing to causes which have affected the whole world, and chiefly also to the low price of copper. But I would judge that the remedy for this state would be a flow of productive immigrants.

To judge by what I see here in California as the progress of 30 years, I have great hopes for the future of Chile, a country so similar, during the next generation of men.

JOHN SAMPSON.

Amador County.

EDITORS PRESS:—Jackson the county seat of Amador county, is prettily situated at the junction of three branches of Jackson creek—South, Middle and North forks. The buildings on the principal business street are built mainly of brick and protected from fire by iron doors and iron window shutters. The courthouse and county buildings are quite tasty specimens of architecture, and are located conspicuously upon the most elevated site in the village. There are a number of very handsome cottages with large grounds, ornamented by great varieties of shade trees, fruit trees and flowers, which beautify and make home attractive. There is a large quantity of fruit raised in the town and vicinity, the surplus of which is purchased and dried for market by an incorporated company who have here a large Alden fruit drying establishment. There are two weekly papers published here—the *Dispatch* and the *Ledger*, a number of general stores, drug stores, livery stables, saloons, hotels, also a good public school, and churches enough to supply the demands of a population of about 1,200. The altitude of the courthouse is about 1,200 feet above tide water.

Sutter Creek.

This town is situated on the stream of the same name, four miles distant from Jackson, in a northerly direction, and 12 miles from the terminus of the Amador railroad at Ione City. This is the largest town in the county, and by reason of its proximity to several very large gold quartz mines, it is the most lively business place in the county. The mines nearest the village are, first, the Amador Con. mine and mill, which employs a great many men. Next the Lincoln gold quartz mine and mill, which also has quite a long pay-roll; also the Mahoney, now shut down, owing to some little "unpleasantness" among the owners, which it is hoped will soon be adjusted, which gives employment to about 100 men. The Oneida and Kennedy mines are close, each with a large number of employes, who draw their supplies from Sutter Creek; also the Amador Canal company's saw mill and lumber yards 1½ miles from Sutter Creek, require quite a number of laborers. There are two chloridizing establishments for the reduction of gold-bearing sulphurets, two very respectable foundries, a hardware store, a drug store, two hotels, a number of dry goods, grocery, furniture, clothing, jewelry and variety stores; also a good supply of tradesmen and mechanics' shops, saloons and cigar stalls in excess of demand, two churches, a public school of 425 children, Masonic, Odd Fellows and Temperance lodges, doctors and dentists and ministers plenty, and all the other concomitants and accessories of a high state of civilization deemed necessary to the comfort and convenience of a population of 1,500 to 1,800 people, but no Chinamen.

There are many fine residences beautified and ornamented by trees and flowers in great profusion. Fruits are grown in great abundance, even the orange, which we saw in full bearing. The town is well supplied with water for household, irrigating, milling and manufacturing purposes, as well as a protection against fire. The reservoir is located on the hill east of the town, at an elevation of between 300 and 400 feet above the main street. The supply is obtained from the Amador canal, the source of which is the headwaters of the Mokelumne river.

A pleasant drive of two miles eastward from Sutter Creek, over a good road, sandwiched by fields of ripening wheat and barley, fields of new-mown hay, sending its fragrance to greet and cheer the traveler, fields of blooming alfalfa, orchards, vineyards and home-inviting farm houses, brings us to the village of

Amador City.

This town is situated on Amador creek, has a population of about 1,000, a public school with 250 children on the roll, one hotel, five general stores, one livery stable, a public hall, one church, shops, saloons, etc. The town wears a thriving, prosperous look. It is most noted, however, by its celebrated mines, of which the Keystone is the principal. This mine has turned out about $40,000 per month for the last 12 years, and gives no indication of ever letting up. They work about 100 men in the mine, the majority of whom have families and live in cottages adjacent to the works. The Original Amador mine, the Bunker Hill mine, the Gover mine, the North Gover mine, the Talisman mine, are all valuable gold mines, giving employment to a good many laborers, residents of Amador City.

The next place on the road traveling east, and about two miles from Amador City, is the village of

Drytown,

Situated on Dry creek, eight miles from Jack-

(Continued on page 86.)

MECHANICAL PROGRESS.

Narrow-Gauge Railways.

The Narrow-Gange Couvention held July 17th in Cincinnati was apparently a success, there being 200 in attendance. The proceedings of the convention may be summarized by presenting the resolutions which were adopted, for they embody the narrow-gauge idea as it is now put forth by those who uphold it. The following resolutions were adopted after careful discussion:

WHEREAS, The question of transportation has grown to such magnitude in this country that it demands the serious attention and earnest efforts of every economist to examine and ascertain the cheapest and most desirable method of conveying the products and the merchandise of the country to the various marts of the world; therefore be it

Resolved, That on account of the cheaper cost of construction, lighter operating expenses, and smaller interest account, the narrow (or three feet) gauge is the factor that will finally solve the problem, and bring the country that which it so much needs—cheap transportation.

Resolved, That the practical working of the narrow-gauge railways in America during the past six years has demonstrated, beyond a reasonable doubt, the feasibility of the gauge of three feet, proving as it has the following facts:

1. That a good road may be constructed at a cost and equipped on this gauge not in excess of two-thirds (all things being equal) of the sum necessary to construct the standard gauge. 2. That when constructed it can be operated for a sum less than two-thirds of the sum necessary to operate the standard gauge doing the same amount of business. 3. That its capacity is ample to meet all requirement. 4. That is is equally as safe as the standard gauge. 5. That the capital invested therein has proved more remunerative than like investments made in standard gauge roads under similar conditions. 6. That when built they have given satisfaction to their patrons equal to that of the standard gauge.

Resolved, That the real advantages of the narrow-gauge roads cannot be fully compared with the standard gauge roads until they can be able to reach, by extensions or connections, general distributing depots, until which time their advantages cannot be fully realized by the public.

Resolved, That the narrow-gauge road should no longer be looked upon as an auxiliary road merely because it is constructed on the three-feet gauge.

Resolved, That a narrow-gauge road may be built at the present prices of labor and material, from the Mississippi or Missouri rivers to the seaboard, capitalizing upon the basis of actual cost, and profitably compete with the water routes for the transportation of freight.

Resolved, That inasmuch as very few of the narrow-gauge railways in America have an indebtedness exceeding one-half their actual cost, and that many are projected when the companies have already secured available stock subscriptions equal to such proportion of the estimated cost, we invite the attention of capitalists to the bonds of these roads as a matter of investment, and to carefully consider the security offered, the liability of the companies, and their ability as an earning power, and that they carefully contrast the same with the standard gauge roads now in operation.

Resolved, That inasmuch as serious mistakes have heretofore been made in the location of lines possessing moment, great care should be exercised in the selection of new lines, and only those should be constructed as may be actually needed, and capable of securing a business commensurate with their cost, and that one of the best evidences whether a certain line is needed or not is the co-operation of the people along such line, and unless such co-operation equals at least one-half the estimated cost thereof, this convention would advise great moderation in the deliberations of any company before entering upon such construction.

Resolved, That the narrow-gauge railroad is the road for the people, that its cost comes within their reach, and it offers to them a transportation facility superior to that offered by any other means.

AMERICAN STREET CARS.—An expert writer says: "The English horse car weighs one-fourth more than the American car, and ultimately gives way in the joints, while those made in this country are light and strong, on the same principle that an American made carriage, though lighter, can stand more wear than an English carriage, which is altogether too heavy and apt to break, owing to its weight. The idea of making anything light, neat and yet strong, is characteristically American, and the same principle holds good in the manufacture of horse cars, and they appreciate it. There are car shops in Europe, and large ones, too, at Birkenhead, Brussels and Hamburg, and they have begun to make them in Paris, as the duty on cars imported into France is very heavy; but in Germany it is only six per cent., and everywhere the American horse car is preferred. Nothing made of wood and iron requires so much care and labor as these very cars, and I think that in their manufacture this country has really reached perfection."

Grasping and Carrying the File.

In their new work entitled "Hints on Filing" the Nicholson File Company, of Providence, Rhode Island, make the following points: In using the larger files, intended to be operated by both hands, the handle should be grasped in such a manner that its end will fit into, and bring up against, the fleshy part of the palm, below the joint of the little finger, with the thumb lying along the top of the handle, in the direction of its length; the ends of the fingers pointing upwards, or nearly in the direction of the operator's face.

The point of the file should be grasped by the thumb and first two fingers, the hand being so held as will bring the thumb, as its ball presses upon the top of the file, in a line with the handle, when heavy strokes are required. When a light stroke is wanted, and the pressure demanded becomes less, the thumb and fingers may change their direction, until the thumb lies at a right angle, or nearly so, with the length of the file; the positions changing more or less, as may be needed to increase the downward pressure.

In holding the file with one hand, as is often necessary in filing light work, pins, etc., the handles should be grasped as already described, with the exception that the hand should be turned a quarter turn, bringing the forefinger on top, and lying along the handle nearly in the direction of its length. In this position, the freest action of the hand and wrist may be had upon light work. Amateurs will find that by following these directions, the movements of the file will be simplified, and made somewhat easier than if grasped at random and without consideration.

The most natural movement of the hands and arms in filing, is to carry the file in circular lines, the several joints of the limbs being the centers of motion; this movement of a convex file would apparently give a concavity to the work, the real tendency, however, especially on narrow work, is the reverse (owing to the work acting as a fulcrum, over which the file moves with more or less of a rocking motion), giving an actual convexity to its surface, except when in the hands of a skillful operator. The real aim, therefore, should be, to cause the file to depart only so much from a true right line, as will be necessary to feel that each inch of its stroke is brought into exact contact with the desired portion of the work.

The movements here referred to, have reference to those in which both hands are used upon flat work, requiring nicety and trueness of finish, and the difficulties to be overcome in producing even a comparatively true flat surface with a file, require much practice on the part of the operator. In point of economy, the pressure on the file should be relieved during the back stroke; this will be apparent to any one who will examine the formation of the points of the teeth, when it will be seen that the file can only cut during ordinary or advancing stroke, and that equal pressure during the back stroke must be very damaging to the points of the teeth.

A SOUTH AUSTRALIAN COMBINED REAPER AND THRESHER.—Recently we gave an account of a California machine of this kind. In reports of the Paris exposition we read as follows: "James Garden Ramsay, M. P., of South Australia, exhibits a working model of a Ridley's reaping machine with improvements. This machine reaps and thrashes simultaneously. The power is traction, and during its progress through a field of ripe wheat, oats, or barley, strips the ears and so far thrashes the corn that it only requires to be winnowed before being ready for bagging. Thousands of these reapers are in use in South Australia; this machine, with one man and three horses, reaps and thrashes ordinarily 10 acres a day." It appears that this machine only works one-quarter as fast as the California Centennial Harvester, and, we would infer, it has no fanning mill attached, or else they clean grain very thoroughly by double fanning in South Australia.

GOVERNMENT HAY PRESSING IN ENGLAND.—The English government does not appear to be satisfied with the density obtained by ordinary hay presses. We read that the plant of hay-pressing machinery which has been in course of erection for some time past in the Royal Dockyard at Woolwich, was officially tested on the 20th ult., and it was found that, with the aid of this machinery, which is worked by hydraulic power, three ordinary trusses of hay can readily be compressed into a somewhat smaller bulk than that of one single truss in the space of three-quarters of a minute. The pressure applied amounted to no less than two tons on the square inch, and so powerful is the plant that as many as six trusses can be pressed into the compass of one, and the machinery is capable of turning out 300 tons of compressed hay per week, or double that amount if working day and night.

RAIL EXPANSION BY HEAT.—An English exchange says that excessive heat, 120° in the sun at Wigan, had a singular effect on the railway metals between Wigan and Manchester, on the London and North-Western line, near Platt Bridge station. The up-line to Manchester was found on that afternoon bulging for eight lengths in the shape of an S at one point, the metals and sleepers having been bodily moved nearly two feet. The rails appear to have been set too tightly, and on the heat expanding them they have been twisted off the original course.

SCIENTIFIC PROGRESS.

Notes on the Solar Eclipse.

The observations on the recent solar eclipse were generally quite satisfactory and will contribute much to our knowledge of the bodies involved. The telegraph has caught the gossip of the observers and a few points may be noted in advance of the finished reports which will be handed in ere long.

Prof. Young reported that he discovered no ultra red or ultra violet lines, but that at the moment of totality all the Frauenhofer lines were beautifully reversed. This was the most important result of his observation, and confirms the observations made in Siam. Both the H lines were also reversed. Very bright lines were seen near large B, which confirms Prof. Pogsou's observations. He also saw the bright lines F and 1,474.

Prof. Colbert reports that his observations tend to show that the moon's path in the heavens lay a little farther to the southward than indicated by the lunar tables, or else that the estimate of the moon's diameter is too large—perhaps both.

The measures made by Mr. Easterday indicated that the corona extended out on an average about 26 minutes of an arc, corresponding to a distance of fully 700,000 miles, all around the sun. It was strongly striated, and in the direction of the ecliptic the rays were nearly straight, while above and below that line they were markedly spiral in their character, and some of the lines at the base formed an angle of not less than 30° with a prolongation of the sun's rays.

The chromosphere was distinctly seen by Prof. Hough, indicating a thickness of some 2,000 miles. The protuberances were much less prominent than at most of the recent eclipses. Two rather pale ones were seen on the western side of the moon.

Mr. Thomas also saw line 1,474, but did not discover any new lines.

Prof. Watson, of Ann Arbor, and Mr. Norman Lockyer have returned from Separation. Prof. Watson discovered an intra-Mercurial planet of the size of a four-and-a-half magnitude star, about two and a half degrees southwest of the sun. Mr. Lockyer says this eclipse was totally different (the corona being 10 times brighter this time) from the one in 1871, showing a greater variation of the brightness of the corona between the maximum and minimum period of sunspots. He obtained a faint photograph of the continuous spectrum of the sun, and saw no traces of lines or rings through Mr. Rutherford's grading. The structure of the corona was well observed by him, but no trace of an exterior ring was seen, and the corona vanished instantly, while in 1871 it remained visible for several minutes after totality. Only one faint protuberance was observed by Mr. Lockyer. He is greatly surprised at the difference of eclipses occurring in different sunspot periods, and at the intimate relation of the brightness of the corona to sunspots.

Sun Engraving.

The forthcoming number of Petermann's *Mittheilungen* contains a highly interesting paper entitled "The Sun in the Service of Geography," in which the advantages of the process of heliogravure or sun-engraving upon copper, as practiced by the Austrian Military Geographical Institute, are dwelt upon. The maps of the new Austrian Ordnance map are carefully drawn on paper, on a scale of 1: 60,000. They are then reduced photographically to a scale of 1: 75,000, transferred upon copper, touched up, and printed. In this manner each sheet of the map can be produced in nine months, while the same amount of work engraved in the usual manner requires nearly 46 months for its completion. The whole of the Austrian Staff map, consisting of 715 sheets, will thus be completed in 10, 11, or 12 years. No less than 271 have been published since 1874. The advantages of this process, as regards cost and rapidity of publication, are evident, and they fully compensate for any slight inferiority in the appearance of the work. An engraver, says the *Athenæum*, to whom we showed one of the maps produced in this manner, firmly believed that it had been engraved upon copper. If the Ordnance Survey Office were to avail itself of this process, the 1-inch map of the United Kingdom, for which we shall have to wait, under present arrangements, for years, might be completed very speedily. The Ordnance survey of Palestine, at all events, might be produced in this manner at comparatively little expense, and in a very superior manner, as an examination of a specimen map in the *Mittheilungen* will show. We ought to mention that a similar process, invented by Colonel Avet, has been in use for several years past, in the office of the Italian General Staff.

PROF. HAYDEN'S LAURELS.—The Royal Academy of Sciences at Rome has elected as a foreign member of that institution, Prof. F. V. Hayden, United States geologist, who has for several years had charge of the geological surveys of the Territories. He is already a member of 33 scientific associations.

The Hughes Microphone.

We notice by English exchanges that Professor Hughes is lecturing upon this sound-swelling apparatus. Among other things he said: The problem of the microphone being solved, it required only to observe the general considerations to produce an endless variety of microphone, each having a special range for resistance. The tramp of a fly or the cries of insects required little range, but great sensitiveness. For a man's voice the surfaces were under a far greater pressure than for the movements of insects. As yet he had found no such insulator for sound as gutta-percha was for electricity. Caoutchouc seemed the best, but he had never been able by its use to prevent the microphone from reporting all it had heard. The question of insulation had now become one of necessity. If they could insulate it so as to direct its powers on a single object they would be able to investigate the object undisturbed by the pandemonium of sounds which at present the microphone revealed where they thought was perfect silence. However simple the microphone might appear to be at the first glance, it had taken him many months to bring it to its present state. He and Dr. Richardson had been experimenting on lung and heart diseases, and although the application by Sir Henry Thompson was more successful, he did not doubt their ultimate success. There was also hope that deafness might be relieved, and there was hardly a science which would not be benefited where acoustics had some direct or indirect relation. Throughout the whole of his investigations he had used Professor Bell's wonderful sensitive telephone instrument as a receiver.

ANOTHER BENNETT ARCTIC EXPEDITION.—From a communication recently received at the Navy Department, it appears that James Gordon Bennett contemplates a double expedition to the North Pole. He has been in consultation with Petermann, the great German geographer, and other Arctic experts abroad, and now proposes his well-known yacht *Dauntless* for an additional Arctic expedition, putting in her an auxiliary engine and screw and otherwise making her complete for an expedition by way of Spitzbergen. The *Jeannette* is on her way to San Francisco, and will pass through Behring's straits early next year. Benuett will spend not less than $120,000 on the *Jeannette* expedition. He wishes the Navy Department to furnish for the *Dauntless* the crew, officers and provisions necessary for her voyage, he making her otherwise ready. He is persuaded that two vessels going in different directions, but by the two ways which are admitted to be the best and only ones which promise an early success, can more than double the chances of reaching the pole.

ELECTRIC AND SUBMARINE LIGHTING.—M. Reznier has communicated to the French Academy of Sciences a description of a new electric lamp, drawing its light from incandescent poles and acting in free air. A thin rod of carbon, pressed laterally by an elastic contact and pushed in the direction of its axis against a fixed contact, becomes incandescent and burns when traversed by a pretty strong current. As the end of the rod is consumed the pressure urges it forward through the elastic slides to the point of fixed contact, where the combustion takes place. In order to facilitate the work of divers by supplying them with a submarine lamp, Barnet and Foster compress oxygen to 30 atmospheres in an iron cylindrical reservoir, from which the combustion of an alcohol lamp is sustained. The escape of the gases generated is provided for.

ILLINOIS COAL.—Mr. William D. Rudy, of the Illinois Industrial University at Champaign, has just published a very interesting pamphlet on the coals of Illinois. In the introduction, Mr. Rudy says: The coal area of the State of Illinois may be safely estimated, in round numbers, at 35,000 square miles, an area three times as large as that of Pennsylvania or Ohio, and constituting one-fifth of the productive coal fields of the United States, not including what are termed the lignite basins of the Western Territories. The coal measures of Illinois attain an aggregate thickness of 1,400 feet, and may be divided into upper and lower measures, the latter of which, as a rule, contain the better coal.

GADALINITE.—The *Engineer* says that M. Soret, in examining the spectrum of the mineral gadalinite, has observed, in the ultra violet, lines which belong to the spectrum of no hitherto known metal. He therefore suspects that they indicate the existence of a new metal. MM. Marignæ and Delafontaine had some time since suspected that gadalinite contained a new metal, and M. Soret's observation confirms their view.

A NEW ALKALOID.—According to the *Chemical News*, M. Tenrot has discovered a new alkaloid in the bark of the pomegranate tree. It is volatile and powerfully basic, forming well-defined salts. It precipitates the chlorides of palladium and gold, but not that of platinum. It gives a white precipitate with the salts of lead, mercury, zinc and silver. The new body is named (in honor of M. Pelletier, presumably) pelletierin.

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

AMADOR.

Centennial.—*Ledger*, August 3: There is not a location on the line of the mother-lode in this county the prospects of which ars of a more flattering charactsr, than the Ceutennial, situated on Dry creek, two miles south of Plymouth. The ledge is 15 feet in width, the quartz heing of that dark-streaked, rihbon character so much prized hy miners. It carries large quantities of snlphurets, and occasionally free gold is visihle. The company are anxious to get a mill upon the property as speedily as possihle, and steps have already heen taken to that end. The old Philadelphia mill of 20-stamp, located near the forks of the Consumnes, has heen purchased hy the company. Men ars now engaged in tearing it down and moving it to the Centeunial ground.

Fort Ann.—This quartz mine is located four miles northeast of Volcano, and is owned by Epling & Carr. The owners are so encouraged over the prospects, that they are now putting up a mill on the property. A dozen men are husy excavating on the mill-site and digging a ditch to convey the water. There is a pile of rich-looking ore on the dump, ready for crushing.

Drytown Items.—The Peunsylvauia cleaned up on Sunday last. A run of 11 days yielded ahout $3,000. Tbe Phenix is running successfully. Some little mining is heing done on the Consumnes river, tbougb tbe beat has heen so oppressive, of late, that many a sturdy miner has heen ohliged to throw up the sponge and quit.

CALAVERAS.

San Joaquin.—*Chronicle*, Aug. 3: The San Joaquin mine at Mosquito is being vigorously worked under the immediate supervision of its owner, J. J. Holmes, Esq. The ledge is showing remarkably well.

Silicate of Magnesia.—At his bydraulic, near the French Hospital, Mr. W. W. Cook has uncovered a bed of pure silicate of magnesia. It will require an analysis to determine whether it is steatite or meerschaum. It may possibly be chrysolite.

Banner Mine.—Active preparatious are being made to take tbe water out of tbe Banuer mine at Mosquito, preparatory to resuming operations.

LOS ANGELES.

Black Star.—*Republican*, Aug. 1: The fact is at last estahlished, that the people of Los Angeles county are not to he disappointed in tbe Black Star coal mine company. The company is, at present, taking out 10 tons per day, and, in a short time, can take out 100 tons daily. Teams are already hauling from the mine to Anaheim, filling largo contracts there. The company is prepared to snpply coal at Anaheim, and the southern end of tbe county, at the low rate of $8. Tcamsters offer to contract now for $6 per ton, delivered in the city of Los Angeles, but the company expects to contract for $4.50 per ton. The coal mine is near the silver mines, and smelting works are talked of at the Black Star mine.

MONO.

Various Mines.—*Standard*, July 31: The Bodie has opened up a rich body of ore, and the yield at Syndicate mill, from ore of tbis mine, from Friday morning to Tnesday morning, was 1,209 pounds of amalgam. This run, in a 20-stamp mill, was probably never excelled on this coast. The Standard is yielding the nsual amount of high-grade ore. The stopes in this mine were never in better condition, and their own mill was not only kept running, but the Syndicate was brought into requisition to help crush their ore. The Sigourney is making an excellent showing, for the amount of work done ou the ledge, aud is so well defined, that any one at all acquainted with miniug, can trace it right along from the point at which it was struck, 46 feet from the face of the cut. The ore runs from $30 to $300 per ton. The wbip at the Tioga seems to he a success heyond all expectation, and the numher of tons hoisted daily is perfectly satisfactory. The whistle at the hoisting works of the Spauldiug, ecboed, for the first time, througb the canyon, Monday, aud this is a signal for operations being vigorously pushed in and around their mine. The Bechtel ore is being shipped to their mill, which started up Monday morning, and thus one more mill is added to those in active operation. The Miners' mill runs steadily on Red Cloud ore, and the returns are fully up to the anticipations of all. The Red Cloud has been making additions to its machinery, and is uow using botb compartments of its shaft.

NEVADA.

Various Mines.—*Transcript*, Aug. 1: The new stamps at the Idaho will he started up next Monday. The crushing capacity of the mill will then he 135 tons per day. The mill of the Oriental mine, located near Forest City, is now in full hlast, and tbe indications are promising. The first clean-up will he made about tbe 3d of August.

Watt Blue Gravel.—Grass Valley *Union*, Aug. 2: Letter of the 27th says: The east drift is in 448 fest from shaft; gravel looks favorable. North drift is in from east drift 96 feet. No change. Machinery is all working well.

A new mining operation is soon to be started on New York hill hy a San Francisco company.

The New Yoik Hill company bave just made a rich clean-up—stated to he over $200 per load.

Diamond Creek.—*Foothill Tidings*, Aug. 3: It is now owned hy Moore, Ellis & Co., who have heen working it for about two years, with five men. There are thres locations of 1,500 feet each, one of them having heen worked hy a former company for over three years. There are at present two tunnels run into the mountain from the Diamond creek side, the lower heing 950 and the upper one over 600 feet in length. Tbe ledge, which is developed all along the entire distance of these tunuels, varies from two to six feet in thickness. The uew owners have heen cleaning out the refuse rock in the old tunnel for some time, and it averaged $6 per ton. They have commenced sinking on two chutes in the lower tunnel, and have already taken out 25 or 30 tons of quartz, that will probably yield not less than $30 per ton. There are 150 tons of rock already on the dump, and an eight-stamp steam mill in constant operation.

The Milton mining compauy's mine, at Frencb Corral, is paying bandsomely; so is their mine at Sweetland.

Rocky Bar.—A recent clean-up of a milling of rock from this mine, turned out a gold brick valued at over $5,000.

Deadwood.—The new hoisting works at this mine, to he run hy water-power, are nearly completed. Last month this mine paid a nice profit to the lessees, and the rock last taken out paid $62 per ton; so a dividend above the expense of new machinery will he paid this montb.

San Juan.—A new mining project has lately been started, wbicb will add vastly to the support of San Juan, as well as tbe townsbip and county. A company has been organized for the purpose of miuing on "Lone Ridge," so-called, near San Juan, aud are now arranging to get water on to said ridge. For this purpose they have contracted, or are contracting for, the purchase of 4,600 feet of iron pipe, which they will utilize for the purpose indicated.

INYO.

Swansea.—*Independent*, July 27: Near tbe Swansea furnace, and but a mile or two south and east of tbe first lead mine ever opened and worked on the Pacific coast, a new ledge of argentiferous galena has been struck. It exteuds the length of three claims of 1,500 feet eacb, and at the several openings ore has heeu uncovered assaying 87½ ounces per ton in silver and 50% lead. The owners are James Hanger, Mark Hand, Tbomas Ryan and Arnold Cordes. The ledge is easily accessible by tbe old Swansea wood road.

San Ygnacio.—Tbe large and very rich deposit of silver ore has led downward to a very regular and strong ledge, showing heavy hodies of rich metal on all sides. Some 13 tons now at Swansea assay at tbe rate of $289 per ton. We are informed that the owners refuse to bond the mine for 60 days at the price of $100,000, preferring to either take cash in band or keep it. There are 200 tons of $250 ore on the dump, and 1,000 tons in sight in the mine, as per careful estimates.

Benton.—Last week the Indian Queeu mill shipped four bars of bullion, the first for the present season. Tbe miue has pleuty of high grade ore in sight for a six montb's run.

Kearsarge.—It is boped that in about two months the present tunnel will strike the Kearsarge ledge about 300 feet from the surface. Enough ore will be uncovered hy this tunnel to give the mill a steady supply for a long and profitahle run, and, at the same time, make it a comparatively easy matter for the company to determine what next to do—whether to suspend in toto, or hegin a new tunnel bundreds of feet lower down to open tbis mine in true miner style. It is comparatively a small matter to tap this mine full 500 feet helow the point to be reached by the present tunnel.

Beveridge District. — Messrs. Hunter, Hughes, Porter and Brittain, the owners of the main locations of the new Beveridge gold fields, are putting up a couple of arastras for the working of their ores, the motive power of which is to he steam.

Defiance.—Coso *News*, August 3: Timbers and supplies have heen hauled to tbe mine. In two or three weeks we hope to hear the whistle of the Defiance's furnaces.

SAN LUIS OBISPO.

Chrome Iron.—*Tribune*, July 27: Among tbe many resources of California that have not yet heen brought into prominence, especially in this county, is that of cbrome iron. Witbin the past five or six months many of our citizens have heen prospecting through the mountains in search of minerals of various kinds, and some inquiry baving been made as to the intrinsic value of tbis article, they were led to make investments, wbicb, however, up to tbe present time, bave not heen remunerative. We think that credit should be given to Messrs. Goldtree Bros., S. A. Pollard, R. R. Harris, E. L. Reed, Louis Flores, and others, for tbe determination tbey bave evinced to prove tbe worth of this new, and almost leading export of our county. These gentlsmen have given both time and money in developing their various mines, have kept in constant employment from fifty to one hundred laborers, and had about ten wagons continually on the road. Since April 1st they have delivered about 2,000 tons of ore at the depot, and bave on hand about 2,000 tons, lying at the mines, ready for shipment. Unfortunately, so far, tbere is but one firm in San Francisco that buys and ships tbe article to the East, and therehy has a monopoly, to the detriment of ths shippers. Cannot our metropolitan press, through its columns and their eastern exchanges, call the attention of the public to this source of wealth, and thereby assist not only the producer of this county, hut also the eastern manufacturers who may need the article, by bringing to their notice from what source they can ohtain an unlimited supply of the raw material. There heing so much idle capital in San Francisco, there is not, in our opiuion, a safer veuture for some of our merchants to enter into than the husiness of huying and shipping this ore to the eastern and European manufacturing centers, where, as we understand, there is an unlimited demand for the same.

SHASTA.

Copper City.—Reading *Independent*, Aug. 1: Reports from the mill of the Extra company are very encouraging. Mr. William Thompson showed us a nice silver button, the first small assay taken out of the rock they are now crushing. The Superintendent is confident that the process they are using to separate the silver from the hase metals is a complete success; which, if correct, will insure the building of probably two more mills the present season.

SISKIYOU.

Our Mining Interests.—Yreka *Journal*, July 31: The new rich strike in the Klamath mine, at Salmon river, hids fair to ssnd into market an immense quantity of the glittering ore, and the Black Bear company have also found a new extension which pays mucb hetter than the old rock now worked. In the Scott valley districts of Oro Fino, Muggins ville, Rattlesnake, Frencb Creek, South Fork, Pinery, and other sections, the quartz mines are all prospecting good, and the surface, bydraulic and drift claims on McAdams, Cberry, Dsadwood, Paterson, Indian, and other creeks, are also producing a good supply of tbe yellow dust. All along the Klamath and on Scott river, the river claims are ahout opened, so as to take out the pay gravel from uuder the river-bed, in working old channels, in which the gold can be taken out in great quantity. At Oak Bar, Hamhurg Bar, and Scott Bar, hig strikes are constantly being made, while in the Pacific mine, at mouth of Hamburg, considerable gold is heing taken out in runniug tunnels to prepare for work; and where the company, besides working in tbe old Klamath river channel, are also huilding a tunnel to strike thc old Humbug creek channel at the junction with the Klamath. At the Empire quartz mine, on the Klamath, near Humhug, the mill will soon be at work ou a large amount of quartz, ready for crusbing. Ou Greenhorn creek, we anticipate a good clean-up from the Warren & Neshit steam mill, which has heen running for some time past. The ledge worked hy A. V. Burns, on Long gulch, also yields good quartz from a well-defined ledge, liable to last for years in affordiug good pay; while over on the North Fork of Humhng, Cornish & Co. are still busy opening their ledge by a new tunuel, with the expectation of soon heing able to get the rock down to wagon-road by au iucline track and wiro rope. In addition to the river and quartz mining, the placer claims at Hawkiusville, Humbug, Cottonwood, Littlc Humhng, and up in the Siskiyou mountain sections ou Hungry and Beaver, more gold thau usual is being taken out.

TRINITY.

Items.—*Journal*, Aug. 3: C. M. Loveridge, Superintendent, iuforms us that the final clean-up was made last week in the Ward mine on Oregon Gulch mountain; result, $4,700. This makes a little over $19,000 for the season, which is considered a very good showing. Miners in Weaver basin are fast completing the work of this season, and some of tbem are already doue cleaning-up. The season has been a favorable one for water, and all tbe claims bave paid well.

Nevada.

WASHOE DISTRICT.

Con. Virginia.—Gold Hill *News*, Aug. 7: Daily yield, 40 tons of ore. Therc is no change to report of auy of the ore stopes on the lower levels. At the C. & C. shaft the operations were somewhat delayed during tbe first part of the week hy the hreakage of the strap of a pump rod. That bas been repaired, however, and the sinking resnmed. The repairs to the Consolidated shaft are being pushed as rapidly as possible, the removal of the platforms for eight hours each day being greatly heneficial in cooling off the lower portions of the mine. A new winze (No. 3) has been started in crosscut No. 3 on the 1750 level, to connect witb crosscut No. 3 on the 1850 level.

Ophir.—Two breakages of the macbinery bave occurred to interfere with the progress of the ore developments aud prospecting on the lower levels during the week. Tbe breakage, along witb a strong drainage of hot water from the soutb drift on the 2000 level, has allowed the water to get so strong a head in the bottom of the main incline, that it was necessary to start the water tanks, the running of which, along with the steam generated, has stopped the sinking of the incline, and greatly interfered with the progress of work on the 2100 and 2000 levels. The east drift on the 2100 level is in 46 feet, tbe face in hard blasting porpbyry. East crosscut No. 2 on the 2000 level is in 95 feet, the face still in quartz and porphyry. The repairs to the pump are uow completed, and ths pumps running as usual.

Savage.—But little change during the week. The water is being held steady at a point a few feet helow the 2000 level. The starting up of the Hale & Norcross machinery will now enahle the two mines to again work together, so that it is likely that the water will soon he sufficiently lowsred to resums active work in tbe crosscuts on the 2100 level.

California.—Daily yield, 260 tons of ore. There are no new features to report of any of the ore-producing sections of the mine. The stoppage of work in the Consolidated shaft, for eight bours each day, gives the lower levels of the mine a chance to cool, and greatly assists the extraction of ore. The heat still continues great, and there still remains some 35 feet of the shaft to repair, to reach the 1400 station. Sinking the joint winze, helow the 1900 level, on the Ophir line, is going vigorously ahead. The northwest drift, on the 1650 level, has reached tbe ore stopes, which connection will greatly assist the ventilation and extraction of ore at that point.

Justice.—The south lateral drift, on the 1300 level, is steadily advancing, the face still showing spots of excellent ore. No. 4 crosscut, from this drift, is also showing stringers of rich ore. The chamher, for the hoisting engine and other machinery, at this winzs, is about completed. West crosscut No. 1, on the 1225 level, is steadily advancing, the face in favorable quartz. The main south lateral drift, on this level, is being retimbered in the most substantial manuer, the face of the drift being in soft, favorable quartz, with spots of rich ore. The water in the main incline appears to he subsiding gradually, the work for the pumps now being very light. It is probahly hsing drained by the pumps of the Alta mine.

Union Con.—The new ore discovery in the Sierra Nevada incliue, near the north line of this claim, is hringing it once more promineutly to the front, as one of the most encouraging prospecting mines on tbe lode. The width, depth, nor extent of this new deposit havo, of course, not yet been determined, hut there is no doubt that tbe ore is improving as it goes downward, and there is no doubt whatever hut the Union Con. will get a good slice of it. Auother encouraging feature is ths strong resemblance of quartz and ore to that found ou the 2000 level of the Ophir, while the fact that the 2100 level of the Sierra Nevada is equal to the 2200 level of the Ophir, gives still greater significance to this "find." The north drift, on the 1600 level, is now in 567 feet, and is advancing at tbe rate of two and a half feet per day. It is necessary to keep a portion of the men at work, retimboring this drift, tbe ground in places being quite soft. The joint east Mexican drift, on the south line, is in 508 feet, the face still in hard blasting porphyry.

Silver Hill.—Yesterday, a splendid vein of healthy ore-bearing quartz was struck hy the nortb drift, on the 800 level. This quartz is of a very compact, yet lively, nature, and promises the finding of ore of a paying character at every step of advancement made.

Overman.—The south drift from the hottom of the winze, on the 1600 level, is making rapid headway, the face also in hard blasting porphyry. Sinking the joiut winze on the Caledonia line, helow tbe 1400 level, has been suspended on account of the strong flow of water encountered.

Con. Imperial.—The west crosscut (No. 3) on the 2400 level has penetrated into some very fine quartz, mixed with porphyry to some extent. Along with this discovery came a flow of water, which created a fear tbat, witb only small donkey pumps to keep down the flow, there was danger of flooding the entire level. It was therefore deemed hest to suspend work in the drift for a few days.

Crown Point.—The north drift on the 2300 level is advancing at the very rapid rate of seven feet per day, toward the north line, running parallel with the ore veiu. The south drift on the 600 level is making good progress, notwithstanding some little delay created by tapping a small stream of water.

Gould and Curry.—The water is entirely drained from the 1900 level, and the drifts both north and south are being cleaned out and repaired.

Lady Washington.—The north drift on the 1300 level is steadily advancing, the face in lively quartz and ore. The north drift on the 1150 foot level is advancing in very heavy clay and porphyry ground. A compromise has been effected with the Benton, Boyle and Keystone mining companies, hy which the stockholders in the Lady Washington company will receive 54,000 shares of the stock of each of the new corporations of those companies, in lieu of the 60,000 shares now held hy them; the stockbolders of the Benton will receive 54,000 shares of tbe Benton Consolidated; the stockholders of the Keystone will receive the same numher, and the shareholders of the Boyle will receive 54,000 sbares of the Lady Washington Consolidated. One share of stock in the Lady Wasbington will entitle the holder to nine-tenths of a share in each of tbe new corporations.

Bullion.—Sinking the main incline is making the best of progress, the bottom almost entirely in quartz, affording good assays. The under side of the incline just cuts the foot-wall, while the entire size of the shaft is in quartz and low-grade ore. The east drift, on the 1700 level, is steadily advancing, the face in porphyry, carrying fine stringers of quartz.

Con. Dorado.—Very good work is being done, siuking the new three-compartment working shaft, and the uew hoisting works are nearly completed, and ready for active practical mining operations. Bottom of shaft in good working ground.

Sutro Tunnel.—Total lengtb of tunnel, to

date, 20,312 feet. Most excellent advancement has been made of late, owing to the vastly improved facilities given by the thorough ventilation, effected through connection with the Savage workings.

BEST & BELCHER.—The retimbering of the joint winze, on the 1950 level, is making the best of progress.

HALE & NORCROSS.—The new air machinery was started up yesterday noon, and is all running in full blast, everything working splendidly. The lower levels will soon be cooled now, so as to permit the resumption of work on the 2000 level.

JULIA CON.—The water was so nearly reduced to the 2000 level, last evening, that it was confidently expected that by this evening, or to-morrow morning at the farthest, the level would be drained.

TROJAN. The extraction of ore, and the opening up of new stopes, on the third and fourth station levels, is making good headway.

SUCCOR.—Sinking the main shaft is making the best of headway, the rock in the bottom blasting out finely, and the flow of water giving but little trouble.

ORIGINAL KEYSTONE.—The new shaft is now down 31 feet. The prospecting shaft, on the north end of the claim, is down 40 feet.

WARD.—Sinking the main shaft is making the best of progress, the bottom in good sinking ground. The rock blasts well, and the flow of water gives but little trouble. It is now down within a few feet of the 1400 level.

CROWN POINT RAVINE.—The new pump and machinery will probably be in working position by the 20th of the present month, when sinking the shaft will be resumed and the excellent ore prospects of the mine proceeded with.

EUREKA DISTRICT.

ALEXANDRIA.—*Sentinel*, July 31: The returns of the late working of the ore, sent to the Richmond company's furnaces, for reduction, from the Alexandria mine, on Prospect mountain, show: Silver, $159.15; gold, $53.13; total, $212.28. It is stated that the ore body is increasing both in quantity and richness, promising to open out into a regular honanza.

JACKSON.—There is no longer a doubt that an important development has been made on the 300 level of the Jackson mine. It occurred to the southward of the main sbaft, and is viewed as of the highest importance, as demonstrating the trend of the ore in that direction.

ACCIDENT IN THE K K.—*Sentinel*, Aug. 3: Some of the machinery, connected with the pumps, at the K K mine, broke last evening, at eight o'clock. This will cause a delay, until a new one can be cast. It is hoped that everything will be in running order hy this evening.

LATER FROM THE JACKSON.—The new ore find in the Jackson was penetrated seven feet yesterday, showing good ore all the way. There can hardly be a douht that it is a honanza of good size aud grade.

HUMBOLDT DISTRICT.

FAIRMOUNT MINE AND MILL.—*Silver State*, Aug. 3: The Fairmount mine, in Winnemucca mountain, is now being tboroughly prospected. All three of the levels are heing run into the hill, and are being connected hy winzes for the purpose of ventilation and opening stopes. The ledge improves as the drifts on it are being extended into the mountain, and looks as well as the owners could reasonahly expect. Work is heing prosecuted vigorously on the new mill, and it is expected that it will he steamed up and the hattery running within three weeks. A roasting furnace will he huilt for the purpose of treating the pulp hefore the pans are started. Ore is now heing hauled to the mill, and it is intended to have 150 or 200 tons on hand when the battery starts.

PARADISE AND MOUNT ROSE.—Governor Safford and party returned from the Paradise mines yesterday, and departed for the west last evening. They expressed themselves as being very favorably impressed with the appearance of the new mines. L. W. Greenwell and L. P. Coscia, of Rye Patch, and E. P. Torry, of Orcana, have gone to the mines, with the view, it is said, of making arrangements to huild a mill in Mount Rose district, for the purpose of doing custom work.

RED DEER.—We are informed by Hohart Luther, that the ore from the Red Deer mine, recently worked at Torrey's mill, yielded $1,125. It was worked up to 85% of its assay value by the ordinary mill process.

Utah.

PARK CITY.—Salt Lake *Tribune*, Aug. 4: In the nortb tunnel of the McHenry mine, 150 feet of following a seam has opened up a fine chamber of ore, consisting of silver, manganese, copper and chloride of silver in good quantities. This ore is now heing taken to the mouth of the tunnel, assorted and stowed away. Average assays from it will not fall less than $60 silver. The Empire company are doing little just now in prospecting tbeir respective claims. In Charcoal avenue, or the little canyon leading to the Walker & Webster mine, a couple of Salt Lakers have commenced the erection of leaching works. Good leaching ores are found in quantities in the Uintah district, and it is generally believed that money, and plenty of it, can he made hy working the ore in this manner. Five miles southwest of Park City, Mr. Burt Kimhall owns some valuahle prospects. He hrought to town, a few days since, some rich specimens, containing hromide of silver, chlorides and metallic silver, gold and copper, thus showing that we have as rich deposits southwest and west of town as we find directly south. The new shaft of the Ontario is down over 300 feet, and hut little water met with so far. Mill running steadily, all the 40 stamps crushing and regular daily shipments of bullion made.

THE National mine is looking bettor than ever before. About five tons of ore are being taken out daily, averaging 56 ounces of silver and 65 % lead. The Leonora mine is developing handsomely. Four men are at work on a two-foot vein of pure galena, which assays 40 ounces in silver and 60 % lead. The Watterman smelter has again started up after a thorough repairing.

ITEMS.—The mills at Silver Reef are nearly all undergoing repairs. The Old Telegraph leaching works are nearly completed. Eugine, pump, and hoisting works of the Oregon Con. are running nicely. The mine looks well. On July 31st, 23 tons of ore from the Triwaukee mine, Bingham, were sold at $80 per ton for the Alta sufferers. The Morgan smelter is shut down, having run out of coke.

FRISCO.—Godbe & Co. have nearly completed their new improvements on the smelter, and they will be ready to start up in a day or two. Their roaster works well, and they now convert tho finest flue dust into a matte that runs like water in the furnace. Rich lead ores containing 600 ounces of silver, are now being received by them from the Horn Silver mine. Campbell, Cullen & Co.'s furnace is running along and making lots of bullion. Harries & Tisheer's mine in West Camp, called the Belle of Frisco, is looking splendid and ore containing 80 ounces silver is being extracted. The ledge is ahout three feet wide, and only a depth of 20 feet has heen attained.

STOCKTON.—The reduction in the price of lead has injured this camp. However, attention is beiug given with encouraging results to extractiou of silver.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's office at San Francisco:

JERSEY M. Co.—August 1st. Capital stock, $10,000,000. Directors—Philip H. Cramer, J. F. Place, George F. Gersel, W. T. W. Schenck and C. R. Greathouse.

FLORENTINE M. Co.—Capital stock, $500,000. Directors—B. F. Seihert, J. H. Yocum, Wm. Gilbert, D. E. Miles and A. C. Taylor.

HIGHBRIDGE S. M. Co. Directors—Stephen Roberts, W. S. Gage, George R. Williams, John F. Cassel and David Goodman. Capital stock, $10,000,000.

THE EUREKA PROCESS.—Mr. E. H. Long, of Washington district, Esmeralda county, Nev., has recently had eight and one-half tons of ore worked by Mr. Hallock, by the Eureka process, at the works at Melrose, and the results have been so satisfactory, that he has bought the right to use the process in the district, and will put up works there. The ore is rehellious, and they have not been able to do anything with it until now. Mr. Long informs us that he was ahle to get about 80% of assay value of the galena character, and with tbat of the coppery character, he got upwards of 90%. The Eureka process is that invented hy Mr. Hallock, with which experiments have heen made during the last three or four months. Mr. Hallock says he has many visitors at his works, and will he pleased to see any mining men who may desire to see bis process at work.

BULLION SHIPMENTS.—Since our last issue shipments of bullion from the prominent mines have heen as follows: Tyho Con., July 29th, $8,485.18; July 31st, $5,060,50; total for July, $64,492.59; Aug. 2d, $5,344.77; Star, July 29th, $3,603; total for July, $30,042; Aug. 2d, $2,742; Gold Hill, Aug. 2d, $6,319.19; Standard, Aug. 2d, $19,563.21; California, Aug. 2d, $79,968.37; total to date, $263,606.15; Con. Virginia, Aug. 2d, $58,671.56; total to date, $124,721.39; Northern Belle, July 31st, $8,428.69; Aug. 3d, $11,866.37; Bodie, July 30th, $22,595.57; Aug. 1st, $24,427.62; Aug. 2d, $16,462.64; Aug. 3d, $29,600; Hackberry, Aug. 5th, $5,000; Indian Queen, July 30th, $4,441.26; Manhattan, Aug. 6th, $12,200; Leopard, Aug. 2d, $6,400; Grand Prize, Aug. 2d, $4,925.21; McCracken, Aug. 5th, $8,548.78; Independence, Aug. 5th, $12,116.06.

MESSRS. TATUM & BOWEN, formerly of Tatum & Co., of No. 51 Fremont street, have removed to No. 3 Fremont street, corner of Market. At the new place they have sufficient room to carry their stock, which was previously stored at public warehouses. Their stock consists of Albany lubricating compound and cups, cylinder oil, and lubricating oil, Downer's mineral sperm, Hoe's chisel-tooth saws, Hoe's printing presses, etc. They have now also the agency of the Stearns' Manufacturing Company, of Erie, Pa., for their saw-mill machinery, of which about 10 car-loads for Dolbeer & Carson's new mill, up the coast, are on the way.

DURING the year ending June 30th, 1878, vessels belonging to the port of San Francisco to the value of $285,550 were lost. Lives, 82.

THE New Orleans Board of Healtb report 24 new cases, and seven deaths from yellow fever.

News in Brief.

IN Iowa, corn promises as well as last year.

THE crops of Oregon are, on the whole, good.

POTATO crops in Clear Creek county, Col., good.

THE Mayor of Jefferson, Texas, receives a yearly salary of $1.

MICHAEL REESE died on August 2d at Walleustein.

BEACONSFIELD and Salisbury were feted by the city of London on August 3d.

ON August 2d, $7,000,000 worth of the 4% bonds were sold.

ON August 2d, Capt. Webb swam 22 miles in the Thames, without rest.

IN western Iowa the yield of wheat this year will be 12 to 15 bushels per acre.

INSURRECTION in Herzegovina; Governor of Mostar assassinated.

THE highest temperature in San Francisco during July was 73°; lowest, 51°; average 57.8°.

ON August 1st a tornado swept through eastern Indiana, damaging crops, trees, and buildings.

UP to August 3d, the total number of yellow fever cases in New Orleans was 233; deaths, 60.

IT is estimated that the salmon catch on tho Columbia river, this season, will aggregate 380,000 cases.

IT is unlawful to catch salmon in the San Joaquin and Sacramento rivers before the 1st of November.

THE number of deaths in San Francisco during the year 1877-78 was 4,977 against 6,170 the previous year.

THE entire yield of wheat in Michigan this year is 30,000,000 bushels, an average of from 19 to 20 bushels per acre.

JOHN ROBINSON, near Fort Benton, Montana Territory, in nine days, took out, with a rocker, $4,000.

THE largest flour mill in the world is now heing built at Niagara Falls. Capacity, 1,200 barrels per day.

ABOUT 18 citizens of Umatilla county, Oregon, were killed and 11 wounded during the Indian raid.

A PARASITE called the "scale louse" is spreading destruction among the orchards of Santa Clara valley.

A SYNDICATE of English capitalists has been formed to open the Cariboo quartz reefs, where prospecting is progressing satisfactorily.

ON the 1st of August, Alta, Utah, was entirely destroycd by fire; loss may reach $200,000.

NINE vessels are reported lost, and six ashore in a storm on the southwestern coast of Cuba, on the night of July 30th.

THE will of Whiting Street, of Northampton, Mass., who was worth half a million dollars, leaves about $25,000 for eharitahle purposes.

MANUEL BRIN has discovered a ledge eight feet wide, averaging $17 in gold, and $20 in silver, 18 miles north of Pyramid lake, Nev.

STAGE, 18 miles from Tucson, was robbed August 3d. Express hox empty; mail sacks contained little; the passengers lost $37.

WITH a view to exteusive distrihution of the tea plant in the Southern States, 300 pounds of the seed have been lately sown at Washington.

JOHN BURNS has instituted suit against the Southern Pacific railroad to recover $51,120, damages sustained from one of the company's locomotives.

THE total length of railroads in the world at the end of 1876, was 184,002 miles. America has nearly as much as Europe. The United States have 74,095.

ON August 4th, lightning struck a Sunday school tent in Philadelphia. One scholar was instantly killed; three others were fatally injured; all were knocked down.

DURING the past year, the Experimental Department of Agriculture at Washington, distributed over 20,000 tea plants, grown in the greenhouses of the department.

DURING a severe thunderstorm, July 31st, Valk & Co.'s planing mill, at Rock Island, Iowa, was struck by lightning and burned to the ground. Loss, $25,000; only $1,000 insurance.

THE British ship *Loch Ard*, from London for Melhourne, with a eargo valued at $350,000, was lost near Cape Otway, June 1st. One passenger out of 17 was saved; also only one out of a crew of 32.

OWING to the prostrate condition of the cotton trade, Hornby & Son, the large mill-owners in the Blackhurn district, have given a fortnight's notice to their operatives that they will close their mills.

THE worst injury in the Northwest to wheat, from the excessive heat this year, has heen in northern Iowa and southern Minnesota. The yield will not be greater than 10 bushels per acre.

THERE will he as much business for the Chicago and Northwestern railroad in every article of grain, except wheat, as there was last year. The damage to the crops has been considerably over-estimated.

The Chinese Ambassador, Chun Lan Pin, and suite, together with the Consular corps, left San Francisco, August 2d, on a special car, via the Rock Island and Lake Shore railroad. On arriving at Hartford the Ambassador will leave most of bis suite and proceed direct to Washington, where he will present his credentials to the President of the United States. After visiting Washington he will start from New York for Madrid, returning to Washington in December.

NEGOTIATIONS are said to be in progress for the cession of Rhodes and Scio to France.

THE M. K. & T. R. R. sold 60,000 acres of land during the first six months of 1878.

A SERIOUS unpleasantness is rumored between the Italian and Austrian Consuls in Bosnia.

THE marble mills of Vail, Shotwell & Co., N. Y., have suspended. Liabilities, $100,000.

THE coal ledge at Willow creek, Siskiyou county, has improved at a depth of 17 feet.

A HUGE 80-stamp mill is soon to be started at Lead City, Dakota Territory, on the Homestake ores.

JAMES REID & Co., New York, have suspended. Liabilities, $200,000; assets, $100,000.

THE Graham Block at Visalia was destroyed by fire, August 3d. Loss, $7,000; insurance, $4,250.

IT is said that more miles of railroad will be built this year in Colorado than in any other State.

ON August 3d, Edison visited the San Francisco Stock Board, and noted the acoustic properties of the room.

THERE have been 120 mining locations made at Silverado, the new mining camp in Los Angeles county.

ON August 3d the Masten Bank of Kansas City suspended; also the grocery house of Bishop & Co., Cincinnati.

THE capacity of the wire mill of the Cambria Iron Works, Johnstown, is to he increased from 30 tons per day to 60 tons.

THE shipments of iron ore from the Lake Superior region up to the 10th of July amounted to 419,473 gross tons.

ON August 3d, the house of J. C. King, N. Y., was robbed of $19,000 U. S. 4% bonds, and $10,000 curreney.

NOBELING, the would-be assassin of Emperor William, is reported to have attempted suicide with a pair of scissors.

AT the Walla Walla, W. T., Land Office, since it was established in 1871, the cash receipts for lands sold, reached $155,912.27.

A NEWLY discovered mine in Frankliu couuty, Pa., is said to contain hy far the richest copper ore yet discovered in tbat State.

THE Sheffield (Eng.) *Daily Telegraph* announces that a single Sheffield firm has this season ordered 50,000 American hay rakes.

A GOOD many of the mines in the Lake Superior region are lessening their forces, owing to the depressed condition of the business.

A UNIQUE sketch of California mining life, from tbe pen of Mr. Rossiter W. Raymond, is now appearing in the New York *Christian Union*.

ON August 2d, the steam saw-mill of Boney & Co., Washington county, Oregon, was destroyed by fire, together with 150,000 feet of lumber.

O. S. DILKE, of the late firm of Townsend, Clinch & Dilke, N. Y., has gone iuto voluntary bankruptcy. Liahilities, $154,000; no assets.

THE University of Copenhagen is ahout to celehrate its fourth eenteuary. Delogates from various foreign universities are to he present on the occasion.

THE value of the coin and hullion exported from New York city during the six months ended June 22d, 1878, was $946,350.34, nearly half of which went to Liverpool.

A STATUE of M. Thiers is to he erected at St. Germain, where he died. A statue is also to he erected at Nancy, and mass is to be celebrated at Notre Dame on the anniversary of his death.

THE annual yield of Zacatecas district, Mexico, from ore averaging $45, 8,000 men and boys heing employed, is about $5,000,000. That is $65 to the man. Virginia City, Nevada, gives $10,000 to tho man.

THE American Minister to Turkey has sent the gunhoat *Dispatch* to investigate the ease of an American lady, who founded a missionary school in Thessaly, and who is said to bave heen scriously molested hy Greeks.

DR. JAMES S. MEYER, of Virginia City, Nevada, claims to have discovered the secret, by means of which tbe ancieuts were ahle to make tools and weapons of hrouze and copper of a temper superior to that of the best steel.

ON July 2d, a couple of boys found two yellow and old bars of hullion in the mouth of an old tunnel in Virginia, Nevada. They say a man stole the hars from them. The man denied it, and was locked up rather than give bail.

G. H. PALMER has discovered a hot sulphur spring seven miles west of the Panamint range, on the east slope of Saline valley. Altitude, 500 feet ahove salt beds; width, 30 feet; deptb, great; watcr very clear and intensely hot. Good, when cooled, for drinking.

GEORGE CRAWFORD, together with a "Colonel" of the same family name, attempted to precipitate a large quantity of forged Ophir stock upon the market. Detectives frustrated the plan. George bas been re-indicted hy the Grand Jury.

THE Kansas Rolling Mills, near Kansas City, have found natural gas at their works from a small shaft sunk to the depth of about 300 feet. The gas is sufficient for lighting the mill for any purpose of night work, hut the intention is to utilize it for heating purposes.

Two heavy rain storms, accompanied hy thunder and lightning, swept over Philadelphia on August 1st, doing considerahle damage to tbe exhihition huilding and goods therein. Cellars were flooded level witb the streets in many places, doing immense damage to goods stored in them. Culverts were chocked, trees blown down, and roofs demolished.

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son. This is an old mining camp, and was during the flush times of placer mining a very lively place. There is a good deal of farming and fruit growing in the neighborhood. There are no mines being worked in the immediate vicinity of the town at the present time, but about a mile distant is the Californuia Potosi, a mine that bids fair, from present developments, to become an important industry.

Plymouth.

This place is three miles northeast of the last mentioned town. Population, 650; public school, 200 pupils; three hotels, four general stores, two drug stores, two variety stores, one livery stable, blacksmiths, jewelers, butchers, three physicians, two churches, etc. The Phenix gold mine and mill, owned by Alvinza Hayward, of San Francisco, is situated in this town, which is the basis of the business-like appearance and evident prosperity of the town. The mine and mill give employment to 105 men, who live in handsome cottages in this pleasant village, their houses being surrounded with fruit and shade trees and beautified with flowers. The town is also surrounded by quite an extensive farming community who have been well rewarded for their labor, especially in the greatly increased hay crop.

Seven miles east of Plymouth, over a good ridge road and through a pleasant and thrifty farming country, brings the traveler to the old mining camp of

Fiddletown,

Or, as it is to be called in future, Oleta. This place was settled in 1850 and rapidly acquired a very large population. Dry creek, which runs through the town, and Slate creek, one and one-half miles south, and all the gulches and ravines putting into them were very rich, and the tourist—when one strays through this ancient camp—is regaled in turn by the few semi-human fossils, remnants of '49 and spring of '50, with the immense strikes, big nuggets, large fortunes and happy times realized by themselves and their associates in the distant past, when they were young and full of ambition and energy, when, too, the country was young and bright and the mines apparently inexhaustible, and to them in their thoughtlessness and improvidence gave promise of forever honoring the daily drafts upon their stores of hidden wealth, but alas, the end came, the mines were worked out, the money was soon expended, and the few old settlers who have survived the flush times do little else than bewail their seeming misfortunes, or recount their successes in the early settlement of the county. This place has been singularly fortunate in escaping the ravages of fire. Many of the old shake cabins built in the quaint style of architecture prevalent with the frontier are still standing, embowered by climbing roses and honeysuckles and shaded by forests of tall locusts, black walnuts and cottonwoods.

Volcano.

This town, settled in '49, was originally called "Soldier's Gulch," but the next year the name was changed to Volcano, which seemed more appropriate and euphonious. It is situated in a deep basin washed out by Sutter creek, though having the appearance of an old crater or bed of a lake. Powerful dynamic forces have evidently been at work here, the vicinage presenting an interesting field for the study of geology. Volcanic, diluvial, glacial and earthquake agencies have all left traces of their action in the tall hills, deep ravines and lava flows of the neighborhood. The rich alluvial soil, resulting from the attritiou of these warring forces, and the more genial influences of the atmosphere and sun, holds the gold that at first so richly rewarded the labors of the miner, and produces the abundant crops of grain and the luscious fruits that bless the farmer and the orchardist. The placer mines have been fabulously rich, it being estimated that $25,000,000 have been taken from this small basin. Mining and prospecting has been much neglected since the surface placers were exhausted, until the last year, when a little life was infused into this lethargic population by a few enterprising men, who have undertaken to develop some of the untouched mineral resources of this extraordinary locality. A tunnel is being run in to tap the basin, starting one mile below town on Sutter creek, and when completed will affect a drainage 42 feet deeper than it has heretofore been worked. This tunnel will drain several hundred acres of mining land, and undoubtedly make available a large amount of hidden treasure.

Another enterprise which promises large pay is the opening of a gravel bed on Grass Valley creek, near Volcano. This is a work requiring considerable capital, as a cut through the rim-rock had to be blasted to a great depth to get sufficient fall. This property is owned by Mr. Charles McLaughlin, of San Francisco, and the work is being managed by M. L. McLaine, of Volcano. There are a great many quartz mines in the vicinity of this town that are thought to be valuable, but are permitted to remain idle and non-productive for the want of a little capital to start the work. Agriculture, horticulture and floriculture have received some attention here, with results about on a par with what has already been described at other places in the county.

The Lumber Interests.

From Volcano east to the summit of the Sierras there is not much agriculture, although in many of the valleys hay is raised in great abundance, but the principal interest is the great abundance of timber, principally pine and cedar. There are some four or five saw mills that are daily turning out large supplies of lumber, besides the great number of saw logs and mining timbers that are daily floated down the Mokelumne river and the different canals to mines and mills in the lower part of the county. This industry, now a very valuable one, is destined to become much more important as the county increases in population and wealth, as it will be sure to do when the enterprising people of the State become better informed as to the natural advantages and resources of this region.

Silver Lake.

This lake is located in the extreme eastern portion of the county, on the summit of the Sierras, and near the Alpine county line. It is a beautiful sheet of water about six miles in length, surrounded by lofty snow-capped mountains, embordered by ragged rocks and gigantic trees, waterfalls and glaziers, rare botanical specimens, unique and beautiful varieties of mosses and ferns, and everything that could be conceived to add to the grandeur and sublimity of the scenery. The fishing and hunting is splendid, the climate cool and refreshing.

One of the curiosities to be seen here is the architecture displayed by a large black ant on many of the large cedar trees found here in great abundance on the hillsides. They bore or cut into and through the trees, forming halls and cross halls and rooms of different sizes, displaying much precision and system in their excavations. They even form stair ways by which halls and rooms above are reached, going up until the tree is so weakened that it falls or they are driven out from some other cause. The ant is about one-half an inch long, with stroug jaws, teeth on the sides, and operate when cutting a little like a pair of scissors.

A good hotel is being opened near the lake for the accommodation of tourists and those who desire a nice, cool and quiet summer resort.

Two miles beyond Silver lake is Dr. Caple's lake, much smaller than Silver lake, noted for its very large spotted trout—splendid beauties and easily caught. There is good hotel accommodations at this lake. These lakes are reached by the Amador turnpike, which passes clear through the county from Ione City to the eastern boundary. The distance from the terminus of the Amador railroad at Ione City to Silver lake is 60 miles, with plenty of feed and water and camping facilities all along the road.

W. G. A.

Jackson, July 1st, 1878.

The Proposed Lectures at the College of Agriculture.

The Professor of Agriculture at the State University informs us that he has received but one application for admission to the free courses of lectures on agricultural topics which have been proposed for the coming winter at Berkeley. It can hardly be that there is but one man in the State who desires to have his thoughts and spirit of investigation set in motion in agricultural science. As we pointed out at length a few weeks ago these lectures could be made of great practical value to all agricultural thinkers and workers who can arrange to attend them. We doubt not there will be defined, in each specialty which is taken up, the latest achievements in the application of scientific truth to practical agriculture. Thus there will be a fine opportunity to get possession of new facts or to discern new bearings for old facts. Doubtless the reason there has been but one application for the course is owing to delay in deeds which should have been done at once upon the giving of the invitation. Thus it was in our case, and we shall enrol ourself at once and expect to be both instructed and entertained by the discussions of industrial science. We think there are hundreds of young men in the State who will do well to follow our example, and thus enable Prof. Hilgard to proceed with his preparations.

In the course of the circular which we published in full in our issue of June 29th, the wish is expressed to give "a full course of instructions in the details of the several cultures constituting the various branches of husbandry: such as dairying, stock breeding, horticulture, fruit culture and the manufactures connected therewith, the growing of grain, forage, textile and other field crops, general farm management, etc. It is therefore intended to engage as lecturers in the several specialties competent persons, residents of this coast, thoroughly familiar with the peculiar circumstances, practice and needs of California agriculture. More detailed announcements cannot of course be made until a sufficient manifestation of interest shall have rendered probable the attendance of such number of students as will justify the expenditure, and definite arrangements with lecturers. Applications for admission should therefore be made as early as possible, so that the opening of the course may not be delayed too far beyond that of the session, which begins August 8th. Students may if desired attend only a part of the lectures to be given, and may also attend such other lectures and exercises in the University as they may be qualified to pursue profitably, and without interfering with the progress of the regular classes. In this, as in other respects, they will be subject to the general rules governing the attendance of special students, or of students at large, as the case may be." Communications on the subject should be addressed to E. W. Hilgard, Professor of Agriculture, Berkeley, Cal.

The Engineer.

Deep Water in Carquinez Straits.

The Antioch *Ledger* of last week gives an account of a survey of Carquinez strait, just made by Gen. B. S. Alexander of the Coast Survey, showing that the north channel of Carquinez strait has been deepened seven feet. The following is the statement in the *Ledger:* In 1874, when Capt. Plummer, brought his ship *El Dorado* to Antioch to load with wheat for Liverpool, the Oakland, Vallejo and Martinez papers said there was not sufficient depth of water for the vessel to return. They were no doubt honest in publishing this erroneous statement, as the Coast Survey chart showed that at two points, namely, opposite Seal island and near Brown's island, below Antioch, there was but 14 and 17 feet of water at low tide; hence it was thought to be imprudent for owners to risk their ships in passing heavily laden, across these shoal points. The survey from which these figures were taken was made in 1867. A sounding of the channel in 1874, however, disclosed the fact that the channel had deepened and the result was that Capt. Plummer was convinced he could go to sea from here with a full cargo. It being the first attempt, however, the underwriters desired him to complete the cargo at San Francisco, which was done. From 1874 to the present time no vessels have been loaded at our wharves.

During the present week Gen. B. S. Alexander, Chief of the Coast Survey, has made a thorough sounding of the channel from the Straits of Carquinez to Antioch and with the most favorable results. Gen. Williams gratuitously offered the use of his steam launch *Lulu*, and a party consisting of Gen. Alexander, Capt. E. C. Boobar, Warren Bryant, of San Francisco, and Capt. John Turner, J. G. Chase, J. P. Abbott, F. S. McNulty, T. O. Carter, Capt. Geo. Graham, Louis Dahnken and Engineer McDermott, of Antioch, spent Sunday and Monday in sounding the channel. The supposed point of difficulty was in the vicinity of Seal island. At this point there are three channels, known as the South, Middle and North channels. The former, the South, is laid down as the ships channel. On Sunday, soundings were made through the South channel, but only 17 feet of water was found at low tide, which was not a satisfactory showing. The party continued on to Antioch, sounding the entire distance and found not less than 24 feet of water at any point, reckoning at low tide.

On Monday the party returned, throwing the lead from Antioch to the Sacramento river, following the Sherman Island or North channel, which showed from 26 to 40 feet of water. Gen. Alexander expressed the belief that the North channel off Seal island would prove to be deeper than the South channel sounded the day previous, and so it resulted. Where the chart of 1867 showed 14 feet of water at low tide the soundings Monday showed 22 feet, which was the shallowest water found between Benicia and Antioch. This survey proves that during the last 11 years the North channel has deepened seven feet, and also establishes the fact that any vessel afloat can with safety come to Antioch. There is from five to seven feet of tide at the point mentioned, which added to 22 feet would give 27 and 29 feet of water at the point where it has been supposed was the great danger of ships being grounded. Gen. Alexander expressed himself as highly gratified to know that the North channel has deepened, and says that there is to-day a better ship's channel from the Straits of Carquinez to Antioch than that of San Pablo bay.

The St. Gothard Tunnel.—The St. Gothard Railway Company finds some difficulty in obtaining the money necessary to complete its great work. According to the original understanding under which the work was begun, Italy was to have contributed $9,000,000; Switzerland, $4,000,000; the North German Confederation, $2,000,000; the Grand Duchy of Baden $600,000; and the other German States the additional cost. Now Switzerland is asked to contribute as a nation, instead of by states, $1,300,000, on condition that the Northern and Central Railway Company gives $300,000 more, which, it is estimated, will complete the road. Whether these subsides are in addition to those originally agreed upon does not appear in the dispatch. The road will connect Luzerne and Milau by rail, and the division of cost between the nations is supposed to represent the proportion of benefits to be derived by each from its construction. It now requires 15 hours to cross the Alps by the St. Gothard pass in the diligence from Fluelan to Bellinzona.

Mexican Projects. — An exchange says: Opportunities to bid for contracts are rife in Mexico. A bridge is to be constructed over the River Lerma, as a step toward developing trade between the States of Michoacan and Guanajuato. A railway is to be built between Puebla and Izuoer de Matamoras. A rolling mill for railway iron is to be started at Morelia, and a paper and cotton mill at San Miguel de Allende. The State government of Tamaulipas has been authorized to construct a railway and telegraph from Tantoyuquita, or some other point on the Tamesi river, to the city of Valle del Maiz, on the boundary between the States of San Luis Potosi and Tamaulipas.

A Wonderful Railroad.—The *Railway Age* publishes an exceedingly interesting letter from one of the engineers of the Oroya railway, in Peru. It appears that this great enterprise of the late Henry Meiggs is again to be pushed forward, a company having been formed with a capital of $15,000,000, one of the objects being the drainage and working of a silver mine of almost fabulous richness. The short Mineral railway of Pasco, seven miles in length, by means of which the ore is carried to a water power, cost about $172,000 per mile, and no wonder, as it reaches a hight of 14,200 feet above sea level (nearly 5,000 feet higher than the highest railway point on the North American continent, Veta Pass, on the Denver and Rio Grande), and every part of the equipment —bridges, rails, engines, cars, etc., had to be brought nearly 200 miles, over terrible mountain paths, on the backs of mules. Even the rails had to be made in six feet lengths, weighing only 45 pounds per yard, to be transported over the winding, precipitous way, and iron bridges of 80 feet span were carried in proportionately small sections. Contrasted with the labor, danger and expense of such a work, railway building on the prairies seems to be indeed easy and cheap. The gauge of this remarkable road is three feet six inches. Query: What would it have cost if the rock cutting, tunnels, fills and bridges had been made 14½ inches wider.

Central Branch Union Pacific.—An exchange says that J. H. Beson, the well-known contractor, who did about half the work on the extension of the Central Branch road from Greenleaf to Concordia, and has the contract for the Beloit extension, states that all the grading on the Beloit extension will be finished within six days. About four miles of the track west of Concordia is laid. Mr. Besou has also taken the contract for grading on the Central Branch extension from Concordia to Scandia, up the Republican valley. This line has been already located. A contract for the grading of the Central Branch line from Beloit to Cawker City will be let in a few days.

Hudson River Bridges.—It so happens that the two great bridges in progress, one across the East river and the other across the Hudson at Poughkeepsie, are seriously embarrassed by the lack of funds. On the latter very little is doing, and in regard to the first Commissioner Prentice remarked to a representative of the *Iron Age* that unless New York city provided her proportion of the funds, to stop would be the only alternative. As yet work in the engineers' department gives employment to the full number of hands.

Ship Canal Project.—The bill authorizing the Barataria Ship Canal Company to construct a canal from New Orleans to the Gulf of Mexico, and granting the right of way for that purpose has become a law. The promotors of this enterprise are confident that, when this canal is completed, a new and advantageous way of exit to the gulf for all classes of ships will be opened.

New Italian Railways.—The Italian government contemplates the construction of 60 new lines of railway. The aggregate extent of these lines will be nearly 2,500 miles, and their cost is estimated at £33,200,000. It is proposed to spread the execution of the work over a term of 15 years.

The Carrara Marble Quarries. — The famous marble quarries of Carrara, although they have been worked since the reign of Augustus, and have furnished a steady and enormous supply to the whole civilized globe, seem to be inexhaustible. They compose an entire mountain range, and embrace every variety and quality of marble, from the coarse, common kind to the statuary marble, Monte Crestola and Monte Sagro yielding the largest and finest blocks. The blocks are detached, drawn out by oxen, and rolled down the hill. The quarries number some 500, only about 20 of them furnishing the marble used by sculptors. Most of the inhabitants of Carrara and the vicinity—some 6,000 workmen in all—are employed in the labor, at two to three lire (40 to 60 cents) a day. The marble taken out year before last was in the vicinity of 120,000 tons, valued at $2,400,000, of which 40,000 tons came to the United States. The export of marble to this country has increased immensely within 12 to 15 years, the third largest marble firm now at Carrara being American. Our Consul there is a member of the firm, and his Consulate is said to produce a larger revenue than any other in Italy.

Metallurgy in the Bible.—Prof. Becker, of the University of California, in the course of his lectures last year before the College of Mines, stated in a general way the results of some investigations he had made into metallurgical references in the Old Testament. In the English translation, references to metallurgical processes make, to use the expression, very little sense. However, with the assistance of an Oriental scholar, the Professor found that the old Hebrew writers seemed to understand what they were talking about, and that the apparent ignorance displayed in our version may be laid to the account of the translators. This is a very interesting subject, and at some future time the Press will develop it more fully.

The Largest Plow in the World.

How vain is boasting! Here comes a railroad journal, the *Railway Age*, and, with victor's tone, voices this paragraph:

The largest plow in the world, singularly enough, is one just built, not for a "large farmer" but for the granger's *bete noir*, a railway company. The Chicago, Milwaukee & St. Paul has ordered it to use in ditching for railway construction in Iowa, and it is to be drawn neither by horse, ox or mule, but by a locomotive. The dimensions of this steam-pulled ditcher are given as follows: The share weighs 382 pounds, the mold board 180 pounds; the beam, 900 pounds; the coulter and clasp, 150 pounds; the clevis, 60 pounds; the standard, 134 pounds. The sizes of the principal parts are: Beam, 16½ feet long, 10 inches wide and 17 inches thick; land slide, 9 feet by 5x2 inches, standard, 40 inches by 7x1½ inches; mold board, 8 feet by 2½ inches; share, 5½ feet by 12 inches. It will cut a furrow 37 inches wide.

This puny, one locomotive implement is then put forth as "the largest plow in the world," and the agricultnro of the country seems to have kneeled in silent acquiescence in the railroad's claim! We have waited in the hope that California prowess would not be needed to crush such a tiny upstart, but if the rest of the country holds its peace, California does not. The fact is that California agriculture can so far overlie this mooted monster in the plow line, that if the Iowa plow should fall into the California furrow they would have to get a lantern to find it with.

A few years ago a plow was built on the Livermore ranch in Kern county, according to the design and under the supervision of Mr. W. H. Souther, which, if it should meet this Iowa plow, it would serve it as a locomotive might a hand-car. It is called the "Great Western," and these are its weights and measurements: Beam, 18 feet long, 18 inches deep and 10 inches thick; landslide, 17 feet long, 5 inches wide and 1½ inches thick; standard, 3 feet high; mold board, 12 feet long and 3 feet high. This plow weighs one ton and is swung, by a heavily ironed wooden arch, between two wheels eight feet in diameter and with tires six inches wide. The attaching of the body of the plow to this arched axle of the wheels is accomplished by running two heavy fenders back from the arch, and fastening them to the back ends of the beam and mold board. A 14-foot lever runs from the mold board across the back end of the beam, and on this a man stands to adjust the plow as to depth of cut, etc. The "Great Western" cuts a furrow four feet wide and three feet deep, and is drawn by 80 oxen, yoked to a wire cable one inch thick. This cable weighs 1,140 pounds.

There follows the plow a A shaped scraper, drawn by a chain from its apex by 80 mules. It is 12 feet wide and 3 feet high at the open end. The sides are heavy iron. This, following the plow, shoves the furrow out 10 feet from the place it is left by the plow.

With the "Great Western" and its scraping follower, the Kern Island canal and many of its branches or sub-canals were built in one quarter the time that it could be done with any other machine now in use, and for a much less sum of money.

Such are the facts in brief, for we have not aimed to describe the machinery in full. The lesson which our Chicago contemporary should draw is the beauty of speaking with becoming modesty, and when an Iowa railroad constructs a little cultivator to scratch along the sides of its tracks, do not again call it "the largest plow in the world."—*Pacific Rural Press.*

Professional Men.—The pursuit of agriculture presents a far more certain field for earnest work, or for educated men, than either law or medicine. As illustrating this point, we are in receipt of useful statistics, showing the careers of 1,000 graduates of a great medical school in England, carefully watched through a long series of years, with the following result: Nine per cent. of the number achieved success of sufficient magnitude to be classed as prosperous; 30% gained a moderate competency, and 61% either failed, more or less completely, died, or went out of the profession. Both in this country and in England professional men often have to spend the best portion of their lives in waiting for opportunities. Lawyers and doctors seldom make enough to pay their living expenses before they are 30 to 40 years of age, and it is difficult to account for the strange infatuation which leads many young men to attempt to force their way into such overcrowded professions, which nature never intended them to fill. However, the general depression in business is gradually educating men to the necessity of honest toil for securing their daily bread.—*Cultivator.*

Manufacture of Iodine.—The sea weed is reduced to ash in closed vessels to prevent loss by volatilization, iodine being very volatile. The ash is leached and the liquors are concentrated and cooled, in order to crystallize out the sulphates, chlorides and carbonates of potassium and sodium, and from the mother liquor the iodine is extracted, either by heating with concentrated sulphuric acid, with or without manganese dioxide, or by precipitation as copper subiodide by iron and a salt of copper, from which product the iodine is expelled by treatment with H_2SO_4 and MnO_2. Use of H_2SO_4 without MnO_2 may lead to loss of iodine. Chlorine is also sometimes used to precipitate the iodine from the mother liquors. Excess of chlorine should be avoided. Washing and resublimation prepares the product for market. Cadmium and potassium iodides are used in photography. Iodine is employed in the manufacture of the aniline colors, also in many departments of medicine.

Useful Information.

How to Make Damask Steel.

The *Jeweler* translates from a German source the following definition of "damask steel" and method of making it: Under damask steel is understood a welding or union of steel or steel and malleable iron possessing different quantities of carbon. If the blank and clean surface of a piece of steel is exposed to a weak acid the parts which have little carbon will be more corroded than those which are richer in that substance, and those peculiar dark and light lines, depressed or elevated, and more or less regular, will be observed, which are known under the name of damasks. There are two kinds of this steel, the real or Oriental, which is a natural quality of the raw material, and the artificial, which is formed by the welding, in fine threads together, of the raw material, steel and iron bars.

The material from which the genuine Oriental Damascus steel is made is known in commerce as wootz, or Indian steel, and also from some kinds made in Persia having similar qualities. Wootz is manufactured by first making carbonated iron out of granulated magnetic iron, in small furnaces heated by charcoal. The balls are hammered out into bars which contain 12% of pure rod iron. These rods are divided into small pieces and about 0.5 of a kilogramme of these put into earthen pots with an addition of dry chips of a kind of cassia wood (*Cassia auriculata*) and a few green leaves of the *Asclepias gigantia* or of a kind of convolvulus (*Convolvulus haurifolius*) and these pots are then carefully closed with earthen covers. Some 15 or 20 of these pots are submitted to a strong heat in a small blast furnace, by which means the carbon of the burned plants unite with the iron and a melted carbon of iron is produced. The process is completed in three or four hours, when the steel is once more melted and allowed to cool in the pots. The steel obtained in this way is red, short and brittle, and cannot be refined on account of its considerable carbon. It is, therefore, kept for some time in a simple blast furnace which causes it to lose its carbon. It is then carefully hammered out. The chemical and physical qualities of wootz are not sufficiently known; it contains, according to the latest chemical analyses from 1% to 1¾% of carbon, with some silicon, manganese, nickel and wolframium. This steel is naturally exceedingly hard, and it requires Oriental patience to work it. It is greatly used for sword blades, and in its unhardened state is also much used for gun barrels. There are three forms in which raw steel or wootz is found; in bullet-shaped pieces of about 0.14 of a kilo, as they cool in the pots, and which come from Calcutta in cakes weighing about two pounds and a half, from Bombay, and in cylindrical rods of about the same weight from Golconda. Indian steel has been imitated in Europe in the following way: Small pieces of very good forged iron or steel are put in a crucible and covered with charcoal. Air is carefully excluded, and the mass exposed to heat until it turns dark gray (carburet of iron), this is easily pulverized, and in this state it is mixed with pure alumina and subjected for a long time to a white heat in a crucible, when it becomes white and brittle. If one-sixteenth to one-twelfth of this white mixture is melted with some good steel, a very close imitation of Indian steel is obtained.

Impervious Cloth.—The *English Mechanic* says the Gastuch, or gas-cloth, is a name given by Dr. Hirzel, of Leipsic, to a gas and water-tight stuff, which he has recently patented. This is produced by placing a large, smooth piece of so-called gutta-percha paper between two pieces of some not too coarse and dense material—*e. g.*, shirting (undressed)—and then passing the arrangement between heated rollers. The outer pieces of shirting combine in the most intimate way with the inclosed gutta-percha to form a material which is impenetrable by gas and water. It may be made still denser and more resistant by being coated on both sides with, *e. g.*, copallac. The substance is conveniently flexible, and will remain proof against variable influences of weather and external temperature. It can be applied to all those purposes for which water-proof material is used, and it is well adapted to form gas-tight membranes for regulators of pressure of compressed gas, bags or sacks for dry gas-meters, as also dry gas reservoirs.

To Preserve Leather from Mold.—Pyroligneous acid may be used with success in preserving leather from the attacks of mold, and is serviceable in recovering it after it has received that species of damage, by passing it over the surface of the hide or skin, first taking due care to remove the moldy spots by the application of a dry cloth.

Cooling a Journal.—A very ingenious as well as simple method of cooling a journal, consists in placing an endless belt of loose water-absorbing texture on the shaft, as near the heated part as may be, and allowing the lower right to run in cold water, which may be held in a vessel at a convenient distance below the shaft.

Waterproof Glue.—Fine shreds of India-rubber dissolved in warm copal varnish make a waterproof cement for wood and leather.

To Weaken the Hair Spring.—F. Kemlo says that this is effected by grinding the spring down. You remove the spring from the collet, and place it upon a piece of pivot wood cut to fit the center coil. A piece of soft steel wire, flattened so as to pass freely between the coils, and armed with a little pulverized oil-stone and oil, will serve as your grinder, and with it you may soon reduce the strength of the spring. Your operations will, of course, be confined to the center coil, for no other part of the spring will rest sufficiently against the wood to enable you to grind it, but this will generally suffice. The effect will be more rapid than one would suppose, therefore you will watch carefully, or you may get the spring too weak before you suspect it. Another and perhaps later process is as follows: Fit the collet, without removing the spring, upon a stick of pivot wood, and having prepared a little diluted nitric acid in a watch glass, plunge the center coils into it, keeping the other parts of the spring from contact by holding it in the shape of an inverted soup skirt with your tweezers. Expose it a few seconds, governing the time, of course, by the degree of effect desired, and then rinse off, first with clean water and afterwards with alcohol. Dry in the sun or with tissue paper.

Awards to Americans at Paris.—A dispatch from Paris says that nearly all class juries of the exhibition have finished their work and submitted their reports to the group juries. The latter have passed upon the reports thus far presented, making very few changes. Nothing is officially known of the result, but it is unofficially stated that the Americans have obtained more prizes than the citizens of any other country, in proportion to the number of exhibitors. In one class all American exhibitors have obtained medals, and in another all except one. It is thought the United States will have five or six grand prizes, and a liberal number of gold medals. The foreign jurors have expressed much admiration for the excellence of the articles in the American section of the exhibition. The general commission has increased the number of gold medals 20% silver medals 40%, and bronze medals 60%.

Prussian Blue on Wools.—The *Muster Zeitung* gives the following recipe for 50 pounds of clean wool: To hot water contained in a tin vessel add 1½ pounds oxalic acid, 1½ pounds tartar, 1½ pounds tin salt; ½ pound tartaric acid. Add the acids to the bath first. When solution is complete, add 3½ pounds red prussiate previously dissolved in hot water. Enter the wool, and beat the bath gently, so as to get up to 200° Fabr. in an hour. Then lift out the wool, and to the bath add 4½ pounds sulphuric acid and 1 pound of tin salt previously mixed with cold water; again enter the wool, and regulate the heat so that it will come to the boil in about a half hour. Let it boil for another half hour, and the operation is complete. The *Textile Manufacturer*, noticing this process, states that the samples accompanying the recipe looked very well.

Testing Diamonds.—A simple method, according to an exchange, of discriminating between real and spurious diamonds, is to immerse the specimen in water. If a genuine diamond, it will sparkle with almost undiminished light and brilliancy of color; but if it be spurious, whether paste or rock crystal, the "fire" of the gem will be completely quenched. Another simple test is to draw a small steel file across the stone. If real, the stone will not be hurt; if imitation, it will be badly marred.

Castor-Oil as a Dressing for Leather—Castor-oil, besides being an excellent dressing for leather, renders it vermin-proof. It should be mixed, say half and half, with tallow or ocher oil. Neither rats, roaches, nor other vermin will attack leather so prepared.

Good Health.

Recipe for Hydrophobia.

Editors Press:—As dog days are here again, a recipe for hydrophobia will not be amiss, and here is one that I have known to cure. Take one-half ounce of "henbet" or chickweed and one quart of strong beer; put them in a new earthen dish or vessel; boil it down to a pint, stirring it all the time. Then put in half pound of honey and let it boil right hard. Then strain through an old white cloth, that has never had any grease about it, into an earthen dish that is perfectly clean—then let it stand until cold—enough to put in a bottle. The preparation is then ready for use. Take it in three doses—one dose each day before breakfast. If there is any poison in the system, it will make the patient deathly sick for a little while, but if the bite was harmless it will not affect them more than water. For a child under 12 years old, a gill will be enough. The patient must not eat anything for three hours after taking, and take it on an empty stomach, and eat no sauce that is greasy nor do any work for two weeks. The "henbet" wants to be cut when there is no dew on it, and cut it about the 20th of June, as it is then ripe enough. The plant has a small viny stalk with red flowers, somewhat resembling the henbane, the pest of the gardens in the East, but that has white flowers.

Reader.

Etna, Cal., July 28th, 1878.

The Safety in Fresh Fruits and Vegetables.

Julia Colman, in her hygienic writings for the *Phrenological Journal*, says: Much more frequently than we suspect, do we allow our food to approach the boundary line of poisonous decay. Cases can be quoted to show that moldy bread and moldy cheese are poisonous. The warmed-over beans and potatoes are not so good as the fresh, because they have lost some of the qualities that recommend them for food. Warm them the second time and they are worse yet. In fact, freshness is a much more important quality in our food than we have been in the habit of supposing. We allow that decayed fruits and wilted vegetables are not wholesome food, but we are slow in learning where to draw the line. We understand in the case of animals that vitality preserves from decay, and we note when an animal is alive and when it is dead, and we should do the same with vegetables, though for a different purpose. The vitality of vegetables is something which can enter into harmony with ours, can feed and nourish it. We do not always need to kill it; we might perhaps with propriety say that we transmit it into our own vitality.

The vitality of fruits is easily ascertained, for when they die they begin to decay. Sometimes a local injury causes a local decay, but the latter soon infects the whole structure, and this is one reason why a partially decayed fruit is wholly unfit for food. Many fruits retain their vitality for a long time after they are removed from the stem on which they grew. There are many varieties of apples, pears and other fruits which do not even mature until some months after their proper period for harvesting, but the vitality is definite enough. Kill that by heat or frost, and there soon follow changes of structure, indicating plainly enough the loss of vitality. Not only is their appearance more attractive when alive and their taste more delicious, but their refreshing and satisfying effects are much more evident. They bring a feeling which is better than stimulation or exhilaration.

Antiseptic Properties of Borax.—According to the *Lancet*, at a recent meeting of the Academy of Sciences of Lombardy, G. Polli reported the results of numerous experiments in which beer, meat, blood, eggs and urine were treated with boracic acid and borax for 30 days during the summer time, and were found still to retain their freshness and to present no traces of fermentation having taken place in them. In experiments, on the other hand, without the addition of the salt, but in some cases with the addition of sulphate of soda, the fluids passed into a state of complete decomposition in the course of 15 days. The energetic disinfecting power possessed by boracic acid and borax, and the facility with which these substances can be absorbed into the economy, led Polli to recommend their use in diseases in regard to the infectious nature of which no doubt exists, or in which septic conditions readily arise. He adduces several examples in which the febrile conditions of tuberculosis underwent diminution. No benefit was obtained by Prof. Visconti from experiments made with these remedies in malaria, though other observers have arrived at a different conclusion. In chronic cystitis, the muco-purulent discharge quickly diminished and even altogether disappeared in the course of a few days, and rapid improvement occurred in bad cases of suppurating wounds when they were applied externally. The dose recommended by Polli is 75 grains of boracic acid and 150 grains of borax per diem.

Ways of Washing the Face.—There are several wrong ways of washing the face, and but one right. Towel, flannel, sponge are all out of place where the face is concerned. The hands only should be used. Doctor Wilson's directions are: "Fill your basin about two-thirds full with fresh water; dip your face in the water, then your hands. Soap the hands well, and pass the soaped hands with gentle friction over the whole face. Having performed this part of the operation thoroughly, dip the face in the water a second time and rinse it completely. You may add very much to the luxury of the latter part of the operation by having a second basin ready with fresh water to perform a final rinse." But the care of the complexion requires that not only the face, but the whole body shall be daily subjected to the bath. The sponge-bath is, perhaps, the best, and the temperature of the water must be regulated by the sensations of the bather and by the season of the year. No one can deny the charm of clear, soft color in the cheeks and lips—and it must be an incorrigible complexion indeed that will not yield to the measures that I have recommended.—*Cassell's Magazine.*

Tobacco-Users.—It has become very common to invest chewing-tobacco and snuff in lead-foil. Herr Hockel examined some snuff from a quantity, part of which had been used by a patient who was laboring under a severe attack of lead poisoning, and found that it contained 2½% of metallic lead. The tobacco near the corners of the package, being more perfectly inclosed by the foil, contained the most lead, which is decomposed by dampness and remains in the tobacco or snuff in the form of carbonate of lead, which is the white lead paint of commerce, which inflicts such horrible sufferings on many of those whose business compels them to work in it.

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W. B. EWER.....SENIOR EDITOR.

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A. T. DEWEY. W. B. EWER. G. H. STRONG.

SAN FRANCISCO:
Saturday Morning, Aug. 10, 1878.

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The Week.

The usefulness of the University of California has, this week, been increased by the gift, from the Reese estate, of a $50,000 library. The amount is not strikingly large; some have been audacious and unthankful enough to say that, considering its source, it is altogether too small. Nevertheless, we, representing the mining and general scientific interests of the Pacific coast, and having an earnest wish for the advancement of our conntry in every good thing, cannot fail to see in this bequest the most important event of the past seven days. In this act is illustrated the principle that is to redeem us as a nation from the evils that blacken our skies. Desperate love of money and hastening to be rich, have occupied the hearts and the hands of too many for too long a time. The concentration of wealth has done much to reduce the less fortunate (?) classes to ignorance and vice. And ignorance and vice, not keen enough to discover that the true cause of their misery is inherent in themselves, throw all of the blame for present troubles upon the wealthy. But here, concentrated wealth acknowledges the claims of the race upon it, and, wise enough to discern the wants of the people, lays her treasure at the feet of education. She recognizes not only education, but the *higher* education, as it is pushed onward and upward by the unfailing aid of books. Whatever branches may he favored by the Regents, as they dispose of this bequest, our coast and our country cannot fail to be incalculably benefited.

The Quicksilver Workings of California Misrepresented.

There is perhaps hardly a country in the world about which there have been so many erroneous statements circulated, as about California. Its climate, its resources, its people and their social habits, have been flippantly described, frequently hy pcople entirely uninformed about the subject on which they wrote, and these statements once in print, appear quoted again and again by persons haviug no means of testing their truth, until some of them become what may be called proverbial falsehoods.

Curiously enough, the very industries for which our coast is particularly interesting, its mining and metallurgy, shares in this universal misrepresentation. As an instance of this, we will cite the metallurgy of quicksilver, about which we have seen more misstatements than about most of the others of our metals. There is hardly a work which treats of the subject that we have seen in English, French or German, which does not repeat as existing at the present time, methods and processes long since abandoned.

For the sake of illustration, we take an article which appeared in the *Metallurgical Review*, for March, 1878, entitled "Mercury," by Daniel de Cortazar, of the Royal Spanish Mining Department. The article is from the advance proofs of the Official Report of Group I., at the Centennial Exhibition. The facts presented and statements made are in the main founded upon what was to be secn of our resources at the exhibition. Mr. de Cortazar, of course, made the best of the material he had at hand, and he certainly is not to be blamed if Californians were careless enough not to make a proper exhibit. We spoke very strongly against such neglect on the part of our mining men at the time, foreseeing that just such misrepresentations would arise. It is, therefore, not in any spirit of captiousness that this article is written, but in order, as far as possible, to correct any mistakes, and to add any facts that lie in our power. We shall quote such passages as are erroneous, and append corrections to the paragraph quoted. If we are thus able to prevent further circulation of erroneous statements, or to create a little more devotion to the scientific study of technology among the men who are making large fortunes out of our mining propertics, we shall be content.

The first error we noticed, probably a typographical one, was the statement that "it (mercury) boils at 77° Fahr." The boiling point of mercury at the ordinary pressure of the atmosphere, according to Regnault, is at 350° C., or 662° Fahr. Next, speaking of its industrial uses, that for amalgamation is rightly mentioned as the chief one, but it would certainly not have been out of place to have mentioned, not to say anything of its other uses, its use for the preparation of vermilion. For this purpose alone, California exported in 1876, 24,526 flasks; in 1877, 31,210 flasks of 76½ pounds, early, or nearly half of the total amount.

The author then goes on to state how poor were the American exhibits at the exhibition. Were it not for some collections made by the Smithsonian Institution, and by the Central Pacific Railway company, we should have been entirely unrepresented. What little there was, of course, did not enable anyone to make a thorough study of the subject. On the other hand "Spain, without doubt, presented at the Centennial Exhibition the best and richest samples of mercurial ores. The directors of the well-known Almaden mines sent to Philadelphia a complete collection of the various ores, classified according to their richness, from crystals and compact cinnahar to sandstones and slates, in which the mercury was found in small globules, or the cinnahar was seen in nearly imperceptible spots in the rock. They also prcsented the rocks of the country, in connection with the mercurial ores, the metal obtained, and the models of the *aludels*, or small clay vessels of special form, in which the condensation takes place, as well as statistics, plans of the mine and furnaces, hy which the extent of the workings and importance of the mine, the profits, and all the circumstances belonging to an establishment of great interest, could he seen at a glance." One cannot hut be struck hy the large-mindedness of these Spanish gentlemen, which stands in strong contrast to the want of public spirit among certain of our own people.

To continue, this statement occurs: "The principal factories of quicksilver are to he found in Almaden, in Spain, in Santa Clara county, California, in the United States, in Idria, Austria, and the Duchy of Zweihruecken, Bavaria. It is said that, lately, quicksilver ores have been plentifully found, and are being used in Borneo."

With regard to the production in California, quicksilver is found not only in Santa Clara county, hut in Solano, Sonoma, Napa, Lake, Trinity, Fresno, San Luis Obispo, and Cerro Bonito. In 1877, Santa Clara county produced 30,320 flasks, all other counties, 48,280 flasks; total, 78,600 flasks. The Borneo mines were worked hy an English company, hut, from reports received in 1876, proved unprofitable.

The author speaks of the retort process of the late Dr. Ure, combined with a system of condensation by contact with water, as having been "a great improvemcnt." It has, so far as we have learned, not proved so in practice, and is reported to be entirely out of use. This, however, we have no certain means of knowing, as in the following:

"The ore produced from the mines of Santa Clara county, in California, is cinnabar, mixed with a small quantity of mispickel and gray copper ore. Ferruginous slates, often very brittle, form the vein stones, and are accompanied hy limestones and sandstones, and all these rocks are altered by an eruption of serpentine." The above is rather too vague to be criticised. Without eutering into this subject, as we propose doing on another occasion, we would remark that, so far as we know, "mispickel and gray copper" ore, if found at all, have been so in extremely small quantities. Iron pyrites there is frequently in abundance, hut arsenic we do not remember to have seen any traces of. The slate rocks are hetter described as decomposed black slate, frequently almost a soft clay, and rotten rather than brittle. They lie upon the cinnabar and form the "hanging wall," or alta," of the Mexican miners. Beneath the ore bodies, and extending as far as has been worked, is the serpentine. The ore may, thereforc, be described, at least at Almadcn, as lying in between those two rocks, in the form of an irregularly-warped surface. The limestone is dolomitic, and is evidently the result of crevice infiltration. The sandstone is not general. We have not, at present, time for further remark upon this subject.

The ores, by the way, are not concentrated hy washing, as is stated, but by screening, only. The "adohe furnace," which the author describes, is no longer used, as it is inconvenient on many accounts, is intermittent in its action, requires extra labor to make the adobes, or hricks, etc. The preseut system at Almaden is a shaft furnace, on the principle of the Rumford roasting kiln, exactly similar to the furnace iu use in Idria, Austria. The ore is fed by a Parry cup and cone, and discharged beneath the fire-bridges, which brings the flame into the column of ore from the fire-places at the side. In this way, there is no escape of fumcs in charging, and, as the roasted ore descends for some distance bencath the fire-bridge, it is thus not only freed from all traces of mercurial vapors, but the heat contained in it is also saved. This furnace is used for roasting the coarser ore. For the finer ore, there is in use, at present, a shaft furnace, with an arrangement of inclined shelving of fire-clay, according to the patent of Huetner & Scott. These two systems of furnaces, it is unnecessary to say, are as nearly perfectly adapted to their purpose as it is possible to make them, and the results which they have given are in every way satisfactory. The condenscrs are 20 in number, instead of 12. The chimney at the end of the condenscr is not 90 feet high, merely, but there is an arrangement of ascending brick and wooden flues, which climb the adjacent hill-side, and are terminated by a chimney, the top of which is 385 feet above the grate-bars of the furnace.

The author speaks as follows: "Those mines lately discovered iu the United States, which merit special atteution, are situated, some in Nevada, others in Utah, and many in California," etc.

With the exception of the Steamboat Spring deposit in Nevada, a deposit similar to the Sulphur Banks of California, which was worked for a time at a loss and then abandoned, we know of no quicksilver mines worked either in Nevada or Utah, although it is not impossihle that some ore has heen found in these States.

The following mines are enumerated by our author as being, besides New Almadeu, the principal mines in California: "Enriqueta, Guadalupe, Aurora, St Carlos and New Idria, * * * Sulphur Banks, * * *."

We would remark that the Enriqueta has not heen worked for 10 years, the Aurora is unknown, and the St. Carlos adjoins and helongs to the New Idria. The producing mines in California are 22 in number, including, in addition to those properly named ahove, Redington, Great Western, Oakland, Oceauic and others.

Speaking of the method of treating the ore at the Sulphur Banks, the author states: "The richer specimens of ores and residues are put into retorts with lime, as is commonly practiced at New Almaden." This method of treatment with lime in retorts has not been in use at New Almaden for 18 years. Nevertheless, the statement was made once that it was so, and the hookmakers have been copying it from each other ever since.

He gives the following as the production of quicksilver in the whole world:

	Flasks.
United States	69,200
Spain	41,700
Idria	8,000
Bavaria	2,000
Italy	1,700
Borneo	2,000
Mexico	500
Other countries	1,500
Total (flasks of 76½ lbs. each)	126,000

We would remark that the amount of quicksilver produced in the United States, as given hy statistics in the possession of Mr. Randol, manager of New Almaden, to whose kindness we are indebted for many of our facts, is 75,000 flasks for 1876, and not 69,200. This would make the grand total 131,800 flasks, instead of 126,000.

"In conclusion," our author remarks, "we may say that the metallurgy of mercury appears at a stand-still, and no improvements have taken place in it during these past years, in spite of certain trials, snch as that of Pellet, which promises, in time, good results in so important a branch of industry."

In couclusion, we would remark, that in California, at least, constant advance is being made in metallurgy of mercury. Improvements are being made every year in furnaces and condensers, and while, in the latter, there is, perhaps, room for some improvement at many places, we are informed of certain movements which arc already on foot to render the condensation of quicksilver fumes as effectual, as at present the treatment of the ore is economical.

WHAT AND HOW?

In this column are printed all sensible inquiries relating to subjects connected with mining or relating to any matters of general scientific interest; also the answers to them as dictated by individual experience, or as furnished by correspondents.

Diameter of Hydraulic Pipe.

Editors Press :—As your article of August 3rd calls for communications on the subject of the proper size of pipes to convey water for mining purposes, I give you my opinion and tbe general rule which I adopt, and which has, in my experience, given good satisfaction. The proportion of pipe may be called by some, extra large, but where the conditions under which hydraulic pipe is laid for mining purposes in the country, (California) with all the variations, from a straight line, either level, sloping, or vertical, and the disregard of easy curvcs when the direction is changed, are taken into consideration, it will be found that although in some cases the proportion may be large, yet as a general rulc the greatest percentage of useful effect is obtained.

1st. I insist on a velocity of water through the main not exceeding four (4) fcet per second, as, with this velocity, the effect of changes of direction which the sections or joints of pipes have, as laid on the natural surface of the ground, is but little.

2d. Divide the quantity of water, in cubic feet per second which is to be carried in the mains, hy four, and this will give the sectional area of the pipe in square feet. This is without regard to the head, as it requires a vcry slight head to generate the velocity of four feet per second.

3rd. Find the velocity due to the head by multiplying the squarc root of the head by 8.02. Then, whatever the proportion of four, the assumed proportion of the water in the pipe, is to the velocity due to the head, as found ahove, so will the area of the dischargc nozzle, if only one, and combined area if more than one, be to the area of the pipe, as found by (2).

By these simple rules you will so proportion the size of the nozzle and pipe as to be sure of getting the full value of the quantity of water at your disposal. And it will give you nearly the largest size of nozzle you can use, with a fixed quantity of water, that is, to the best advantage.

Let us see how large a pipe must be required for, say 600 inches, miners' measnre; and also whether one or more four or four and a half inch nozzles can be used.

Allowing, as you have, .0271 cubic feet per second for each inch, if 600 inches are used, then 600 × .0271 = 16.26 cubic feet per second. Tbis divided by four, gives 4.06 as the area of the pipe in square feet. This would give a diameter of about 2.25 feet, or 27 inches—nearly four timcs the area you give.

For the area of the discharge nozzle, find the velocity due to 275 feet head hy (3).

The square root of 275 = 16.58, and this multiplied by 8.02 = 132.97 feet per second, as the velocity due to the head. 132.97 divided hy four, equals 33.24, which is the number of times the area of the discharge nozzle will be contained in the area ofthe pipe.

The area of the pipe will hc, for a diameter of 27 inches, 572.56 square inches. This divided hy 33.24 = 17.2 inches. The area of onc four and a half inch nozzle is 15.9 inches; the area of oue four inch nozzle is 12.56 inches; the area of one four and three-fourth inch nozzle is 17.7 inches. Of course, in conveying water for the purpose of utilizing the pressure as much as possihle at the discharge, the velocity in the main pipe must be much less than when no pressure is required at the discharge. Consequently, the ordinary formulas for the discharge of water through open-end pipes would not apply.

W. W. Hanscom.

San Francisco, August 3rd, 1878.

Dip-Wheel.

Editor Press :—I am a river miner. Please inform me through your paper what size dip-wheel I require to build on a river that ruus ahout 3,000 inches of water the lowest time in summer, the wheel to raise 100 inches of water, 38 feet perpendicular. What size wheel, how large the huckets, and how to apply the river water on the wheel?—Ed. Wilson, Forest Hill, Placer county, Cal., June 9, 1878.

If you will explain more in detail just what you mean to do, and what kind of a dip-wheel you have, we can better solve your problem for you.

Edison's Electric Pen and Duplicating Press.

Edison, during his vacation, has honored our coast with his presence. He has spent so many years working for the advancement of his country, that he certainly deserves a long rest. As he travels, he must meet everywhere evidence of the additional comfort he has been the means of bringing to the people. This was brought forcibly to mind by a visit to Mr. E. A. Dakin, 209 Sansome street, in this city, who has control on this coast and in China, Japan, South America, Central America, Mexico and the Islands, of some of Edison's wonderful inventions. Of these the Electric Pen and Duplicating Press is the most valuable to the public as a labor-savor, and as furnishing to all classes of business men facilities they have never before enjoyed, as is evidenced by the fact, that, during the short two years since its introduction, 18,000 have been called for.

The usefulness of the pen is very apparent, in any business whatsoever, in which any number of copies of documents, or cards, or circulars, or written or printed matter of any kind are required. Lawyers find it very useful. It is employed in railroad and insurance offices and in schools. Wholesale and commission merchants, architects and draftsmen, find it equally useful and are among its best patrons. It is also successfully applied to the printing of music. The agent has a scrap-book in which it may be said without exaggeration, every branch of every business gives proof of the almost universal applicability of the Electric Pen; and the large number of sales which he is making and the amount of job work which he is doing are substantial testimonials of its appreciation by San Franciscans.

If an ordinary type-setter, could, by making his hand go through the motions of writing the copy before him, compel type in the case to fly from their boxes and fix themselves right side up in their respective places in the form, he would then accomplish in some degree that which is done by the Electric Pen. The operator with this pen sits down to a desk, with the copy before him, takes the pen, moves his hand as he would in ordinary writing, and soon has a form as light as a sheet of paper and as effective as if it were made of type-metal. But more than this, if he wants a number of copies of a map, or a picture of any kind, whether a landscape or animal form, or a human face, he needs no stone engraving, nor wood engraving, nor photography; all he has to do is to draw them with the pen as he would with a crayon, and he has a stencil at his command from which an almost unlimited number of copies may be obtained. The Electric Pen is, in fact, a very rapid, and, at the same time, delicate stencil-cutter, the material of the plate being paper.

The manner in which the pen accomplishes the stencil-cutting will be understood from the engraving and the following description:

The Electric Pen consists of a small electro-magnetic engine, mounted upon a frame-work secured to the top of a tube, pointed at the end. Within the tube is a common needle, fastened to the end of a shaft, which is given an exceedingly rapid vertical motion by cams upon the rotating engine shaft. If the pen be held in the manner shown in the engraving, upon a sheet of common writing paper, placed on some soft substance, a letter may be written as easily as with an ordinary pen; but the characters, unlike those formed by the ordinary pen, will be composed of innumerable holes punctured in the paper by the rapid projection of the needle from the tube.

The motive power used to drive the engine of the pen is derived from a voltaic battery, shown in the engraving. This battery consists of two Bunsen cells, the principle of which was discovered by the celebrated chemist, Bunsen, and which, for power and convenience, has never been excelled. A particular form of this battery was especially designed for the electric pen, with a view to economy, and its use by persons inexperienced in electricity. It is provided with a lifting arrangement, whereby the plates may be raised from the exciting fluids, when not in use, thus preventing consumption of materials.

The current from the battery is conveyed to the engine by two wires insulated from each other, and placed in a single flexible cord, thus giving a free movement to the pen.

When the pen is not in use it may be placed upon a stand made particularly for that purpose and accompanying the outfit.

After the pen has done its work, the next in order is to print the copies, and this is accomplished in a very simple way by means of the press. (See engraving).

This consists of a metal base, with a perfectly smooth top, upon which the sheet to be printed is laid. A frame, operating upon hinges and having springs for securing the stencils in position, is brought down upon the bed of the press. A roller of felt, saturated with ordinary printers' ink, thinned with an oil, is passed over the stencil plate; the holes of the stencil become filled with ink, and deposit it upon the paper underneath. The result is a perfect facsimile of the original writing, without the possibility of an error, and presenting an appearance far superior to writing done with an ordinary pen. The printed sheet is then replaced by a blank one, and the same process gone through again, until enough copies are obtained.

From five to fifteen copies per minute can be made in this way, and if the steacil is carefully treated it may be used for printing thousands of copies, and after all that, laid away in good condition for future use. Any kind of work may be done, large or small, in ink of any color, and by any person that can read or write. The cost of operating it is merely nominal, yet its work is neat and reliable. We have said that any kind of work can be done by it. For some work, however, it has a fitness possessed probably by no other machine, viz., for writing the amounts on bank checks and stock certificates, which, if so written, cannot be altered without absolute certainty of detection.

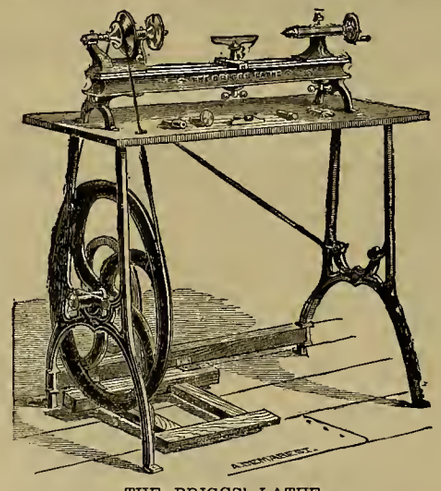
The Overend Feed-Water Heater and Pump.

The object and principle of feed-water heaters are, of course, well understood by all that have to do with the creation of steam-power. If cold water be forced into a hot boiler, there

EDISON'S ELECTRIC PEN AND DUPLICATING PRESS.

arises a loss of power corresponding to the amount of heat necessary to raise the cold water to the required temperature. Moreover, if the exhaust steam is allowed to escape, here is another waste of heat, of power, of fuel. The Overend Feed-Water Heater and Pump prevents both of these losses by using the heat of the exhaust steam to warm up the cold feed-water. This is accomplished as follows:

The machine consists of a large cylinder con-



THE BRIGGS' LATHE.

denser, furnished with inlet and outlet pipes, connected to the cylinder on either side. In front and behind are the pumps, which are run by a belt-wheel on the top of the condenser. The exhaust steam enters the condenser through a large pipe on the right. At the elbow of this

Overend Feed-Water Heater and Pump.

pipe, just before it connects with the condenser, a small pipe for cold water is introduced. Through this small pipe the cold feed-water is allowed to run in on top, as it were, of the exhaust steam. This cold water, of which very little is needed, serves to condense the exhaust steam, and the exhaust steam, in turn, heats the cold water up to boiling point. What little exhaust steam is not condensed, passes off to the left. The condensed steam and heated water fall to the bottom of the condenser where *double-acting* pumps receive them and forces them together at the temperature of 212°, into the boiler. The double-acting feature of these pumps is said to be new; the plunger is hollow. All impurities of the water fall to the bottom of the condenser, and from there they can be removed through a man-hole.

Any oil in the exhaust is blown across the surface of the water in the condenser to an outlet provided for it. So we see that a *constant* stream of *pure* water, *just on the point of being converted into steam*, is supplied to the boiler.

Among the many advantages claimed for this machine, the inventor gives the following as among the most important:

First.—The great saving of water and fuel, a test of one year in a large and extensive steam-power establishment showing an actual saving of 26½% in fuel, and over 50% in water, so that a saving of from 15% to 20% in fuel and 50% in water may be assured under fair conditions. This percentage of saving is over and above the benefits derived from the coil-heater, which was in use before the invention of the present apparatus.

Second.—The boiler, being constantly supplied with pure distilled water, is saved from the destructive effects of scaling; all the sedimentary deposits contained in the water being separated by distillation, are precipitated to the bottom of the condensing chamber, from whence they are easily removed through a man-hole plate.

Third.—The danger of explosion, caused by oil being carried into the boiler, is obviated by the use of this apparatus, there being an outlet for the oil which may accumulate in the condenser. The spray forces the oil floating on top of the water from the center to the outside of the chamber where the outlet is situated, and from which all the oil escapes. This outlet also prevents the possibility of an overflow of water in the condenser and heater, and the bursting of the exhaust-pipe, which is likely to result therefrom.

Fourth.—The pumps may be used separated from the condenser and heater, for pumping cold water or liquids, and the large reserve-pumping power available for any immediate emergency is often a very valuable requirement.

Fifth.—The machines cost about the same as those possessing none of the special advantages herein enumerated.

We saw this machine in operation at 510 Commercial street, San Francisco. The engineer in attendance was very pleasant, showing himself perfectly familiar with the machine and patiently explains its working to all desiring information. Representatives of all establishments using steam-power will do well, if only in the interest of economy, to visit and examine this machine.

CHROME IRON.—We call attention to the article on the above subject in the Mining Summary of this issue. In the next issue we shall have more to say on the subject. Meanwhile, we advise those interested in the San Luis Obispo deposits to send specimens of the ore to the Mechanics' Fair. We volunteered in our last issue, to exhibit specimens sent to our care,

New Book on Arizona.

Mr. E. Conklin, the San Francisco co-representative of Frank Leslie's publications, and of the Chicago *Times*, and agent for the New York *Mining Record*, and Bureau for Mining Information, is about to publish a book on Arizona. Mr. Conklin has the reputation of being a "pusher into new countries." Since 1870, he has spent a fortune in exploring, and making the world acquainted with territory, before little known. He has traveled in the West Indies, in Central America, in Mexico, in the Territories of the United States, including Alaska. While in Mexico, he was one of a party of three that were the very first that ever climed to the bottom of the crater of Popocatapetl. The scenery, he says, was simply beyond conveyance by words. The party were reckless enough to sleep at the bottom of the crater. Mr. Conklin was finally taken out insensible, and carried, in that condition, to the foot of the mountain. During the last Indian war with Joseph, Conklin conceived a great desire to obtain a picture of that chief. He traveled, undaunted, for days, until he succeeded in gaining his purpose. The picture appeared in Leslie's publications. He has passed through stirring scenes, and is well fitted to make an interesting work on such a country as Arizona.

It is promised that the new book shall be thorough. It is the immediate result of extensive travels, both north and south, in Arizona, and will be of special interest to all mining men, through its late and full information concerning the new, much-talked-of Santa Rita mines. Though containing information with regard to all important mining districts of the Territory, it is, by no means, a technical work on mining. As its name, "Picturesque Arizona," implies, it gives us views of that strange country. Many of these views are entirely new, having never before been presented to the public. His complete series of Arizona views has been purchased by the Continent Stereoscopic company, of New York, who are also publishing his book. We shall obtain some of his scenes from Arizona, to publish in the PRESS, at an early date. The book is entertaining in its accounts of frontier and mining life. It will soon be on our coast, and will, no doubt, be eagerly seized by all lovers of travel, and researchers after new and reliable information respecting an interesting land.

The Briggs Lathe.

We give herewith an engraving showing the Briggs lathe, a new one which combines superior excellence in quality and finish, with strength and completeness. This lathe will turn a piece of wood or metal 12 inches long and six inches in diameter. It can be used with equal advantage for drilling, polishing, sawing, etc. The length of bed is 24 inches; the spindle is made of steel, has a conical bearing, and can be tightened as it wears. The bed, head, tail-stocks, and cone-pulley, are of cast-iron, and the centers of steel. The following pieces are furnished with the lathe: Two T rests, one face-plate, two plain centers, one spur center for wood, one plain drill-chuck, one drill-pad, and one center left-blank to turn down as a fitting for a universal chuck. The bench weighs 81 pounds, is made of iron, with a black-walnut top, and has a driving-wheel measuring 22 inches in diameter, with three grooves for changes of speed. The lathe may be seen at Dunham, Carrigan & Co's, of this city.

MECHANICS' FAIR.—The Thirteenth Industrial Exhibition of the Mechanics' Institute will present, it is promised, unusual attractions. As on former occasions, mining, agricultural and other machinery will be exhibited in motion. Pacific coast manufactures, minerals and agricultural products will be fully represented. An effort is being made to have an unusual display of California vine products. Prizes will be awarded by competent judges, among them the Rev. Dr. Bleasdale, of Australia. The San Francisco *Journal of Commerce* is soliciting donations to an exhibit which it will have under its own care. The art gallery will be managed by the San Francisco Art Association. New features will be added to the horticultural garden. And that most popular accompaniment, the music, will be as entertaining as heretofore, if not more so. All this is promised. We trust that the Managers will not disappoint us.

JUDSON POWDER.—We publish in another column several letters from persons using Judson powder, from which will be seen in what great favor that article is held by mining men. It is specially useful for bank blasting, and has been very rapidly introduced, proving that its efficiency was quickly recognized. Messrs. Bandman, Nielsen & Co., agents of the Giant Powder Co., manufacture this powder in this city. The letters referred to will show what has been done with the powder in numerous cases, and we recommend their perusal to the mining public.

ALL parties at work on the San Francisco gold placers seem satisfied that there is at least sufficient to make wages.

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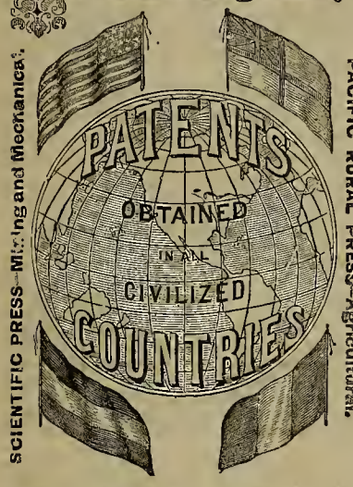
SCIENTIFIC PRESS

Patent Ageney.



Office—202 Sansome St., N. E. Cor. Pine, S. F

PATENTS obtained promptly; Caveats filed expeditiously
Patent re-issues taken out; Assignments made and recorded in legal form; Copies of Patents and Assignments procured; Examinations of Patents made here and at Washington; Examinations made of Assignments recorded in Washington; Examinations ordered and reported by Telegraph; Rejected cases taken up and Patents obtained; Interferences Prosecuted; Opinions rendered regarding the validity of Patents and Assignments; Every legitimate branch of Patent Soliciting Business promptly and thoroughly conducted.

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Roasting of Gold and Silver Ores, and the Extraction of their respective Metals without Quicksilver. 1870.

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It contains 142 pages, embracing illustrations of furnaces, implements and working apparatus.

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Concentration of Ores (of all kinds), including the Chlorination Process for Gold-bearing Sulphurets, Arseniurets, and Gold and Silver Ores generally, with 120 Lithographic Diagrams. 1867.

This work is unequaled by any other published, embracing the subjects treated. Its authority is highly esteemed and regarded by its readers; containing, as it does, much essential information to the Miner, Millman, Metallurgist, and other professional workers in ores and minerals, which cannot be found elsewhere in print. It also abounds throughout with facts and instructions rendered valuable by being clearly rendered together and in simple order. It contains 120 diagrams, illustrating machinery, etc., which alone are of the greatest value. PRICE, $7.50.

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OUR FRIENDS can do much in aid of our paper and the cause of practical knowledge and science, by assisting Agents in their labors of canvassing, by lending their influence and encouraging favors. We intend to send none but worthy men.

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The Managers have the honor to announce to the public that the Thirteenth Grand Exhibition of SCIENCE, ART and INDUSTRY, given under the auspices of the Mechanics' Institute, will open at the Pavilion on Market, Eighth and Mission streets, on

TUESDAY, AUGUST 13th, 1878.

Great and unusual attractions will be presented to visitors. Mining, Agricultural and other machinery will be in motion. Pacific Coast Manufactures, Minerals and products of the soil will be fully represented, beside many new and interesting novelties never before exhibited on this Coast. The

ART DEPARTMENT

Will be under the supervision of the San Francisco Art Association, a guarantee for excellence and completeness. Local Art will be specially represented, as also works of noted foreign artists, selected from the private galleries of this City. The

HORTICULTURAL GARDEN,

So popular heretofore, will be made still more attractive this year by the addition of many new features.

THE MUSIC.

Each afternoon and evening a first-class instrumental concert will be given by the best soloists and accomplished musicians of this City, with a daily change of programme of the best and most popular music.

No expense or pains will be spared by the Management that will add to the comfort or convenience of visitors.

Applications for space or information can be obtained from the Secretary, at the office, 27 Post street.

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ST. CHARLES HOTEL,

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This popular House, having been thoroughly refurnished and refitted, is now open for the reception of guests as a

FIRST-CLASS HOUSE,

And in the character of its accommodations second to no interior Hotel in the State.

The Hotel Coach will carry passengers from all Trains and Steamers to the House

FREE OF CHARGE.

Two lines of Street Cars pass the Hotel to the Beach and Bath Houses.

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Henry N. Copp's hand-book of mining laws, just issued, contains the United States mining laws and instructions thereunder, a digest of decisions, forms, list of mining patents issued, etc. The digest of decisions alone is a very valuable thing, giving, as it does, in brief form, all the decisions of the Secretary of the Interior and Commissioner of the General Land Office in relation to mining matters. These are all under proper headings for easy reference. Forms are given for notice of location, proof of labor, notice of forfeiture, miners' lien, application for survey, patent, etc., affidavit of improvements, etc. There is also a list of patents issued for mining claims from July 26th, 1866, to August 1st, 1877. The book is of pocket size and very convenient for all who are interested in mines. It will be sent post-paid for $1, on application to Dewey & Co., 202 Sansome street, San Francisco.

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A Mechanical Engineer, having an extensive experience in Marine Engineering (especially compound) and Iron Ship Building, also in Steam Engines and Machinery in general, is open for engagement. First-class references.

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Exhilarating Climate! Grand Scenery!!

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CONNECTED WITH THIS HOTEL ARE

J. C. SMITH'S CELEBRATED

Hot and Cold Bathing Establishment,

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This is the only Hotel in this Valley with cottages separate from the main building and located immediately on the margin of the beautiful waters of the Merced river. Our

DINING ROOM,

Also on the river, looks out under shady trees and over green lawns, with a Grand View in a Direct Line of the Yosemite Falls, 2,634 Feet High.

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Who cannot endure the fatigue of horseback riding, can see all the principal points of interest from the porches of this Hotel.

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A competent person is desirous of receiving the position of Superintendent of a Smelting and Refining Works. Can give satisfactory reference for ability to smelt all lead ores, refine silver and make market lead. No objections to go to the Territories. Address P. F. M., this office.

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On his own account, and that since March 8, 1878, all his articles have been and will be in future marked with his full name, "Ernst Gundlach."

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The Only SAFE BOILER. SAVES One-half the FUEL Consumed by Others.

The engine is adapted to all the various industries in which small power is required. The engines are FIRST-CLASS, and are made from two to twelve horse-power.

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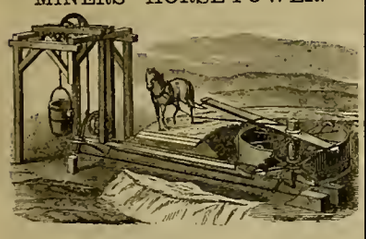

This Power is especially adapted to working mines, hoisting coal or building material, etc. It will do the work of a Steam Engine with one-tenth the expense. One Horse can easily hoist over 1,000 pounds at a depth of 500 feet.

The Power is mainly built of wrought iron, and cannot be affected by exposure. The hoisting-drum is thrown out of gear by the lever, while the load is held in place with a brake by the man tending bucket. The frame of the Power is bolted to bed-timbers, thus avoiding all frame work. When required these Powers are made in sections for packing.

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Steel Castings,

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This furnace is guaranteed to chloridize from 88 per cent. to 95 per cent. of the silver, and put gold in a state so that 88 to 95 per cent. of the battery assay can be obtained by amalgamation on any gold or silver ore ever formed by nature.

The cost of Roasting and Chloridizing is as follows:

One man, per day	$ 3 50
One man, per day	3 00
Wood, 1½ cords at $3	7 00
Cost of 20 tons	$13 50
Cost of one ton	67½

From 2½ to 5 per cent. of salt is necessary.

In a furnace of three or four times this capacity the cost is decreased by 20 per cent.

Several furnaces are in successful operation in California, Nevada and Idaho.

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ENGINE FOR SALE.

A first-class, large sized Britton Fire Engine, in fair order is offered for sale cheap. Price, $400. It is worth more than double that sum. About forty men can work on the brakes. Towns or corporations wishing a good machine should examine this engine before ordering elsewhere. Apply to

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BURNHAM'S STANDARD TURBINE WATER WHEEL.

WARRANTED BEST & CHEAPEST.
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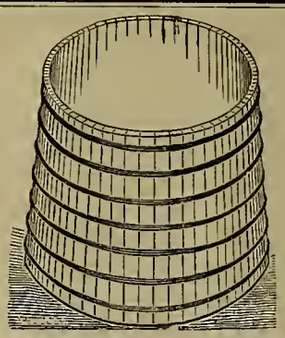

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Do you want to buy, sell or exchange lands or other property in any part of the U. S. or Canadas? Are you a Soldier or Sailor, in want of a Patent? Why not obtain more Bounty or Pension? Do you want to locate Government or State Lands without settlement? Why not? When I have the well-known Approved Soldiers' Additional Homesteads, under seal of the General Land Office, and that can be located without settlement, upon any Government $1.25 or $2.50 lands, subject to homestead. The Sioux Half-Breed Scrip, for location upon unsurveyed lands.

Land Warrants and Scrip of all Kinds

For cash, or part on time. Good title given or no pay. Have you any lands with an imperfect title to sell, or choice vacant lands you know of which could be located to advantage; or claims not lawfully held, which we could contest. Let me hear from you in full, and I will do my best to inform you what is to your advantage.

I will mail you a circular explaining all, and a copy of the new Pension Law. Address, (plainly)

D. H. TALBOT,
General Land, Scrip and Warrant Broker, Sioux City, Ia.

Dewey & Co { 202 San-some St. } **Patent Ag'ts**

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending July 18.		Week Ending July 25.		Week Ending Aug. 1.		Week Ending Aug. 8.	
Alpha	13¼	9.75	10½	9	11	9½	16½	10
Alta	8¼	6¾	7¾	7¼	9½	7¾	11	8½
Andes	40c	35c	40c	35c	35c	25c	80c	35c
Alpa	65c	....	60c	....	....	....	....	....
Argenta	45c	40c	50c	45c	50c	45c	50c	40c
Baltimore Con	....	....	33¾	4.45	3.95	4.60	4.05	10
Belcher	4½	3¾	4.45	3.95	4.60	4.05	10	4.45
Belmont	1	45c	1	70c	1	65c	2.75	90c
Best & Belcher	15	13½	15½	14½	14½	13½	17½	14½
Bullion	5½	3.80	5½	3.80	5½	4.60	8¼	5½
Bechtel	1.20	90c	1.40	80c	1.90	1½	5	1.80
Bodie	7½	5½	101	7	17½	10	25	17
Benton	2	1.90	2.15	1.90	3.40	1.90	3.90	3.40
Caledonia	2½	1½	2.15	2.05	2.15	1.85	3.35	2.15
California	13½	10½	10¾	7½	10	7½	12½	9½
Challenge	....	....	1	75c	1	75c	1½	1
Chollar-Potosi	26	25½	32	25½	30	28	35½	29½
Confidence	4½	4½	6	5	5½	5½	7	5
Con Imperial	70c	60c	75c	65c	70c	60c	5	70c
Con Virginia	9½	8½	8¾	7	9	7	10¾	8½
Crown Point	7	6	7¾	5½	8½	6¾	9½	7¾
Dayton	....	....	20c	....	....	....	50c	25c
DeFrees	20c	15c	25c	15c	15c	....	20c	10c
Day	50c	45c	40c	....	50c	40c	1	40c
Eureka Con	56½	55½	53	34	48½	44	43	44
Exchequer	2.90	2.70	3.40	2½	4.15	3.20	5½	3.90
Endowment	70c	65c	70c	50c	95c	65c	2	1
Gen Thomas	....	....	....	....	15c	....	....	....
Grand Prize	3.60	3.20	3.35	3½	3.55	3½	3.60	3¾
Gila	55c	40c	60c	50c	60c	35c	35c	....
Golden Chariot	30c	25c	25c	20c	30c	20c	25c	....
Gould & Curry	7	6½	8	6½	7½	6½	9	7½
Hale & Norcross	7½	6½	7¾	7	7½	7	9¼	7
Hussey	25c	10c	55c	40c	50c	45c	90c	55c
Julia	6½	5½	7½	6	8½	5	12½	8
Justice	5½	4.05	5½	4.95	5½	4	5½	5½
Jackson	....	....	....	....	....	5	4	4½
Joe Scates	....	....	....	....	....	....	....	....
K K Con	....	....	....	....	....	....	....	....
Kentuck	3½	2.90	3.60	3	5½	3.40	6	4½
Kosmith	....	....	....	....	....	....	50c	....
Lady Wash	....	....	....	....	3	....	8½	8
Leopard	1.45	85c	1.10	80c	1	75c	1.35	1
Leviathan	45c	35c	45c	35c	45c	40c	95c	40c
Leeds	1	....	1	....	40c	....	1	25c
Modoc	70c	50c	35c	25c	35c	25c	30c	20c
Manhattan	....	....	6½	6	6	5½	5½	5½
Meadow Valley	....	....	....	....	....	....	1.40	1
Mexican	16½	14½	18½	14½	13¾	12½	24½	13½
North Con Virginia	....	....	....	....	1.60	75c	5½	1.45
New York	60c	50c	60c	50c	1.10	50c	1½	95c
Northern Belle	11	10½	11	10½	10½	10½	10½	9
New Coso	45c	40c	40c	....	45c	40c	40c	....
Navajo	60c	35c	55c	40c	50c	40c	50c	45c
Occidental	....	....	....	....	....	....	1.40	1
Ophir	53½	47½	59	42	45	36	46	38¾
Overman	11	8½	11½	10½	12½	9½	18	11½
Panther	....	....	....	....	....	....	20c	....
Raymond & Ely	3	....	3	....	3	....	3.35	3
Rock Island	....	....	....	....	....	....	....	....
Savage	11½	10¾	11½	10¾	10½	9½	13	10¼
Seg Belcher	24	....	....	....	....	....	26½	22
Sierra Nevada	7¾	6¾	9¾	7½	12½	7¾	33½	13
Silver Hill	1.05	70c	90c	75c	1	60c	2	1
Succor	1.05	....	1.20	1	1.05	90c	2.70	1.05
Solid Silver	2.85	....	2½	2½	2½	25c	4	2.40
Star	1.05	40c	1½	1	1	....	2½	1
Trojan	50c	35c	50c	40c	50c	45c	65c	50c
Union Con	7¾	6¾	9¾	7	9¾	6¾	30	10c
Utah	10½	8½	11	9½	11¾	8¾	16	10¾
Wells-Fargo	15c	5c	10c	5c	10c	5c	20c	5c
Woodville	35c	30c	90c	35c	60c	35c	75c	60
Yellow Jacket	9	8½	11¾	9½	10¾	9½	16	10½

Sales at S. F. Stock Exchange.

Friday A. M., August 2.

575 Alta.....8@8¼
150 Alpha.....11@11½
750 Andes.....35c
210 Best & Belcher...15½@15
1030 Julia.....5½@5½
1560 Belcher.....4.45@4.60
365 Doyle.....70@75c
2880 Benton.....3.40@3½
690 Con Virginia.....8¼@8½
445 California.....9½@9¾
120 Chollar.....30c@29½
1075 Crown Point.....7¼@7½
435 Caledonia.....2½@2.20
3585 Con Imperial.....70c@75c
300 Crown Point Rav.....20c
1985 Exchequer.....4.05@4.10
130 Gould & Curry.....7½
240 Hale & Nor.....7½
1030 Justice.....5½
170 Kentuck.....5c@4½
750 Kossuth.....5c
110 Leviathan.....45c@40c
10 Lady Wash.....3
4560 New York.....1.05@1.20
915 North Con Vir...1½@1.45
360 Overman.....12
1405 Ophir.....47½@48
2780 Sierra Nevada...13½@14½
585 Savage.....10½@11
655 Silver Hill.....1.10@1
700 Succor.....1.05
625 Solid Silver...2.40@2.45
1100 Trojan.....12½
4310 Union Con.....11@10½
80 Utah.....11½@11¾
1500 Wells-Fargo.....15c
450 Woodville.....60c
625 Ward.....1.95
325 Yellow Jacket...10¼@11

AFTERNOON SESSION.

120 Alta.....8@8¼
2855 Bechtel.....1.80@1.90
565 Belcher.....4½
635 Bodie.....17½@17
2200 Belmont.....5c
2000 Comhination.....25c
690 Con Virginia.....8¾@8¼
1175 California.....9½@9¾
500 Crown Point.....7¼@7½
20 Caledonia.....2.15
20 Chollar.....29½
500 DeFrees.....15@20c
400 Day.....50c
1950 Endowment.....1¾
35 Eureka Con.....47@47½
305 Grand Prize...3.60@3.65
400 Gila.....55c
510 Gould & Curry.....7¾@7½
300 Golden Chariot.....25c
350 Hillside.....2½@2
650 Hussey.....55c
1040 Independent...1.35@1.40
185 Jackson.....4@4¼
2060 Julia.....8½@8
90 Justice.....5½@5½
1400 Leopard.....1.05@1
1190 Mexican.....13½@13¾
255 Manhattan.....5½@6
400 McClinton.....1¼
500 Modoc.....30@25c
115 Northern Belle..10¼@10½
630 Ophir.....39½@38¾
90 Raymond & Ely.....3
200 Star.....1@1¼
4300 Sierra Nevada...13¼@12¾
300 Silver Prize.....1½
385 Savage.....10½
1360 Tiptop.....1½@1.45
100 Tioga Con.....1
150 Utah.....10½@10¾
2715 Union Con.....10@10½
380 Ward.....1.80

Saturday A. M., Aug. 3.

150 Alpha.....10½@11
450 Alta.....9@8½
310 Argenta.....45@46c
1000 Bullion.....5½@5½
1570 Benton.....3¼@3.60
645 Best & Belcher.....15¼
1150 Boyle.....85c
140 Belcher.....8½@8¾
350 Argenta.....50@45c
475 Alta.....8½@10½
655 Bodie.....34@34½
2030 Bechtel.....2.40@2.60
1410 Belmont.....1.30@1.85
1695 Benton.....3¾@3.80
910 Bullion.....5¾@5½
2000 Belcher.....6¼@6¾
2990 Best & Belcher...15¼@15¾
200 Combination.....25c
45 Con Virginia.....8¾@8½
1285 Crown Point.....8¼@8
515 California.....9½@9¾
150 Chollar.....31
800 Hussey.....65@70c
50 Hillside.....2.15
240 Hale & Nor.....7¾@7¼
550 Independent...1.40@1.35
550 Justice.....5¾@5½
3215 Julia.....10@10½
110 Jackson.....4½
5255 Leopard.....1.1@1.10
350 Leeds.....25c
1950 Modoc.....20@25c
7325 Mexican.....14½@14½
190 Manhattan.....5½
140 Martin White.....4
300 McClinton.....90c@1.20
1400 Northern Belle.....10
65 Northern Belle.....10
2850 North Con Vir.....4½@5
200 North Star.....45c
330 Overman.....12@12¼
460 Ophir.....41
160 Raymond & Ely..3@3.95
1405 Sierra Nevada...16¼@17
100 Silver Prize.....10
80 Star.....1¼
1500 Tiptop.....1.15@1.10
3025 Tioga Con.....1@1.60
1660 Union Con.....12@12½
380 Ward.....2.30@2.40

Tuesday A. M., Aug. 6.

970 Alpha.....11@12
970 Alta.....10@9½
445 Best & Belcher...16@15½
1750 Belcher.....6¼@6
3235 Bullion.....6¼@6
1555 California.....9¾@9½
810 Con Virginia.....8¾@8½
4515 Con Imperial.....75c
20 Confidence.....5
2835 Crown Point.....8¼@7¾
1435 Caledonia.....2¼@2
225 Chollar.....32½@33
2015 Exchequer.....4½@4.15
2055 Gould & Curry.....8¼@8¼
985 Hale & Nor.....8@7¾
2290 Justice.....7@6½
4345 Julia.....11½@12
720 Kentuck.....4½@4.55
1720 Mexican.....15½@16½
285 Ophir.....45@43½
580 Overman.....13½@12½
6110 Sierra Nevada...23@24
290 Savage.....11½@10
1450 Succor.....2@2½
4655 Union Con.....14½@15
255 Utah.....12¼@14
350 Yellow Jacket...10½@10½

AFTERNOON SESSION.

655 Andes.....75@80c
1295 Argenta.....50c
890 Belmont.....1½@1.85
1950 Bechtel.....4½@5
510 Bodie.....25c@22½
1925 Benton.....3½@3½
2895 Boyle.....1.20@1.25
25 Challenge.....1
450 C P Ravine.....25c
200 DeFrees.....20c
495 Day.....75c@80c
180 Eureka Con.....44@46
250 El Dorado S.....11½
4160 Endowment...1.40@1.60
275 Gila.....55c
600 Grand Prize.....3.55
2600 Hussey.....70c@80c
250 Hillside.....2@2½
665 Independent...1.30@1.35
100 Jackson.....4½@4
710 Leopard.....1.15
275 Lady Wash.....8¼@8½
1935 Leviathan.....85@70c

SALES OF LAST WEEK AND THIS COMPARED

Thurs'd'y A. M., Aug. 1. Thursday A. M., Aug. 8.

500 Alta.....9½ 805 Alpha.....13¼@15
70 Alpha.....10½ 1780 Alta.....10¼@11
45 Andes.....25c@30c 230 Andes.....75c@80c
525 Best & Belcher...15c@15¾ 880 Belcher.....17½@17
1410 Bullion.....5¾@5¾ 1975 Bullion.....7¾@7¾
3720 Beutou.....3¾ 4260 Belcher.....8½@9
3925 Belcher.....4¼@4.45 150 Chollar.....34@35
1260 Con Imperial.....65c@70c 220 Con Virginia.....9
1430 California.....9¾@9¾ 1815 Caledonia.....3¼@3.35
880 Con Virginia.....8½ 2170 Crown Point.....9@9½
25 Confidence.....5½ 16605 Con Imperial...1.10@1¼
110 Chollar.....29½ 160 Challenge.....1¼
930 Crown Point.....8¼ 645 Confidence.....5@6
1100 Caledonia.....2.05@2.15 110 Dayton.....25c
25 Challenge.....2 2460 Exchequer.....4.70@5
1265 Exchequer.....3.85@3.90 1900 Gould & Curry...8½@9
825 Gould & Curry.....7¼ 1140 Hale & Nor.....8¼@8¼
140 Halo & Nor.....7½ 2020 Justice.....6½@7
1700 Julia.....7¾ 2685 Julia.....10@11½
1475 Justice.....5¼@5¾ 1200 Kentuck.....3½@3½
675 Kentuck.....4.60@4.70 1300 Lady Wash.....8¾@8¾
170 Leviathan.....40@45c 3370 Lady Bryan.....2@2.10
20 Lady Wash.....8 1450 Mexican.....16½@17½
1180 Mexican.....13@13¾ 200 Mides.....2
2185 New York.....1.1.15 975 New York.....1.40@1½
4830 North Con Vir...1.1.60 775 Overman.....17@16
305 Ophir.....42½@41¾ 350 Ophir.....42@42½
480 Overman.....11¾@11 250 Occidental.....1½@1.40
100 Succor.....1.05 1350 Succor.....2½@2.20
5715 Sierra Nevada.....10½@11 970 Savage.....12¼@13
1010 Savage.....10@10½ 20 Seg Belcher.....20½
1725 Silver Hill.....1.20@1.25 2100 Silver Hill.....1½@2
630 Trojan Hill.....45c@50c 14465 Union Con.....22@20
535 Utah.....11@10½ 435 Utah.....14½@15
2980 Union Con.....9¾@9¾ 8100 Wells Fargo.....15@20c
930 Ward.....1.80 50 Woodville.....60c
140 Woodville.....60@55c 1280 Ward.....2.90@2½
150 Yellow Jacket.....10½ 2325 Yellow Jacket ...13@16

AFTERNOON SESSION.

220 Alta.....8½
200 Argenta.....45c
350 Alpha.....11@10½
1700 Belmont.....80@75
40 Best & Belcher.....14½
1550 Belcher.....4¾@4.60
1610 Bechtel.....1.60
50 Bodie.....17
100 Boyle.....70c
1110 Benton.....3.10@3.40
690 Bullion.....5¾@5
450 Con Virginia.....8½
445 Crown Point.....8¼@8¾
125 California.....9½@9¾
125 Chollar.....30@29½
300 DeFrees.....15c
50 Day.....45c
155 Eureka Con.....47½@48¼
1750 Endowment.....90c@95c
1610 Exchequer.....4@4.15
1535 Grand Prize.....3.55@3.60
600 Gila.....50c@55c
515 Gould & Curry.....7¾
100 Golden Chariot.....25c
1475 Hussey.....50c
50 Hillside.....1.90
1110 Julia.....8¼
4800 Indepe.dent.....1.40@1
475 Justice.....5½
1650 Julia.....8½@8¾
1100 Jackson.....5
1650 Kentuck.....3¾@3½
1200 Leopard.....1.60@1.65
300 Modoc.....35c
395 Manhattan.....5½@5½
85 Martin White.....4
785 Mexican.....13¾@13¾
65 Northern Belle.....10¼

AFTERNOON SESSION.

300 Argenta.....40@50c
2375 Belmont.....1.30@1
630 Bodie.....23¼@24
1875 Bechtel.....2.80@3.10
2950 Benton.....3¼@3¼
1730 Boyle.....1½@2
400 Combination.....25c
1070 Con Virginia.....10½@10½
50 Crown Point.....9¼
550 DeFrees.....15c
80 Eureka Con.....45
2360 Endowment.....1½@2
1175 Exchequer.....4½@4¾
100 Golden Terra.....1¼
1200 Golden Chariot...25c@30c
2700 Hussey.....70c@80c
340 Hillside.....2½@3
695 Hale & Nor.....8½@9
90 Independent.....1¼
430 Jackson.....4½@4¾
1885 Leopard.....1.20@1.30
700 Leeds.....1
1470 Leviathan.....80c@85c
4550 McClinton.....1½@60c
1825 Modoc.....25c@30c
25 Martin White.....4
1150 Manhattan.....5½@6
3545 Mexican.....20c@24½
700 New Coso.....40c

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS—STOCKS ON THE LISTS OF THE BOARDS.

Company.	Location.	No.	Amt.	Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business
Alps S M Co	Nevada	13	1 00	May 21	Aug 14	Sept 10	O D Squire	331 Montgomery st
Alta S M Co	Washoe	15	1 00	July 18	Aug 22	Sept 10	W H Watson	302 Montgomery st
Belcher S M Co	Washoe	15	1 00	July 17	Aug 20	Sept 10	Jno Crockett	419 California st
Boyle M Co	Nevada	1	15	Aug 1	Sept 4	Sept 23	Wm H Watson	302 Montgomery st
DeFrees M & M Co	Nevada	7	10	Aug 5	Sept 6	Sept 23	Thos E Atkinson	310 Pine st
El Dorado South Con M Co	Nevada	13	25	July 27	Aug 30	Sept 23	O A Sankey	331 Montgomery st
Grand Prize M Co	Nevada	1	1 00	July 9	Aug 15	Sept 5	R H Brown	327 Pine st
Hussey Con G & S M Co	Nevada	5	15	July 24	Aug 14	Sept 6	R H Brown	327 Pine st
Kentuck M Co	Washoe	13	1 00	Aug 7	Sept 9	Sept 30	J W Pew	310 Pine st
McCracken Con M Co	Arizona	1	50	July 10	Aug 24	Sept 28	H Aug Whiting	211 Sansome st
Modoc Con M Co	California	5	50	July 17	Aug 26	Sept 16	J W Pew	310 Pine st
Martin White M Co	Nevada	3	1 00	July 23	Sept 3	Oct 1	J J Scoville	309 Montgomery st
New York M Co	Nevada	16	30	Aug 1	Sept 3	Sept 24	D L Thomas	419 California st
Prospect G & S M Co	Washoe	6	25	July 18	Aug 20	Sept 10	Warner Craig	320 Sansome st
Silver Hill M Co	Washoe	3	50	July 18	Aug 22	Sept 12	W E Dean	419 California st
South Standard M Co	California	2	25	July 23	Aug 27	Sept 17	C A Sankey	331 Montgomery st
Sierra Nevada M Co	Washoe	55	1 00	July 31	Sept 4	Sept 25	W W Stetson	309 Montgomery st
Seaton M Co	California	11	75 00	June 26	July 30	Aug 21	J H Lightner	58 Nevada Block
Tiptop S M Co	Arizona	4	50	July 15	Aug 21	Sept 18	D F Verdenal	327 Pine st
Wells Fargo & Co	Washoe	10	10	June 22	Aug 23	Sept 9	W M Helman	309 California st
Young America M Co	Nevada	10	20	June 27	Aug 1	Aug 21	R H Brown	327 Pine st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Almaden Quicksilver M Co	California	1	25	July 30	Aug 31	Sept 21	W J Forde	207 Sansome st
Benton M Co	Nevada	1	35	Aug 1	Sept 5	Sept 24	Wm H Watson	302 Montgomery st
Colorado River C & G M Co	Arizona	2	25	Aug 5	Sept 5	Sept 30	F A Whiting	211 Sansome st
Eagle M & M Co	Nevada	7	15	June 24	July 9	Aug 19	R H Brown	327 Pine st
Excelsior S M Co	Nevada		25	July 16	Aug 20	Sept 6	Francis P Devine	304 Post st
Eagle S M & M Co	Nevada	9	15	July 13	Aug 16	Sept 6	R H Brown	327 Pine st
Father De Smet G M Co	Dakota	1	1 00	June 17	July 22	Aug 19	J A Quinan	404 Montgomery st
Gold Mountain M Co	California	6	1 00	June 22	July 24	Aug 15	Charles Dore	410 Pine st
Golden Rule M Co	California	7	75	July 15	Aug 17	Sept 9	J B Russell	432 Montgomery st
Henrietta G M Co	California	3	10	June 7	Aug 12	Sept 6	F Klosterman	309 California st
King M & S Co	Nevada	1	25	June 24	July 23	Sept 19	Chas K Clark	111½ Leidesdorff st
Moore's Flat B G M Co	California	7	25	June 14	July 19	Aug 12	J M Buffington	309 California st
Morgan M Co	California	4	50	June 1	July 8	July 29	John J Raphael	533 Kearny st
Murchie G & S M Co	California	1	20	July 2	Aug 7	Sept 6	S D Rogers	Merchants' Exchange
McElroy G M Co	California	2	10	July 23	Aug 28	Sept 17	Lewis Lillie	519 Montgomery st
Mariposa Land & M Co	California	14	1 00	July 10	Aug 12	Sept 9	Leander Leavitt	309 Montgomery st
McClellan Con G & S M Co	Nevada	2	25	Aug 5	Sept 5	Sept 23	Otto Metchke	328 Montgomery st
Newton H & D M Co	California	1	08	July 21	Sept 2	Sept 20	G W Cummings	330 Sansome st
Nevada Gravel M Co	California	2	10	July 8	Aug 10	Aug 28	J Pentecost	511 California st
Oak Grove M Co	Arizona	1	05	Aug 6	Sept 10	Sept 30	R D Bogart	16 Leidesdorff st
Oroville G M Co	California	1	10	June 14	July 27	Aug 21	Ph D Auh	417 California st
Orion M Co	California	2	70	July 9	Aug 9	Aug 24	P Conklin	28 Sansome st
Panther M Co	Nevada	1	8	June 21	July 27	Aug 19	J W Pew	310 Pine st
Real Del Monte M Co	Nevada	3	1 00	July 18	Aug 26	Sept 16	A Baird	304 California st
Summit M Co	California	4	05	July 17	Aug 19	Sept 10	J W Clark	318 Pine st
S F Sulphur M Co	Nevada	3	5	June 14	July 18	Aug 13	P M McLaren	310 Pine st
Tiger M Co	Arizona	1	30	July 16	Aug 20	Sept 20	W H Lent	309 Montgomery st
Telegraph C & S M Co	California		03	July 17	Aug 19	Sept 9	I T Milliken	528 California st

MEETINGS TO BE HELD.

Name of Company.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Alta S M Co	Nevada.	W H Watson	302 Montgomery st	Annual	Aug 15
Bodie G M Co	California.	W H Lent	309 Montgomery st	Annual	Aug 15
Caledonia S M Co	Nevada	R Wegener	414 California st	Annual	Aug 21
DeHaro M Co	Nevada	Frank Mayer	408 California st	Annual	Aug 14
El Dorado Slate Co	California	J R Jones	524 Sacramento st	Annual	Aug 22
Independence M Co	California	R H Brown	327 Pine st	Annual	Aug 19
Lady Wash M Co	Washoe	A W Hawens	419 California st	Annual	Aug 14
Lucky Rock G M Co	Nevada	Chas S Healy	45 Merchant's Exch	Annual	Aug 16
Meadow Valley M Co	Nevada	T W Colburn	414 California st	Annual	Aug 22
Moore's Flat B G M Co	California	J M Buffington	309 California st	Annual	Aug 26
Navajo M Co	Nevada	R H Brown	327 Pine st	Annual	Aug 13
Occidental M Co	Washoe	Alfred K Durbrow	309 Montgomery st	Annual	Aug 13
South Comstock G & S M Co	Nevada	J M Buffington	309 California st	Annual	Aug 19
Summit G & S M Co	California	C A Gould	611 Montgomery st	Annual	Aug 31
Steptoe Con M Co	Nevada	Ed F Stone	306 Pine st	Annual	Aug 15
Vancouver M Co		Frank Mayer	408 California st	Annual	Aug 14
Ward Beecher Con M & M Co	Nevada	D A Jennings	401 California st	Annual	Aug 20

LATEST DIVIDENDS—WITHIN THREE MONTHS

Name of Company.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
California M Co	Washoe	C P Gordon	Nevada Block	1 00	Aug 15
Con Virginia M Co	Washoe	A W Hawens	Nevada Block	1 00	July 15
Eureka G M Co	California	R Wegener	414 California st	25	April 25
Excelsior W & M Co	California	Geo P Thurston	315 California st	50	July 15
Eureka Con M Co	Nev	W W Traylor	309 Montgomery st	3 00	July 20
Empire M Co	California	David A Jennings	401 California st	25	June 15
Georgia S M Co	Washoe	R Wegener	414 California st	3	April 16
Independence M Co	Nevada	R H Brown		25	July 20
McMillon S M Co	Arizona	A O McNeans	Safo Deposit Bldg	5	June 20
Silver King M Co	Arizona	Wm H Boothe	320 California st	50	May 30
Staudard G M Co	Cal	W Willis	309 Montgomery st	1 00	Aug 12

Pacific Board—Latest Sales.

Wed'sday A. M., Aug. 7.

170 Alpha.....15@15½
160 Best & Belcher...17@17½
500 Bullion.....7¼@7½
590 Belcher.....9½@9
170 California.....10½@10¾
620 Crown Point.....8@7¾
1360 Con Imperial...1.15@1.20
420 Con Virginia.....8¾
245 Caledonia.....3¾@3¾
10 Chollar.....34
630 Exchequer.....4¾@4
330 Gould & Curry.....8¼@8¾
160 Hale & Nor.....9¼@9
200 Julia.....12½@12¾
330 Justice.....7¼@8
200 Kentuck.....3½@3½
490 Mexican.....15@17½
290 Ophir.....42½@43¼
40 Overman.....15¾
425 Savage.....11¾@12¼
385 Sierra Nevada...33¾@34
100 Succor.....2@2
350 Silver Hill.....1¾@1.65
465 Union Con.....22¼@23
50 Utah.....15c@15¾
450 Woodville.....80c@70c
120 Yellow Jacket...12½@12¾

AFTERNOON SESSION.

960 Andes.....90c@75c
25 Bechtel.....2
30 Belcher.....8½@8¾
300 Boyle.....1.20
210 Bullion.....7@7¼
200 Black Hawk.....75c
10 California.....10¾
670 Caledonia.....2.95@2.80
1075 Con Imperial.....95c@1
250 Crown Point.....8¾
100 Endowment.....1¾
755 Exchequer.....5c@4¾
550 Gila.....50c
200 Goodah.....1½@1.10
100 Gould & Curry...8½@8¾
20 Hale & Nor.....8¾
80 Julia.....11¾
350 Justice.....7
350 Leopard.....1¼@1¾
100 Leviathan.....75c
100 Lady Wash.....3¾
70 Mexican.....16½@16¾
200 Modoc.....30c
900 New York.....1¼@1.15
20 Ophir.....41¾@42
200 Overman.....15¾
1350 Sierra Nevada...24¼@25¼
150 Sierra Nevada...24¼@25¼
630 Silver Hill.....1¼@1.80
2910 Trojan.....68c@64c
400 Union Con.....18¾@19
1810 Ward.....2.70@2.90

AFTERNOON SESSION.

900 Wells-Fargo.....9@11c
70 Yellow Jacket...11½@11¾

California Board—Latest Sales.

Wed'sday A. M., Aug. 7.

100 Andes.....85c
20 Alta.....10
50 Bullion.....7@7¼
40 Belcher.....8¾@7¾
20 Best & Belcher...16½@16¾
30 California.....10c@10½
20 Chollar.....34
270 Caledonia.....3¾@3¾
55 Con Virginia.....8¾@8¾
850 Con Imperial.....85c@1
60 Crown Point.....8¾@8¼
40 Exchequer.....4¾@4¾
100 Andes.....85c@80c
30 Best & Belcher...16¾@16¾
50 Belcher.....8¾@8¾
40 Julia.....12¾@12½
225 Kossuth.....7c
850 Leviathan.....80c@95c
30 Mexican.....17¾@17¾
400 Monumental.....10c@9c
20 New York.....1½
50 Ophir.....44@43¾
70 Sierra Nevada...34¾@34¾
50 Succor.....2
40 Silver Hill.....1½
300 Alexander.....6¼@6¼
100 Andes.....85c@80c
30 Best & Belcher...16¾@16¾
50 Belcher.....8¾@8¾
150 Caledonia.....3.35
20 California.....10¼
500 Con Imperial...1.15@1.20
20 Crown Point.....8¾@8¾
40 Exchequer.....5

500 Endowment...2.30@2.10
800 Goodah.....1¼@1.15
50 Justice.....7¾@8
50 Julia.....12¼@11¾
250 Kossuth.....10c@8c
100 Leviathan.....97½c
50 Mexican.....16¾@16¾
400 Monumental.....10c@9c
200 New York.....1.30@1.35
50 Ophir.....42¼@42¾
50 Sierra Nevada...29¾@28
50 Justice.....7¾@8
50 Julia.....12¼@11¾
250 Kossuth.....10c@8c
100 U Flag.....12½c
100 Woodville.....80c
700 Wells-Fargo.....9@11c
200 Yellow Jacket...12¾@12¾

Mining Share Market.

Last week was considered one of remarkable activity. The activity has been on the increase during the present week, the whole market being at times wide-awake, but special attention being drawn to the north-end mines, Union Con., Sierra Nevada, Mexican and Ophir. From Monday to Friday, inclusive, of last week, the dealings in Union Con. amounted to 30,735 shares. The business in that stock for only the first two days of this week surmounted the dealings of all five, last week. Monday, the business in Union Con. amounted to 11,210 shares; Tuesday, to 19,980 shares; total, 31,190 shares. Such an increase cannot be reported of any other mine. The cause of this lively condition is said to be two-fold. Union Con. has prospects of its own, in the first place; in the second place, the rich strike reported in Sierra Nevada, is, it is alleged, over the line in Union ground. Whether this be true or not, it is to be hoped will soon be settled.

Meanwhile, this rich strike easily accounts for life in Sierra Nevada. The following is an extract from a letter to the *Daily Stock Report*, dated Virginia, August 7th: "It has been pretty definitely ascertained that the east wall struck the other day by the incline, was not the east wall at all, but a thin streak of porphyry, through which the incline soon passed and disclosed ore of magnificent promise and richness—some say assays going as high as $600 per ton. The management here are as dumb as an oyster, so it is impossible to fully confirm the news, but there is hardly a doubt that it is true."

Ophir has been weakening. Mexican, on the contrary, has been getting rather better. As the week progresses, the excitement seems to be running along the line to the south, California, Con. Virginia and Belcher being moved. Julia has been slowly on the rise.

Mechanics' Industrial Fair.

EDITORS PRESS:—At the request of the Board of Managers, of the Thirteenth Industrial Exhibition, to open in this city August 13th, 1878, we are about to make a display of Pacific coast products and manufactures. It will consist of cereals, fruit, wino, wool, minerals, ores, tobacco, silk, flour, woods, and other objects, natural or cultivated, of curiosity or importance. We invite the co-operation of all, and respectfully solicit those who have fine products to supply us with samples of them. Anything worthy of display in any of the above lines may be shipped to us, per Wells, Fargo & Co., who will carry them free of charge to the Mechauics' Fair building, Mission and Eighth streets, San Francisco. Credit will be given to each party contributing, and if any premium is awarded, it will be sent to the parties sending us the exhibit.

W. H. MURRAY,
Business Manager *S. F. Journal of Commerce* Publishing Co.,
No. 414 Clay street, San Francisco.

What is Said of the Judson Powder.

FOREST HILL, April 1st, 1878.

MESSRS. BANDMAN, NIELSEN & Co., Agents Giant Powder Co, San Francisco:

Dear Sirs:—In reply to your inquiry as to how we were pleased with the Judson Powder: In the first blast we used 24,450 pounds in 12 different chambers in hard cemented gravel; the bank was from 125 to 180 feet high; the powder line 65 feet from the face. This was an entire success, completely pulverizing 240,000 cubic yards, so that there were no hard lumps left of any amount, as was formerly the case when the blastiog was done with common black powder, when there was an entire mass of large lumps of cemented gravel left requiring a great deal of labor; and then the gravel would not be pulverized, and and the gold could not be as readily saved.

The second blast had 11,000 pounds of powder under a 200-foot bank. This did more work per pound than the former blast—say 12 cubic yards per pound of powder. In my judgment, the Judson powder far surpasses the common black powder in quantity of ground moved, also in pulverizing the gravel; then it is not liable to explode, as fire will not explode it, and it requires very little tampering compared with black powder.

I, for one, am very thankful for the invention of the Judson powder, and remain, Yours Truly,

JOS. MCGILLIVRAY,
Supt. Dardanelles Con. G. M. Co.

NORTH SAN JUAN, May 18th, 1878.

MESSRS. BANDMAN, NIELSEN & Co., San Francisco:

Gentlemen:—In reply to your inquiry as to our opinion of the merits of Judson powder: In conversation with our Superintendent he says he is satisfied that Judson powder is the best agent that has yet been introduced for blasting hard cement gravel, and from what we have used of it we are rather prepossessed in its favor. We have up to the present time used about 1,000 cases. In April we fired a blast of 260 cases; the main drift was 70 feet long; the cross drift, or T, as it is called, 100 feet; the bank 125 feet high, 100 feet of it blue cement, and the most of this of the very hardest kind. When we commenced washing on it we were rather disappointed in the execution the powder had done. Still, after we washed the ground away and seen the character of it, we were not surprised that the result was not better. There should have been 300 cases in it instead of 260. Your agent, Mr. White, saw part of the blast, and from him you can learn something of the nature of the ground that the blast was in. Last Monday we fired a blast of 154 cases, which did excellent work. We are now running a drift that will take about 170 cases. We have lately noticed one very good quality of the powder, viz: it works *down* as well as up. This is quite an advantage, for in black powder blasting, if the drifts are not about on the bedrock when the gravel is hard, the bottom is nearly always left, and this we have to blast up. Every Judson powder blast we have put off has cleaned right out to the bottom or bedrock; the T in the last blast was all of six feet from the bedrock. We are satisfied that in hard cement, with an equal show, Judson powder will break more ground and pulverize it better than the black powder will.

We think you can rely on us to use a large amount of Judson powder, unless something turns up to change our present opinion. Hoping this may be of some satisfaction to you, we are, Yours Respectfully,

AMERICAN MINING CO.,
Per J. H. Brown, Secretary.

Office of the North Bloomfield Gravel Mining Co., No. 320 Sansome St.,
SAN FRANCISCO, May 23, 1878.

MESSRS. BANDMAN, NIELSEN & Co., San Francisco:

Dear Sirs:—In answer to your favor of 24th inst. asking my opinion of the comparative merits of Judson and ordinary gunpowder as blasting explosives, I have to say that in bank blasts in hydraulic mining, where the gravel is hard and thoroughly cemented, I regard the Judson powder at the same price as being very much the better of the two. In quite soft gravel the difference is not so great, but still I think rather in favor of the Judson.

In very hard gravel it is desirable not only to shatter the entire mass above the powder drifts, but also to break the gravel into the smallest separate particles practicable. This the Judson does very much more effectually than the black powder, thus not only saving or reducing the further expense of breaking up the lumps of cemented gravel by sledges, but also conducing to an increased yield of gold in the sluices. In this respect I regard the introduction of Judson powder as being of much benefit and economy to the hydraulic mining interest. In blasting in large excavations, such as railroad cuttings, etc., the Judson powder will do better work than any explosive with which I am acquainted, for the reasons above given.

Very Respectfully, HAMILTON SMITH, JR., C. E., Vice-President.

Milton Mining and Water Co.,
Nevada County, Cal.

FRENCH CORRAL, July 23d, 1878.

MESSRS. BANOMAN, NIELSEN & Co., Gen. Agents Giant Powder Co:

Dear Sirs:—Yours of the 19th inst. at hand. We have been using the Judson powder since its first introduction, and find it superior to the common blasting powder. In our hard cement it pulverizes it better and lessens the expense of working it by hand. The black common blasting powder breaking it (the cement) in large bodies which had to be pounded and broken up by hand, in order to make it small enough to be moved by the water and run into the sluices below. The Judson shivers or pulverizes the cement better and it needs less hand-work to pass it into the sluices. With the use of the Judson we catch a larger percentage of our amalgam at the upper end of the sluices, showing conclusively that the cement is better pulverized and more easily washed. In the bank the Judson will break equally as much bank and probably more (equal quantities). I am of the opinion that the great advantage of the Judson over the black powder in back blasting is the manner that it works to the bank, crushing it better and finer than the other. I remain,

Yours truly, V. G. BELL, Sup't.

Important to Manufacturers.

We publish the following extract, believing that the information it contains will prove of material benefit to many business men who will read the facts therein given:

It is customary with manufacturers in England and France to testify their faith in the merits of their own wares by the use of a "TRADE-MARK;" and in all their business communications with the trade and the public to give to it the character and quality of a guarantee of the article to which it is attached.

The advantages derived from such a practice are:

First. The interest of the manufacturer continues to be identified with the character of his wares from the moment they are first placed on the market until they are worn out; and he is always in a position to regulate the conditions of their sale, and to dictate his own prices, both as between himself and the jobbing or commission merchant, and the retail trade.

Second. The best class of the retail trade at first objects to selling goods that bear a fixed mark, for the reason that competition very soon reduces the profits on goods that are widely known; and hence the almost universal practice, with responsible retail dealers in every branch of trade, is to have goods stamped with their own names, and thus, in some measure, protect themselves in the matter of price, and secure an additional profit on their own gnaranty.

Third. The best class of manufacturers and the best class of retail dealers are thus immediately brought into antagonistic business relations, and the antagonism continues until the manufacturer appeals directly to the consumer, asking him to demand his wares of the retail dealer in preference to any other—of course furnishing the reasons for such preference. The retail dealer for a while makes the best resistance he can; but wide newspaper publicity forces him at last to yield—he is forced to respect the demand of the consumer; and finally the reluctant dealer of yesterday becomes the most enterprising merchant of to-day, and he, too, advertises that he has a full line of the popular brand, and is prepared to sell at close prices. Newspaper advertising, in the thoroughness, promptness and completeness with which it does its work, has solved the problem; educating the consumer to ask for what he wants, and to recognize it when he sees it. This is one of the miracles performed by the modern newspaper press in the economy of the world's industry.

Fourth. The absence of a trade-mark reduces the manufacturer to a mere workman for the seller. It matters not how long his goods have been in use by the public; if they are not known he is compelled to meet competition of every kind and is always in a position to be undersold by rivals. Necessity occasionally may force such a manufacturer in order to get ready money to make an extra concession in price; you must make a similar concession or have the sale of your goods greatly delayed. If another rival fails entirely, and his goods are offered at auction, the auction price determines the market value for the time being, and in a country where there are so many failures as in ours, experience has shown that in nine cases out of every ten the auctioneer becomes at one time or another the final salesman for the manufacturer who has failed to protect himself by a trade-mark.

Fifth. Manufacturers who make popular trade-marked goods are, too, sometimes embarrassed, and their wares, also, are offered at forced sales; but the trade have a strong interest in maintaining prices on such goods, and hence ready buyers are always found at a small reduction from former prices, and the trade-mark, which was at first an obstacle to their introduction by the best trade, becomes the very basis for their permanent prosperity.

The Joseph Rodgers & Sons' cutlery is as unique an illustration as it is good of the value of a trade mark. Joseph Rodgers was simply a retail dealer in England. He ordered what cutlery he wanted made with his own name, and thoroughly advertised his wares. The Sheffield makers, noticing his success, paid him a large sum for the exclusive right to the use of his name for their own trade-mark; and thus arose the most popular brand of cutlery in the world. And while it is to-day 50 per cent. dearer than similar goods made at Beaver Falls or in Connecticut, and pays a U. S. government duty of from 30 to 50 per cent., and the usual expenses incident to the trade in this country, still it holds its place and continues to testify to the importance of using a trade-mark and making it as widely known as possible.

A few years since Congress amended our laws so as to issue patents and give more definite protection to manufacturers throughout the United States who register their trade-marks. Also, provisions were made for registering labels in a more secure form than issuing patents for trade-marks. The result is that during the past year or two business has greatly increased in registering trade-marks. So far as we have learned, every applicant for a trade-mark has not only been well pleased with their patent, but in most instances greatly profited.

Manufacturers on the Pacific Coast will do well to seek further information on this subject, and apply for their patents through DEWEY & Co., patent agents, No. 202 Sansome street, San Francisco.

Woodward's Gardens were never more attractive than at present. Besides three lions already mentioned, six monster living alligators, several iguanas and a boa-constrictor have just been added. New stars are constantly engaged for the Pavilion exercises. Rates of admission as usual.

EXAMINE the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.94. Lewis C. Grover, President; L. Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

Signal Service Meteorological Report.

Week Ending August 6, 1878.

HIGHEST AND LOWEST BAROMETER.

July 31	Aug 1	Aug 2	Aug 3	Aug 4	Aug 5	Aug 6
29.94	29.99	30.00	29.97	29.97	29.99	29.94
29.88	29.93	29.92	29.91	29.93	29.92	29.90

MAXIMUM AND MINIMUM THERMOMETER.

60	61	63.5	62	63	66	65
53	53	53	54	54	54	53

MEAN DAILY HUMIDITY.

81.3	79.7	79	81.7	77	81.3	71.3

PREVAILING WIND.

SW	SW	SW	SW	SW	W	SW

WIND—MILES TRAVELED.

281	263	255	278	389	402	286

STATE OF WEATHER.

Clou'y	Fair.	Fair.	Fair.	Clear.	Clear.	Clear

RAINFALL IN TWENTY-FOUR HOURS.

Total rain during the season, from July 1, 1878, .01 in.

METALS.

[WHOLESALE.

WEDNESDAY M., August 7, 1878.

IRON.—			
American Pig, ton	28 00	@30	00
Scotch Pig, ton	28 00	@30	00
White Pig, ton	28 00	@—	—
Oregon Pig, ton	—	@—	—
Refined Bar	2½	@	3
Horse Shoes, keg	5 00	@—	—
Nail Rod	—	@	7
Norway, Oval	—	@	7
COPPER.—			
Sheathing, lb	34	@	35
Sheathing, Yellow	21	@	
Sheathing, Old Yellow	12	@	
Composition Nails	24	@—	
Composition Bolts	24	@—	
STEEL.—			
English Cast, lb	13	@	14
Anderson & Woods, ordinary sizes	15	@—	—
Drill	15	@—	—
Flat Bar	14	@	19
Plow Steel	8½	@	12½
TIN PLATES.—			
10x14 I C Charcoal	7 50	@	8 50
Sanca Tin	23	@—	24
Australian	17	@	17½
ZINC.—			
By the Cask	9	@—	—
Zinc, Sheet 7x3 ft, 7 to 10, lb	9	@—	10
7x3 ft, 11 to 14	10	@—	—
8x4 ft, 8 to 10	11	@—	—
8x4 ft, 11 to 10	11	@—	—
NAILS.—			
Assorted sizes	3 15	@3	25

LEATHER.

[WHOLESALE.]

WEDNESDAY M., August 7, 1878.

Sole Leather, heavy, lb	22	@	23
Light	20	@	24
Jobbing, 8 Kil, doz	48 00	@50	60
11 to 13 Kil	65 00	@76	00
14 to 19 Kil	80 00	@90	00
Second Choice, 11 to 16 Kil	55 00	@70	00
Cornellian, 12 to 16 Kil	67 00	@67	00
Females, 12 to 13 Kil	63 00	@67	00
14 to 16 Kil	71 00	@76	00
Simon Ultmo, Females, 12 to 13 Kil	58 00	@62	50
14 to 15 Kil	66 00	@70	00
16 to 17 Kil	72 00	@74	00
Simon, 18 Kil	61 00	@63	00
20 Kil	65 00	@67	00
24 Kil	72 00	@74	00
Robert Calf, 7 and 9 Kil	35 00	@40	00
Kips, French, lb	1 00	@ 1	35
Cal. doz	40 00	@60	00
French Sheep, all colors	8 00	@15	00
Eastern Calf for Backs, lb	1 00	@ 1	25
Sheep Roans for Topping, all colors, doz	9 00	@13	00
For Linings	5 50	@10	5
Cal. Russet Sheep Linings	1 75	@ 4	50
Boot Legs, French Calf, pair	4 00	@—	—
Good French Calf	4 00	@ 4	75
Best Jodot Calf	5 00	@ 5	25
Leather, Harness, lb	35	@	38
Fair Bridle, doz	48 00	@72	00
Skirting, lb	33	@	37
Welt, doz	30 00	@50	00
Buff, lb	18	@	20
Wax Side	17	@	18

LUMBER.

WEDNESDAY M., August 7, 1878.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE. RETAIL PRICE.	
Rough, M	13 00	Rough, M	18 00
Refuse	9 00	Fencing	18 00
Clear	23 00	Flooring and Step	28 00
Clear Refuse	13 00	Narrow	30 00
Rustic	23 50	2d quality	20 00
Refuse	18 00	Laths	3 50
Surfaced	20 00	Furring, lineal ft	¾
Refuse	14 00	**REDWOOD. RETAIL PRICE.**	
Flooring	20 00	Rough, M	18 00
Refuse	12 00	Refuse	14 00
Beaded Flooring	23 00	Pickets, Rough	15 00
Refuse	13 00	Polnted	16 00
Half-inch Siding	16 00	Fancy	22 50
Refuse	14 00	Siding	20 50
Half-inch Surfaced	20 00	Surfaced & Long Beaded	20 00
Refuse	14 00	Flooring	30 00
Half-inch Battens	16 00	Refuse	22 50
Pickets, Rough	11 00	Half-inch Surfaced	30 00
Rough, Pointed	12 50	Rustic, No. 1	30 00
Fancy, Pointed	18 00	Battens, lineal ft	
Shingles	1 75	Shincles, M	2 00

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by SUTRO & Co.]

SAN FRANCISCO, August 7, 3 P. M.

LEGAL TENDERS in S. F., 11 A.M., 99⅞@99.90. SILVER, 1⅛@1¼. GOLD in New York, 100⅛.

GOLD BARS, 890@910. SILVER BARS, 8@15 ₱ cent. discount.

EXCHANGE on New York, ⅛; on London bankers, 49@49¼. Commercial, 50; Paris, five francs ₱ dollar; Mexican dollars, 94@95.

LONDON Consols, 95⅝; Bonds, 108¼.

QUICKSILVER in S. F., by the flask, ₱ lb, 42@42½c.

MODEL MAKER AND MACHINIST.—I. A. Heald, No 514 Commercial St., San Francisco, (fourth floor).

SUSPENDED
WIRE ROPE TRAMWAYS.

This system of transport is peculiarly adapted for the carriage of minerals over rough countries. Heavy gradients and long spans easily overcome, and cheaper than by any ordinary means.

Transmission of Power by Wire Ropes.

The power of water or steam can by this means be carried for long distances, with great economy.

For estimates and practical information apply to

JOHN SAMSON, Engineer,
No. 743 Pine Street, San Francisco, Cal.

Pocket Map of California and Nevada.

Compiled from the latest authentic sources, by Chas. Drayton Gibbs, C. E. This map comprises information obtained from the U. S. Coast and Land, Whitney's State Geological, and Railroad Surveys; and from the results of explorations made by R. S. Williamson, U. S. A., Henry Degroot, C. D. Gibbs and others. The scale is 18 miles to 1 inch. It gives the Judicial and U. S. Land Districts. It distinguishes the Townships and their subdivisions; the County Seats; The Military Posts; the Railroads built and proposed, and the limits of some of them; the occurrence of gold, silver, copper, quicksilver, tin, coal and oil. It has a section showing the hights of the principal mountains. The boundaries are clear and unmistakable, and the print good. 1878. Sold by DEWEY & CO. Price, postpaid, $2; to subscribers of this journal, until further notice, $1.

Take the paper that stands by your interests.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Excelsior Silver Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Potosi District, Lincoln County, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the Sixteenth day of July, 1878, an assessment of Twenty-five Cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary at the office of the Company, 304 Post street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 20th day of August, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, the sixth day of September, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

FRANCIS P. DEVINE, Sec'y.

Office, 304 Post street, San Francisco, Cal.

Mariposa Land & Mining Company of California.—Location of principal place of business, San Francisco, California. Location of works, Mariposa County, California.

Notice is hereby given that at a meeting of the Board of Directors, held on the Tenth day of July, 1878, an assessment (No. 14,) of One Dollar per share was levied upon the capital stock of the corporation, payable immediately in U. S. currency, to the Secretary, at the office of the company, Room 33, Nevada Block, No 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary, at the office No. 9 Nassau street, New York City, N. Y.

Any stock upon which this assessment shall remain unpaid on the Twelfth day of August, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the Ninth day of September, 1878, to pay the delinquent assessment, together with costs of advertising and the expenses of sale. By order of the Directors, LEANDER LEAVITT, Sec'y.

Office, Room 33, Nevada Block, 309 Montgomery street, San Francisco, Cal.

Seaton Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Drytown Mining District, Amador County, California.

NOTICE.—There is delinquent upon the following described stock, on account of Assessment (No. 11) levied on the 26th day of June, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Thompson, W., Jr.	72	15	$1125 00
Thompson, W., Jr.	79	10	750 00

And in accordance with law and an order of the Board of Directors, made on the twenty-sixth day of June, 1878, so many shares of each parcel of such stock as may be necessary will be sold at public auction, at the office of the Company, Room No. 58 Nevada Block, northwest corner Pine and Montgomery streets, San Francisco, California, on Wednesday, the twenty-first day of August, 1878, at the hour of one o'clock P. M. of said day, to pay said delinquent assessments thereon, together with costs of advertising and expenses of the sale.

JOEL F. LIGHTNER, Sec'y.

Office, Room No. 58 Nevada Block, Northwest corner Pine and Montgomery streets, San Francisco, California.

Office South Comstock Gold and Silver Mining Company. Notice.—The annual meeting of the stockholders of the South Comstock Gold and Silver Mining Company, for the election of Trustees and the transaction of such other business as may be presented, will be held on Monday, the 19th day of August, 1878, at two o'clock P. M. of that day, at the office of the Company. Transfer books will be closed on Saturday, August 10th, 1878, at the hour of 12 M. of that day.

J. M. RUFFINGTON, Secretary.

Office—Rooms 3 and 4, second floor, No. 309 California street, over Actna Insurance office.

Summit Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the Seventeenth day of July, A. D., 1878, an assessment, (No. 4,) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of said Company.

Any stock upon which this assessment shall remain unpaid on the 19th day of August, A. D., 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the Tenth day of September, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

J. W CLARK, Sec'y.

Office, No. 318 Pine Street, San Francisco, Cal.

Telegraph Copper and Silver Mining Company.—Principal place of business, City and County of San Francisco, California. Location of works, Gopher Mining District, Calaveras County, State of California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 17th day of July, 1878, an assessment of three (3) cents per share was levied upon the capital stock of the Corporation, payable immediately in United States gold coin, to the Secretary, at his office, Room 2, 528 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 19th day of August, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the Ninth (9th) day of September, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

I. T. MILLIKEN, Sec'y.

Office, Room 2, 528 California street, San Francisco, Cal.

Vigorit Powder Company.—Location of works, California City, Marin County, State of California. Location of principal place of business, City and County of San Francisco, California.

Notice is hereby given that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 1) of fifty cents (50c.) per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, Room No. 1, 109 California street, in the City and County of San Francisco, California.

Any stock upon which this assessment shall remain unpaid on Thursday, the twelfth day of September, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the second day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expense of sale.

JAS. W. BAKER, Sec'y.

Office, 109 California street, Room No. 1, City and County of San Francisco, California.

EVERY new subscriber who does not receive the paper and every old subscriber not credited on the label within two weeks after payimg for this paper, should write personally to the publishers without delay, to secure proper credit. This is necessary to protect us and subscribers against the acts and mistakes of others.

Iron and Machine Works.

THOS. PENOERGAST. HENRY S. SMITH.

ÆTNA IRON WORKS,

MANUFACTURERS OF

IRON CASTINGS

and **MACHINERY**

OF ALL KINDS.

Fremont Street, Bet. Howard and Folsom,

SAN FRANCISCO.

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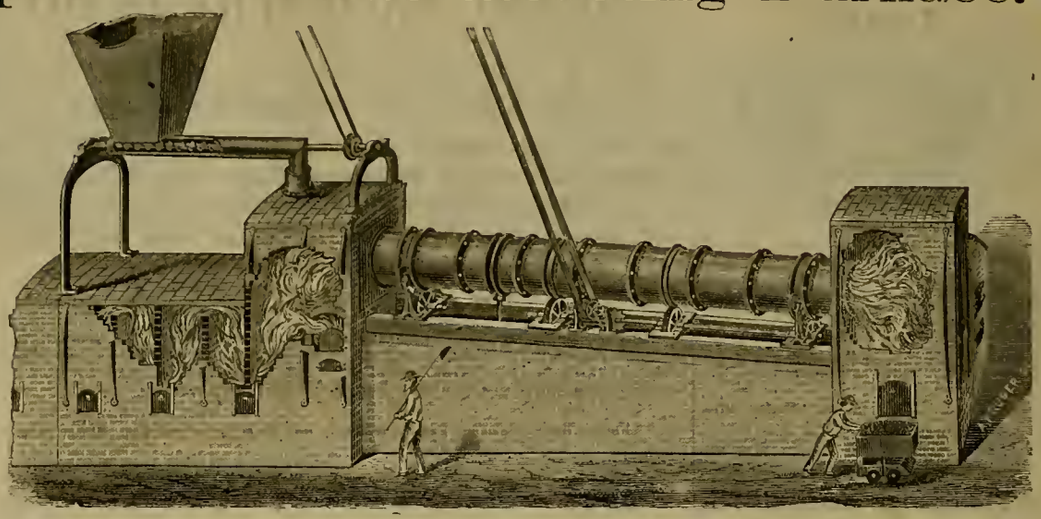

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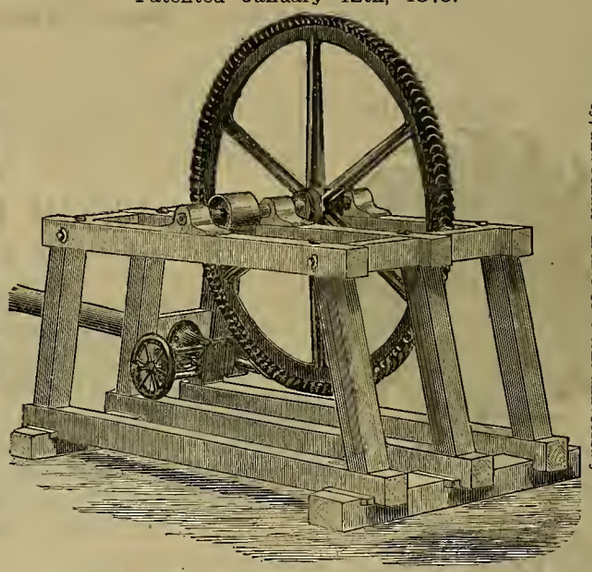

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The Mining Debris Trial.

[Continued from Last Week.]

Louis Janin, mining engineer, and resident of California since 1851, thought the only proper way to work these mines was by the hydraulic process. Observation had led him to believe that the inhabitants of the mines in this State were more prosperous, generally, than in any other mining district with which he was acquainted. He believed that the stoppage of the mines would not prevent the flow of sediment. Thought Mr. Allardt's estimates of solid matter, and amount of water passing the railroad bridge, wrong. Prof. Thos. Price, chemist and engineer, estimated the total yield of gold, since 1849, at $1,200,000,000. During late years, the yield has been about 19,000,000 annually. Hydraulic mines would produce about $14,000,000 this year. Witness said there was no poison contained in the debris on Bear river lands, and thought the water flowing there was good for irrigating land. Had visited the land of plaintiff, and saw no signs of vegetation having been poisoned. He believed hydraulic mining had been profitable, but some claims had not paid yet, owing to the great expense in opening them.

A. F. Williams, of Oakland, had been engaged in mining about 27 years. He visited the land owned by plaintiff in September, 1876, and twice within the past month. He went to view the land and crops. Several gentlemen were with him. At his last visit did not notice much difference between the condition of the land in 1876 and now. Several points on the land were designated by witness, where they had dug down and measured the sediment, which he stated to be from three inches to one and one-half or two feet in depth. He couldnot see any material difference in the growth of weeds on the land covered by sediment and that not covered. On ground covered the deepest with sediment, they saw a light crop of barley. In a field, south and west of Keyes' house, he found a crop of corn growing on ground covered with sediment about one foot deep. There were many well-defined ears on the stalks. The corn was here produced and shown to the court; one stalk was measured, and found to be nine feet six inches long, and the ears, two in number, had the appearance of well-defined ears in the milk. Witness said these specimens were a fair sample of the corn in that field. He went up to the bridge, and saw a field of corn there, on ground that was covered with sediment, about three feet deep. That corn was as good as any he had seen. He thought that if the mines were stopped, the debris would continue to flow. He said if the mines continued work, the dams or dumps would be increased in size, and afford more protection by keeping the tailings back. Witness, on cross-examination, said he owned interests in several hydraulic mines—one located at Smartsville. Said he did not think the mine was filling up the river, but some fine sediment might come down this far. He had not furnished witnesses money in this case, and he came as a witness by subpœna. He did not go down to Keyes' land, last Sunday, to make his damages look light. He went to gain information, and see the growing crops, that he could testify intelligently.

Wm. Campbell, of Lake Tahoe, formerly resident of Bear river, near Johnson's crossing, visited the land of plaintiff, last Sunday. The land was covered by sediment, to the depth of 12 to 18 inches. Saw growing crops on this sedimentary land. Did not see any grain or corn growing on other than sedimentary land. He considered the corn, potato, and bean crops good. The corn here exhibited is a fair sample. Had not seen any that looked better. Considered the land worth double now, for growing corn, potatoes, and beans, which it was before being covered with sediment. Did not know if it was any better for small grain or not. The corn, potatoes, beans, and fruit, growing there, were as good as in other places. He saw a field of corn, just up, which looked well. Did not think a man would plant crops, knowing it would not produce.

W. A. Findley, David N. Jones, J. W. Laymance, E. J. Tompkins, Josiah Dodge, Joseph Perrine, George W. Smith, Lewis Posey, A. M. Pitts and James McCarger, all gave testimony pointing strongly to the fact that land was improved rather than injured by the sediment.

J. P. Pierce, of Santa Clara, had formerly lived at Smartsville about nine years. Witness said the hydraulic mines at Smartsville had averaged from $50,000 to $300,000 per acre. There were about 2,000 inhabitants at these and vicinity, who depended upon the work and product of the mines for a living. The yield of gold at these mines, Smartsville and Timbuctoo, had been as much as $12,000,000, and they were no more than half worked out now. Witness said his company at Smartsville was a member of the organization to contest this suit, and had paid an assessment of $1,300 to the President of the organization. The assessment was levied on the assessed valuation of their property.

He gave a description of their ditch and mines at Smartsville and their farm of 1,700 acres near there, and said they irrigated about 300 acres of it with water from their ditch. It would not pay to work their claims by drifting.

Jasper N. Muns and L. Harding testified to the usefulness of sediment on farm lands.

A. B. Brady, among other things, said that to stop mining in Nevada county would almost entirely desolate the present thriving towns.

James O'Brien, miner and farmer, testified that he was a member of the Hydraulic Miners' Association, formed two years ago. His company paid money to the Association. Over 100 claims paid in the same way. He did not consider the fund a means for corruption, but for mutual protection. Ground that gave but two cents per cubic yard had been worked by him on a paying basis. His income from his hydraulic claims had been as much as $30,000 per annum.

Richard Abby, President of the Spring Valley Water and Mining Company, testified:

They had 110 men employed in various ways. He gave the working expenses of their mines, yield of gold, amount paid in by stockholders, and said they had declared one dividend of $200,000, and had declared one this year of $60,000. Could not say how much had been declared in all dividends. Witness said he was a stockholder in the Milton mine, located on San Joaquin ridge. That mine had also declared large dividends.

T. W. Balch, the next witness, said he was the owner of the Little York mining claims. Bought them from an English company over one year ago. Said in working all their claims they dumped the tailings on land owned by them. When he came in possession of them, most of the top dirt had been washed off. On cross-question, he said he paid $100,000 for the claims.

A large number of deeds and patents to land and claims were put in evidence.

Geo. S. Powell, Superintendent of the Bird's-eye claims, estimated the gold taken out of these claims at between $30,000,000 and $40,000,000. The balance of his evidence was corroborative.

The evidence of Wm. Roblin, J. L. Gould, Hiram Searls, Thomas Patterson, and of two mining engineers, E. C. Wren and Natono Westcoatt, was mainly corroborative. The last-named said that 20,000 acres was the most that could be overflowed under any circumstances in Bear River valley. Said the farming population of the valley was no more than 75 or 100. Was of the opinion that a good system of levees would protect the land at all times.

August 9th the defendants closed their evidence.

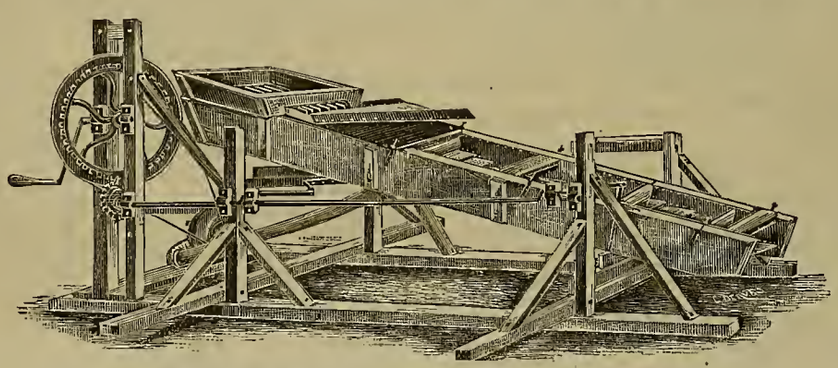
Joseph Johnson, S. D. Woods, Frank Kirshner, B. F. Dam, W. L. Ousley, B. D. Gray, David Hevilbart, A. K. Baker and J. D. Lewis were called by plaintiffs to give rebuttal testimony, most of it concerning the effects of debris on farming lands.

Thomas B. Brewer and J. H. Keyes were each recalled to correct some points in their previous evidence, when counsel for plaintiff said their evidence was all in.

Judge Keyser adjourned the Court for the term. The evidence is to be printed. In about 60 days from adjournment the case will be argued.

The Russel Patent Amalgamator and Gold Saver.

We give an illustration of the machine which is at present at work on the auriferous sands of the ocean beach at the "Combination" claim. It was invented by E. F. Russel, an old and experienced miner of this city, and interested parties have a good opportunity of seeing it in practical operation.



RUSSEL'S PATENT AMALGAMATOR AND GOLD SAVER.

The operation will, with the aid of the cut, be evident. It consists of a sluice about 10 feet long and two feet wide. It is fed by a hopper, at whose bottom is either a bar or perforated iron screen, according to the nature of the ore worked, *i. e.*, gravel or sand. At present the perforated screen is in operation. By an inclined sluice at the bottom of the hopper, the coarse material, containing no gold, is discharged to the side of the machine, and so does not enter the amalgamating sluice.

The sluice proper is divided into four compartments, each of which has a fall of one inch to the foot. At about the middle of each compartment are placed three riffles, which are formed by indenting the copper plate with which the sluice is lined to the depth of about an inch, forming three troughs in the form of horizontal, triangular prisms, whose bottoms slide backwards and thus have a tendency to retain gold contained in the sand which passes into them. At the edge of each of these compartments or inclined planes, is placed a trough which contains quicksilver at the bottom. The quicksilver is protected by a grating of stout iron wire from the action of pebbles, etc., which would carry it off mechanically if this were not done. Hanging from a stout iron wire over the little stream which dashes over the edge of the compartment, is a curved plate of amalgamated copper, which sweeps the surface of the water, and is intended to save the "float gold," which would otherwise be lost. That it performs its office at the beach the amalgam which adheres to it proves beyond doubt. The whole sluice rests upon a pair of sliding bars, and is given an oscillating motion similar to that which the miner gives to his "pan," by means of a system of cranks and levers put in motion by a system of cog wheels and crank handle, as shown in the figure. The machine is so arranged that this motion may be imparted either by hand, by steam, horse or water power, or, as they are talking of doing at the beach, by means of a windmill. The whole sluice, it is necessary to add, is lined by amalgamated copper plates, so that wherever the gold lodges it will be attacked and retained. The inventor claims that with two (miner's) inches of water, he can put through 30 tons of ore in 24 hours.

The peculiar advantages claimed for the machine are, first, the small amount of water with which it can be run. It is claimed that with the same amount of water it will put through four times as much sand as any other machine. Second, the reciprocating motion is a great advantage, as it causes such an agitation of the material as is favorable to the settling and amalgamation of the gold. Third, the shape of the riffles, which is favorable to the retention of the gold. Fourth, the grating over the mercury boxes, which prevents the "flouring" and consequent loss of mercury. Fifth, the hanging plates to catch the "float gold." Sixth, the formation of compartments, which allows the fall of material in a sheet upon the amalgamated copper plates, which is also favorable to amalgamation. There are in all 21 receptacles for quicksilver, besides the hanging plates.

The machine, as we just stated, is in operation at present on the "Combination" claim, and seems to give satisfaction to all parties concerned, although working with a bad supply of water. The results of the clean-up are awaited with some curiosity by all concerned. We can recommend this machine as worthy the investigation of all interested in placer mining, as it evidently combines the advantages of most of the methods hitherto in use. It can be seen at work upon the beach, or at the office of the agents, Kluit & Morizio, room 24, Safe Deposit Building, S. F.

Edison Again.—Edison has ascertained that electric and magnetic currents are stronger where a lode exists than where nothing but country rock abounds, and where the ore body is large and rich they are found to be the strongest and to vary with the size and richness of the vein. He is confident that he can manufacture instruments with which, by careful experiments and after minute comparison of results, he can tell not only the richness and extent of ore bodies beneath the surface in fissure veins, but also the kind of metal which they contain. The Gold Hill *News* is our authority for the above.

Oil Well Packer.—James C. Thompson, of Barnhart's Mills, Pa., has patented an improved vacuum packer for oil wells, for shutting off communication between the upper strata of rock and the oil-bearing rock, and it consists of three apertured metallic disks placed on the well tubing, and arranged to receive the vacuum tube, which, by its weight, compresses a rubber packing disk vertically, so as to expand it laterally to fill the bore of the well.

The subject of building a narrow-gauge railroad from Virginia City to Reno is being again agitated. Surveys show that that town can be reached in 30 miles by a practical route.

Another giant powder cap has been played with, and another victim is the result; this time a boy about six years old; wounded in the breast, perhaps fatally.

Rook sharps from that vicinity pronounce the Bodie the richest gold mine in the world. It has a vein five inches wide which is nearly solid gold.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—Eds

The Wood-Gas Process.

An Open Letter to Mr. ' « '.

Dear Sir:—In the course of a conversation with our mutual friend, Mr. ——, we discussed some points which are likely to interest yourself. Our topics were the general character of the wood-gas process, the construction and manipulation of wood-gas apparatus; the illuminating qualities of the product, the cost of its manufacture; and, finally, its special advantages in cities which, like your own, are far removed from English, North American, and Australian collieries.

In alluding to these points, it is neither necessary nor appropriate to adopt the abstruse form of a purely technical essay; but every salient consideration, whether technical or commonplace, which should be regarded by those who seek an advantageous investment, will give tone to what I aim to make a truthful and intelligible abstract of ascertained facts.

Prof. Pettenkofer first proposed wood gas as a means of illumination in the year 1848. To Mr. L. A. Riedinger, however, is due so many improvements in this valuable industry, that he is fairly entitled to divide its honors with the original discoverer.

Among the European towns lighted with wood gas are Bayreuth, Coburg, Wurtzburg, Darmstadt, Kempten, Regensburg, Aarau, Landshut, Zurich, Giessen, St. Gallen, Ulm, Erlangen, Luzerne, Salzburg, Innspruck, Chur, Passau, Rentlingen, Heilbronn, Trient, Solothurn, Augshurg, Munich, etc. In some of these, the product was enriched by gas from hoghead shale, grease, etc.; while in others the quality of unenriched gas from the firs of the great forest of Hagenau, was found satisfactory to the consumer. About 1854, Mr. J. C. Cresson, the engineer of the Philadelphia Gas Works, had his attention called to the subject by one Breisach, who was familiar with the German practice.

In Mr. Cresson's annual report for 1854, to the managers of the Philadelphia Gas Trust, he states, "as a matter of official record, that a cord of ordinary fire wood will furnish nearly twice as much illuminating material as is obtained from the best Pittsburg coal." This year he carbonized 50 cords of wood.

In his next report, for 1855, he reports 830 cords of wood as carbonized during the year, and gives the yield of first-rate gas per cord of 128 cubic feet, at 12,000 cubic feet from common shore pine; and 15,000 cubic feet from dry oak. During 1856, 644 cords of wood were carbonized.

The subsequent abandonment of this mode of lighting, arose solely from a development of the Pennsylvania collieries and coal transport, which largely cheapened the cost of bituminous coals, as laid down in his sheds, and rendered them a cheaper gas material than the various woods.

Just before the war of the Rebellion, several of the southern cities of the United States were lighted with wood gas; among them, Wilmington, N. C.; Charleston, S. C.; and Macon, Columbus, and Augusta, Ga.

I was, at the time, engineer of the Savannah, Ga., gas works, making about 100,000 cubic feet per day, from the coking coals of Lancashire, England, from which we were soon afterward deharred, by blockade of our port.

I at once adopted the more appropriate iron retorts, made the requisite changes in the ovens, and supplied this town, of 40,000 souls, during four years, with a wood gas, whose mellow splendor elicited the approval of the consumer; while its economy of manufacture sustained satisfactory dividends throughout those terrible years, and won me election to a directorship in the Savannah Gas Light company.

Apart from the experience thus obtained, in the manufacture of some 125,000,000 cubic feet of wood gas, I have since translated or collated the whole German practice, and built wood gas works at Red Bluff, Reno, and elsewhere.

You will see, from this necessary personal mention, that I advise you to adopt a mode of lighting with which I am familiar from individual practice, as well as from the comparison of the labors of others.

I.—General Character of the Process.

Generally speaking, the illuminating gases from wood and coal are similarly produced, each material being distilled, or carbonized, in close vessels called "retorts," which are brought to the required high temperature by the application of heat, which is afforded by a furnace exterior to the retorts, and transmitted through their enclosure to the material within.

The tarry vapors, oily products and acids of the crude wood gas are next separated, partly by cooling impact and washing, and finally by the chemical affinity existing between the hydrate of lime and that master-enemy of the illuminating value of wood gas, carbonic acid. Thus deprived of its entangled impurities, the gas is measured and stored, and ready for distribution to the public and private lights.

II.—Construction and Manipulation of Apparatus.

While the process is, as has been observed, substantially the same in both cases, wood gas demands a different proportioning of what apparatus it borrows from the coal gas manufacture, and certain appliances exclusively its own. Of the latter class is the "dry-room," wherein even freshly-felled wood may be brought to a state of perfect dryness. This feature, though absolutely unrecognized in the United States, and infrequent even in Germany, is necessary to a well-ordered gas-work.

No air-drying can satisfactorily strip the wood of moisture, the presence of which acts to chill the retorts below a proper temperature, to reduce both the volume and value of the gas product, to increase the quantity of lime required to remove carbonic acid, and to add 20% to the labor of the stoker, by compelling him to handle this proportionate weight of useless and obstructing water.

The wood is therefore prepared for the retorts, through the agency of the waste heat of the furnaces, hy drying for many hours at a temperature ranging from 150° to 200° Fahr., 60° to 95° centigrade.

Brought, then, in say 24 hours, to a state of dryness which even years of mere atmospheric exposure would fail to entirely effect, the wood is ready for the retort, which is a semi-cylindrical vessel with a length of four or five times its diameter, and is kept at a cherry-red heat.

After the wood is introduced, the retort-lid is luted on, and the evolution of gas instantly begins, with a speed almost like that of an explosion at first, which rapidly diminishes to the close of the charge.

Well-dried wood requires 60 minutes to work off, while damp wood is but imperfectly distilled in 80 minutes. The gases, vapors and entangled liquids which rush from the retort to and through the hydraulic main, are composed of some 50 different compounds of the original elements of the wood, as hydrogen, oxygen, nitrogen and carbon, the chemical names of which are only of interest to the laboratory student.

Popularly, then, we may call crude wood gas a mixture of

a. Wood tar	}	Liquids and
b. Wood vinegar	}	Vapors.
c. Carbonic acid	}	Gases.
d. Carburetted hydrogen	}	

Of these, we arrest the first three; and measure, store and apply the useful fourth.

After all the stress of drying, much steam is evolved from the union within the retort, of elementary oxygen and hydrogen: the water which results, dissolving the acetic acid and constituting its dilute form, wood vinegar.

Passing through the coolers, or so-called "condensers," the gas surrenders at its lowered temperature most of the tar and wood vinegar, which escape, through suitable overflows, to special receptacles.

These condensers are variously constructed:

1. As vertical tubes, radiating in air or in water.

2. As horizontal tubes, radiating in air or in water.

3. As "ventilating" or "flue" condensers, of the Kirkham and Wright system.

Vertical immersed tubes are preferable, where water is plentiful and cheap; otherwise, the "ventilating" type should be adopted.

The neophyte might suppose that this more cooling to atmospheric temperature would deposit *all* the liquid matter; but as an important and, until very recently, troublesome fact, much of it remains suspended as minute bubbles of which the pellicle is a liquid film, and the contents a true gas.

Halley's theory of this "vesicular" form of vapors, has led to the invention of the Pelouze and Audouin condenser, which discharges a multitude of fine jets against opposed surfaces, and thus ruptures the enclosure, just as we crush the shell of an egg when we throw it against a wall.

Certain mechanical features of my own have improved this beautifully philosophical instrument; and, after treatment hy it, vapors cannot exist at any temperature which is lower than the boiling points of the liquids which partially compose them. The indifference of the Californian quicksilver producers to the merits of this machine is unaccountable.

Having thus condensed the gas, first, hy simple cooling, and, second, hy mechanical impact, we proceed to take out any finely-divided wood ash which may have been carried over, the rest of the acetic acid, and some portion of the carbonic acid, in a capacious vertical cylinder known as the "scrubber."

In this vessel the gas passes upward to meet a downward flow of water, which eufilms the coke or twigs with which the scrubber is loaded from top to bottom.

The only impurity now remaining is carbonic acid, formed in the retort by the combination of part of the oxygen with part of the carbon of the original wood. But for its destructive effects upon the light-giving constituents, carbonic acid might be ignored by you, as it is, really, in many towns; but in your case, the lime necessary to arrest it costs less than the enricher necessary to counterbalance its destruction of light, and you must therefore use a set of lime-purifiers.

These are boxes of cast-iron, though purifiers of masonry or of wood are also used, carrying the hydrate of lime upon slotted trays of wood, and provided with movable sheet-iron covers, which enter a hydraulic joint.

I propose to give you three of these purifiers, each of which is seven feet square, and contains six horizontal tiers of the slotted lime trays.

These are connected to a rotary center valve, so chambered that two purifiers shall always be at work, and one out of action for recharging with lime. Each working box, then, contains about 300 square feet of trays, which will jointly receive the hydrate from 1,500 pounds of quicklime, equal to the thorough purification of about 40,000 cubic feet of gas.

The gas is now completed, and it only remains to measure it hy an ordinary station meter, and store it in the gasholder ready for sale.

The manipulation of the apparatus is so simple, that any one of average muscle and brain can attend to it after a few days' instruction.

The fires are to be carefully attended to. A given weight of dried wood is to be placed in the retorts 16 times during each complete day of 24 hours. The overflows, gauges and valves are to be kept clean, and a fresh charge of lime is to be turned to work as soon as the lime-water test shows that the gas begins to be a little foul at the outlet of the purifiers. These duties are simple enough on paper, but simpler still in the daily routine of work. It may be observed that the corrosive acids held in the crude gas are so diluted hy the attendant water, that the apparatus, other than the retorts and their settings, is next to imperishable; while the completed gas is almost perfectly neutral. One of the large retorts I propose will make 20,000 cubic feet of gas per day during its "lifetime" of 300 working days.

III.—Illuminating Value.

German experimenters say that wood gas gives one-fifth more light than coal gas, while Mr. Cresson says it is one-half better. Both these overstate the value of wood gas, or, at any rate, of the gas from such wood as you can procure.

As a fact, wood gas varies in quality according to the following conditions: The quality of the wood; the dryness of the wood; the character of the apparatus; the heat of the retorts.

The poorest wood gives say 10,000 cubic feet of 10-candle gas, per cord. Your wood, which is described as similar to our ash, will give 15,000 cubic feet of 12-candle gas.

The pitch pine of our Sierra Nevada gives 22,000 cubic feet of 18-candle gas; while the unequalled "light wood" of our southern Atlantic seaboard yields the great volume of 28,000 cubic feet, also, of 18-candle gas.

The residuary charcoal varies from 450 to 600 pounds per cord distilled, and is applied in conjunction with supplementary wood, as fuel to heat the retorts.

As a 12-candle gas is not likely to satisfy your consumers, some enricher must he added; and the most appropriate material will be the celebrated "Hartley shale" from Australia, 10% by weight of which will bring your cord yield up to 16,500 cubic feet of 18-candle gas.

IV.—Cost of Manufacture.

In calculating this subject, I have, after consultation with your associate here, taken the elements of cost at the following figures:

1. Gas sold per day (cubic feet)	18,000
2. Cost of wood used in retorts (per cord)	$5.00
3. Cost of wood used as supplementary fuel (per cord)	$0.60
4. Cost of lime for purification (per 100 pounds)	$1.00
5. Laborers' wages (per day)	$1.00
6. Manager's salary (per month)	$200.00
7. Superintendent's salary (per month)	$250.00
8. Cost of shale (per 100 pounds)	$3.25

Forty pounds of lime purify 1,000 cubic feet of gas; one cord of wood and 250 pounds of shale produce 16,500 cubic feet of gas; street leakage, 10%. One cord of wood is required as extra fuel for each two cords worked off in the retorts.

From these data we obtain

Monthly Cost of Manufacture—600,000 Cubic feet of 18-Candle Gas.

36 and 4-11 cords of wood in retorts, @$5	$ 218.18
9,091 lbs Hartley shale, @3½c	205.46
18 and 2-11 cords of wood in furnaces, @$6	109.09
24,000 lbs lime, @1c	240.00
120 days labor, @$1	120.00
Wear and tear	75.00
Clerk and Collector	100.00
Superintendent	200.00
Total, equal to $2.18 per 1,000 cubic feet,	$1,307.73

You may consider the allowances for salaries and incidentals too large; in which case you will, of course, do better than stated. In this, and every other estimate, you will find that I err on the safe side. If, then, you sell gas at $6 per 1,000 cubic feet, you will nett $1,900 per month; if at $6.50, $2,200; if at $7, nearly $2,500.

In other words, heavy as your investment is, it cannot fail to he largely remunerative, apart from the great economy, convenience, safety, and luxury which the municipality will reap as the result of your activity and enterprise. A sum equal to the city's present expenditure for coal oil, will make their streets, squares and public institutions one blaze of light.

V.—Local Advantages.

These are so manifest and important, that I need do no more than allude to them.

Beyond the cost of, say, 50 tons of shale, and of a couple of retorts with their appropriate fire goods, the current expenses of a year will circulate in the immediate neighborhood of your city, instead of being squandered among foreign collieries.

Your wood gas will carry none of that obstinate bisulphide of carbon which, it is stated, has enured to the injury of valuable hooks, archives and paintings in England.

Should your port of entry ever be blockaded, your home woods will still keep up an ample supply of tolerable gas to both public and private consumers.

The thousand and one technical arguments in favor of your adoption of wood gas, induce me, finally and as the result of over 25 years' labor, to assure you that it is, beyond all comparison, your most available method, from its superior compactness, simplicity, ease of management and certainly of results. It is, in your city, an untried one; but its calm and smokeless brilliancy is delighting a hundred other towns, and it has, therefore, passed entirely out of the catalogue of experiments. Coal gas answers your purpose as well, apart from the vital objection that its cost of production is considerably greater.

Respectfully, J. R. Smedberg,
Gas Engineer.

127 Beale street, S. F., Aug. 7th, 1878.

Forestry.—The Value of Catalpa.

Editors Press:—The testimony is cumulative, and comes from every quarter, as to the urgency that exists for the planting of forests in the United States to repair the waste occasioned hy reckless destruction, so as to provide timber for the inevitable wants of the future. Congress has appointed a commission, of which F. B. Hough, of Lowville, New York, is Chairman, to report on the whole subject of forests and forestry, timber demand and supply, and and its relations to the industries of the Nation. This is only following in the steps of older governments, where this important subject has been assiduously studied for generations. But the genius of Americans does not lead them to depend on governmental promptings and leadership, they being competent to project and carry out in their personal or co-operative capacity enterprises of the greatest moment.

Thus we have already many examples of individuals engaged in extensive tree planting, notable among which is that of the Messrs Landreth (the seedsmen of cosmopolitan fame), of Bristol, Pennsylvania, who already have 5,000 acres on the Rappahanock appropriated to this industry. Scores of Californians have devoted large areas to the growth of the eucalyptus. The transcontinental railways have also given attention to this subject, some of them appointing foresters and promoting sylvi-culture along their lines.

The veteran car-builder, Mr. E. E. Barney, of Dayton, Ohio, has done a good service to the country hy collecting and publishing facts as to the great value of the catalpa tree (*C. Bignonioides* and the importance of its extensive cultivation in groves.

Some of the facts he presents are truly startling. Thus, he says: "There cannot he less than 200,000,000 ties in the various railroads in the United States. At 200 ties per acre, it has required 1,000,000 acres of well-timbered land to furnish them. As the average life of ties is hardly more than five years, it requires 200,000 acres of land each year to keep up the supply. Three times that amount is required each year to furnish the lumber used in bridges and rolling stock. So that the lumber on 1,000,000 acres of land is required every year to supply the wants of our railroads for all purposes.

"Samples of catalpa, taken at random, indicate that this wood will hear the pressure to which it is subjected when used as railroad ties. Two catalpa railroad ties have been in use near our office over four years, and 12 others for the last five months. All hold their spikes well and show no indication of mashing more than the oak on each side of them, and over both of which heavily-loaded trains pass almost hourly.

"A catalpa gate-post was cut for fire wood and found in fair condition after doing service for nearly a century. Col. Cockrum has known it in use, without stain of decay, for fifty years."

The rapidity of the growth of catalpa in youth is astonishing, and it seems to grow equally well in any soil. It will grow from Iowa in the north to Florida in the south. The propagation is very simple: by scattering the seed on land either recently cleared or only partially so: or by raising the plants in a seed bed and setting them out. Catalpa also takes a fine polish and is an admirable ornamental cabinet wood. It is quite time that farmers should he wise enough to plant trees, not only enough for their own needs and that of their less provident neighbors, but also to supply the wants of our numerous railroads.

As one method of promoting timber culture, I suggest the formation of

Forest Corporations.

As it requires more than the average life of a man, beginning, say, at 25 years old, to harvest a timber crop from his own planting of seed, it would seem best for this work to be done by forest corporations. In every neighborhood, men could readily select areas suitable for planting groves and obtain them at minimum prices. They could also procure labor from the members of the corporation, at the lowest rates, to attend to the culture of the trees. Another advantage of having such an enterprise carried on by distant capitalists would be that the sympathies and interests of the vicinage would he concentrated upon it, which would not he so likely to be the case if it was undertaken by foreign or absentee parties, who, also, would have to pay, perhaps, double prices for the necessary labor, while nine-tenths

(Continued on page 102.)

MECHANICAL PROGRESS.

The Introduction of Steam Wagons.

Steam wagons seem to be gaining entrance on this coast. One of English manufacture is being used for threshing by H. C. Copeland, of Tehama county. It drives the separator, and, at time of moving, it draws all its wagons and machines, and other appurtenances any distance at a speed of about three miles an hour, its weight being about six and one-half tons. Its work seems to be generally satisfactory.

Another enterprise, of more strictly local moment, is being pushed by Gaskill Bros., of Campo, San Diego county. From an account in the *Arizona Sentinel*, we learn that the contract for carrying the daily mail between Yuma and San Diego has been intrusted to Gaskill Bros. About 100 miles of the road lies across the California desert. Across this stretch, mail and passengers are soon to be carried by steam. Messrs. Gaskill are industrious inventors, and have obtained a number of patents. One of their last inventions is a steam wagon, designed more particularly for traveling level and sandy roads. A working model has been made which fully demonstrates the practical value of the invention. One of the brothers has just purchased a suitable engine and boiler at San Francisco, of about two-horse power. The wagon will be made in their shop at Campo. It will have two driving wheels of seven feet diameter and 12 inches width of tire. The whole apparatus will weigh about 2,000 pounds, when supplied with fuel and water, and ready for business. It is intended to make an average speed of eight or ten miles per hour, carrying five or six persons and a moderate weight of baggage and mails. It will consume about 10 gallons of water per hour. There is plenty of fuel in the mesquit groves on the desert, and among the willows and cottonwoods on New river and the Colorado. One man can manage the whole thing. Messrs. Gaskill propose to have the new machine making regular trips across the desert by October 1st.

A LARGE CALIFORNIA THRESHER.—We learn from the Guadalupe *Telegraph*, that a grain separator, of unusual size, has been constructed upon the ranch of E. J. Preston, under his personal supervision, and from plans and ideas of his own; and the thorough and accurate manner in which each part performs its work, fully justifies the pride which the owner feels in his huge pet. It is called the "Red Elephant," from its size and color. The cylinder of this mammoth machine weighs 500 pounds, is 44 inches in length, has 12 bars, and 222 teeth; the shoe and the carrier are five feet in width, the axles, over eight feet in length, from wheel to wheel, and the box sets up high enough from the ground to obviate the necessity of digging holes for the sacks. The straw is furnished to the machine by two large derrick-forks, which lift half a ton at a time each on to the table, where four men fork it along, a few feet, to the self-feeder, which carries it into the massive jaws of the cylinder, in a constant stream, thus saving the labor and expense of several men, and working up a "setting" in half of the time occupied by other machines. The average capacity of the "Elephant," in good, fair working grain, is 2,000 sacks a day. It is run by a 16-horse power wood-burning engine.

A SIMPLE ELECTRIC LAMP.—We learn from *Seward's Journal* that M. de Parville writes enthusiastically of M. Reyner's new electric lamp, which seems to be as easily managed as an ordinary oil lamp. A rod of carbon, from 20 to 30 centimetres long and from one to two millimetres thick, is held at one end by a metal rod which tends to descend by its own weight, and at the other by a carbon wheel in a vertical position. The carbon is pressed strongly against the wheel, which is made to revolve slowly. A current of electricity from a battery of from four to six of Bunsen elements raises the carbon to a white heat at the point of contact of the rod with the wheel. A splendid light is produced. If a high degree of luminosity is required, the heated portion of the carbon may be increased at pleasure. Break the current and the lamp is extinguished. Restore the connection by turning a knob and the light flashes forth. The battery may be stowed away anywhere, and any one can use this illuminating contrivance in a house or workshop, without being annoyed with the difficulty and expense of maintaining any magnetic electric machine or steam engine.

STEAM CRANE.—A satisfactory public trial of a large steam crane, built at the steam crane works, Rodley, near Leeds, England, has been made at the quarries of Mr. Bradley, Meanwood. The crane is made to hoist, propel and revolve, simultaneously or separately, as desired; thus, a stone can be hoisted out of the quarry, and, at the same time traveled to any position required.

RINGING ENGINE-BELLS BY STEAM.—There are about half a dozen engine-bells on the line of the Pennsylvania railroad that are rung by steam. An iron rod is run from the bell to the boiler, and is turned on the same principle as the air-pump. when it is necessary that the bell should be rang, and the steam works the rod to and fro.

Compressed Air for Car Driving.

The use of compressed air for a motive power in street cars, is still being tested by experiments. We read in an Eastern exchange that a New Haven company has brought out an air car, the tubes of which are only eight inches in diameter. It is asserted that they withstood a pressure of 3,000 pounds to the square inch. This car has been tested a great many times during the past three months. On the last trip it ran to Whiteville and back, five miles, and had 650 pounds to the square inch left, air enough to have gone over the same route again. Freezing is prevented by a small air pump, which, from time to time, generates hot air, forces it to surround the cylinders, and thereby prevents any accumulation of frost. The car, it is said, can be managed by a boy, and from either platform. It makes no noise, and, as no machinery is seen, it resembles, in every way, an ordinary street car.

The *Railroad Gazette* says that it is the intention of the Second Avenue railroad company, of New York city, to place upon its tracks, cars propelled by air pressure. The experiment was recently tried, and proved eminently satisfactory. It is claimed for the new apparatus that the time may be reduced one-half, and that it can be worked at least 30% cheaper than horse cars, while noise, to a great extent, is avoided. The principle upon which the system is based, is that atmospheric air compressed into a small compass gives a reservoir of energy representing the mechanical force used in compressing it. Two long compressed air receivers, made of steel, are to be placed under the seats, and six under the platforms. These eight are connected cylinders, placed in iron frames between the wheels of the car. They are also connected with an engine between the crank-axels and wheels. The air is forced into the receivers by a 500 horse-power engine. The liberation of this air in the engine under the car, will turn the wheels. The car will be allowed to run by its own momentum on down grades.

GLASS HARDENED BY COMPRESSION.—Some interesting experiments, says the *Iron Age*, were lately made by Mr. Frederick Siemens, before the Berlin Polytechnic Society, on the resistance of glass plates hardened by compression and cooled in water. Upon a hardened plate 8.4 inches square and 1.1 inches thick, supported at its four corners, a lead ball, weighing 8.8 pounds, was dropped from hights varying from 3.3 to 6.6 feet. The plate resisted the shocks and broke only when a hight of 15.7 feet was reached. Another hardened plate 4.7 inches thick was broken by a weight of 2.2 falling from a hight of 14.8 feet; a third one succumbed to the shock of a ball weighing 1.6 pounds, falling 11.6 feet, while the same weight, falling 2 feet, broke an ordinary plate of the same dimensions. The great difficulty of hardened glass—its tendency to break spontaneously—has been overcome by Mr. Siemens by placing the hardened cold plates in boiling water, and allowing them to cool very slowly.

IMPROVED FIRE BARS.—*Iron* tells of a new style of fire bar devised by an English inventor to secure fuller combustion of fuel. The peculiar feature of their bars is the shape of the spaces left for the air to pass through. These, instead of being straight, are of a wave-shaped form, the convex parts of one bar fitting into the concave parts of the adjoining one, and the proper distance being regulated by the width at the ends in the usual way. Additional oblong air-spaces are also provided, and placed in the spaces between the wave-shaped openings. The underside of the bars is made as thin as possible, so as to give the air ample inlet area; and when they have to be fitted against the sides of boiler-flues, a set of tooth-like projections is cast on to the edge of the outside bars. Any portion of the length of these teeth can easily be cut off by a hammer and chisel to effect the desired fit. By the use of these bars the inventor claims a large saving in fuel.

WHEELS AND AXLES.—At the Paris Exposition, are shown wheels made in cast iron, gun-metal or phosphor bronze, with patent adjustable nuts on the axles, by the use of which any slack can at once be taken up, and left-hand screws are rendered unnecessary. The spoke ends, instead of being driven endwise into the nave, are dovetail-shaped, and forced sideways into the similarly shaped recesses of the cast-iron naves, a plate on top of them, secured by bolts, keeping them in place. Instead of securing this plate by bolts and nuts, it is sometimes held up by a large nut screwed over the back oil-chamber, thus forming a very neat-looking nave.

ENGLISH CHIMES.—A fine carillon peal of bells, cast by Messrs. Gillet & Bland, Croydon, has been presented to St. Audrew's church, Plymouth, by Mr. C. Norrington. The *Western Daily Mercury* says the construction is an improved and patented one. There are 10 bells, on which are played 14 tunes, one each day, every four hours. At midnight, a self-shifting apparatus changes the tune. The tenor bell weighs 35 cwt. 14 lbs. The 14 tunes are arranged on two barrels, of seven tunes each. The barrels are changed once weekly. The hammers, which strike the bells, weigh from 38 to 72 lbs. each, and the weight giving the motive power to the carillons, is over eight cwt.

SCIENTIFIC PROGRESS.

The Formation of the Tulare Plains.

Mr. J. R. Scupham, scientific expert of the Central Pacific Railway Company, makes a report in the *Bulletin* on well-boring in the Tulare plains, which contains some interesting facts concerning formations, etc. The well was bored near Tipton. For a depth of 280 feet mountain debris was pierced. The first signs of an abundant supply of water were discovered after passing through a stratum of sandstone from four to six feet thick, lying over a bed of quicksand. The first flow was at the rate of eight gallons a minute from a seven-inch pipe one foot above the surface. Then a five-inch pipe was sunk 30 feet deeper, which pierced a stratum of blue clay containing four separate layers of sand, each of which contributed a supply of water. The lower one gave out a considerable volume of water. It was decided to stop sinking at this step to secure the water already discovered. The well at last accounts was delivering 86,000 gallons a day out of a five-inch pipe, four feet above the surface of the plain, and the supply is constantly increasing instead of diminishing.

Mr. Scupham reports that the water is remarkably pure, showing its identity with glacier lakes. It has less than six grains of solid matter to the gallon. The solid substance is chloride of sodium, which corresponds almost exactly with the waters of Lake Tahoe. A well of this capacity gives enough water to irrigate 100 acres of ground, and its cost is estimated at from $700 to $1.000. Mr. Scupham believed that water can be obtained throughout the whole length and breadth of the Tulare plains by sinking wells to the depth of 300 or 400 feet. As to the chance of diminished flow after numerous wells have been sunk, Mr. Scupham estimates that wells on each quarter section of land would not materially affect the supply, and they might be placed much closer together without decreasing the flow. The temperature of the water is 72°.

The Tulare plains are in full view of the Sierra Nevada, which rise from it somewhat abruptly. Mr. Scupham, John Muir and others, believe the debris to be the ruins of extinct glaciers, which eroded the Sierra to their present shape. Geologically speaking, this debris was carried at a very recent period from the mountain slopes and summits and deposited in the valley. Mr. Scupham thinks that the main portion of the Sierra was at one time more than 20,000 feet high, and the loftiest peaks were at least 5,000 feet higher. From the aerial currents from the west, heavily charged with moisture from the ocean, immense volumes of rain were condensed and precipitated on the mountain slopes toward the ocean, which, flowing to the plains, caused a great lake, which is now extinct.

A JAPANESE SALAMANDER.—The *Independent* notes that a fine specimen of the gigantic Japanese salamander (*Triton Sieboldii*), nearly three feet long, has been added to the Brighton aquarium. It is thoroughly acclimatized, existing in fresh water at a normal temperature and feeding principally on raw beef and liver, which it seems to prefer to the species of fresh water fishes offered alike for its acceptance. It is a sluggish, weak-limbed reptile, covered with a dark brown skin, the head and throat being thickly dotted with the glands so characteristic of the water newts, and the large pores serving to distribute the viscous matter shed over its exterior are distinctly visible. The mouth is remarkably capacious and the eye small and easily overlooked. Specimens were first brought to Europe by Dr. Von Siebold, who discovered them in a lake on the top of a basaltic mountain in Japan. It is the *Sieboldtia gigantea*, Bonaparte, and the *Salamandra maxima*, Schlegel, but is now referred to the genus *Cryptobranchus* (*C. Japonicus*, Van der Hœven). It is very closely allied to our American gigantic newt (Menepoma) of the Alleghany mountains, the difference being mainly in the gill-slits, which are permanent in the American form, but which disappear in the adult of the Japanese one. It is also interesting as being nearly allied to the huge fossil salamander (*Andrias Scheuchzeri*) from the fresh water Miocene beds of Œniugen, Switzerland, famous as the *Homo diluvii testis* of Scheuchzer, who long maintained it to be a fossil man, and, therefore, an indisputable relic of the Noachian deluge. Cuvier proved that it was merely a gigantic salamander.

NEW FOSSILS.—Prof. E. D. Cope, of Philadelphia, has recently described some reptiles, from the Permian formation, in which the humeri possess many of the characters of those of the mole and other fossorial *mammalia*, in the great development of the muscular insertions and epicondyles, and the presence of a supracondylar foramen. They are referred to five species of three genera of *Pelycosauria*, a tribe of the order *Rhynchocephalia*.

SIZE OF THE TIGER.—The size which the Bengal tiger reaches, is a matter of some discussion; but, in *Nature*, J. Fayrer mentions cases in which a tiger has reached the size of eleven feet nine inches, or even twelve feet, measured from the nose to the tip of the tail, before skinning. Still a tiger is large that reaches ten feet.

Expansion and Atomic Weights.

A German authority gives the following review of the expansion of the solid elements as a function of their atomic weights: Since all gases, under similar physical conditions, contain in equal volumes the same number of molecules, they must all have the same co-efficient of expansion, because this expansion represents simply an increase in the energy of the progressive motion of the molecules. For the non-gaseous elements, however, no such simple relation has been hitherto observed. Wiebe has thrown some light upon the subject, by studying the expansion-co-efficients of the solid elements in connection with their atomic weights. The quotient of the density of any such element, referred to water as unity, divided by its atomic weight, gives the space occupied by one atom of that element. If the ratio of this value to the co-efficient of expansion be obtained, some striking relations appear, as is shown in tabular form for 26 solid elements. In the first column the symbols are given, in the second the density, in the third the atomic weight, in the fourth the expansion-co-efficient expressed in parts in a hundred million at 40° C., and in the fifth the ratio of this to the quotient of the density divided by the atomic weight. The numbers in the fifth column then represent the absolute expansion of the atoms, or the co-efficients of expansion of the elements referred to their atomic volumes. These atomic co-efficients often show simple relations for closely allied elements; thus the value is the same for iron, cobalt, and nickel; the numbers for arsenic, antimony, and bismuth are as 1 : 3 : 4; those for zinc and cadmium as 2 : 3, etc. If these co-efficients be regarded from the standpoint of Lothar Meyer's law of the periodicity of the properties of the elements, and be graphically represented as a function of the atomic weight, they give a curve similar to that of the atomic volume, in which members of natural families have an analogous position. Hence the author concludes that the absolute expansion of the atom is a periodic function of its atomic weight.

THE MICROPHONE AND INSECT VOICES.—A writer in the *Entomologist's Monthly Magazine* suggests that, as the microscope reveals to the eye of man all the most insignificant of nature's works, why may not the microphone disclose to our hearing the most inaudible sound. Through Prof. Hughes's discovery, we may hope, he says, to have great light thrown upon the somewhat obscure subject of stridulation in insects. We do not see why the microphone may not be applied to detecting the high-pitched sounds produced by the grasshoppers and crickets, and the now inaudible stridulating noises made by moths and other insects. It could, possibly, be applied to studying and detecting the noises produced by fishes and marine invertebrate animals. It could also be applied, perhaps, to detecting the gnawing of museum pests in collections of stuffed mammals and birds and entomological collections. Particularly valuable would its use be in detecting the presence of white ants in the tropics, in the inside of articles of house furniture, which this insect ruins before its work is usually detected.

THE SMALLEST INSECT.—We read that Hon. J. D. Cox, who is an excellent microscopical observer, contributes to the *American Naturalist* an illustrated account of the smallest insect known (*Pteratomus Putnamii*), a parasite of an ichneumon, which attacks the common leaf-cutter bee, originally described by Packard, from an incomplete specimen. Mr. Cox gives a carefully-prepared figure of the perfect specimen which he discovered, and clears up some unknown points in its structure. This is a hymenopterous insect, with the wings long and narrow, linear and beautifully ciliated—not being fissured, as erroneously supposed by Packard. The winged atom is one-nineteenth of an inch long, and bears off the palm among all known insects for extreme exiguity.

A VOLCANO IN THE MOON.—Dr. Hermann J. Klein, of Koln, with his five and a half inch dialyte, by Ploesel, discovered, some time ago, on the moon's surface, a great black crater on the Maro Vaporum, and a little to the northwest of the well-known crater Hyginus. He describes the crater as being nearly as large as Hyginus, or about three miles in diameter, being deep and full of shadow, and as forming a conspicuous object on the dark gray Mare Vaporum. So far, the English observations of the new crater have been perfectly in accord with those of Dr. Klein, and if the existence of this new crater be confirmed, it will form the strongest possible evidence of a real change on the surface of the moon; a change, moreover, of a volcanic nature.

MR. BENNETT'S CHART.—A special chart of the Polar regions has been made in London for Mr. Bennett, whose expedition, next year, is to go to Behring's strait. The warm current flowing north through the strait is represented as sweeping round the northwest coast of America, one arm of it going north by the west side of Banks' Land to 80° north latitude. No doubt this is the direction which it is intended the expedition will take. Kellett Land, at the north entrance to the strait, is extended into a great broad island, by the east side of which this warm current is represented as flowing. If such land really exists, it will certainly form an excellent basis for further operations by sledge.

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

AMADOR.

Drytown.—*Dispatch*, Aug. 10: The mining outlook is very favorable, although there is a good deal of growling by mine owners and workingmen in consequence of the irregularity of the supply of water furnished by the Amador canal company. The quartz mills in this section are idle about half their time. The Gover may be shut down if water cannot be obtained more regularly. The Pennsylvania has had a clean-up that is thought to have exceeded expectations, but since that they have had scarcely any water, although the mine and mill are crowded full of better rock than was crushed during the last run. The Potosi mine, now called the California, is doing nothing at present, owing to some hitch among the members. This company has been putting in an air-compressor drill lately, the air to be compressed by water. When matters are satisfactorily arranged, they may yet have a good mine. The Centennial mine, on Dry creek, is looking well. A 20-stamp mill is about to be erected.

Items.—Work is progressing rapidly on the reservoir to be used by the Monte-Richard mining company, and it will be completed as soon as possible, which will be but a few days. The mines are reported to be looking well in the vicinity of the Pioneer mill, above Volcano, and there seems to be a new impetus given to the prospecting for quartz.

CALAVERAS.

Items.—*Chronicle*, Aug. 10: The gravel continues rich at W. W. Cook's Maison d'Sante. The Bonanza, Moser & Co., pays largely. Preparations are being made for a clean-up at Veith's mammoth hydraulic. The Duryea claim, in Chile gulch, is paying better than it has for years. There are drifters enough employed to keep the batteries at work night and day. As very few inches of water are sufficient to run the mill, the scarcity of that commodity will not affect this claim much. Brown & Co., located on Tunnel ridge, are pushing things. A good clean-up at the Rough Diamond is rumored. Everything runs smoothly at this mine. The pay chute was struck in the Sliter & Hoey claim, Old Woman's gulch, Tuesday last. It is expected that the necessary drifts will be run and the ground opened for breasting in a couple of weeks. The mill is in complete readiness to run, so that the claim will be the scene of busy operations in the course of a couple of weeks. The 1550 level in the Gwin mine has entered the pay chute to the north of the shaft. Stopes are to be opened immediately. The mills are still kept running on ore from the 1400 levels. The new mill on the Champion mine, at West Point, is approaching completion. At Mosquito everything is nearly in readiness for starting up the Banner. The hoisting works, pumps, engines, etc., are being repaired preparatory to taking out the water. Operations at the San Joaquin, Holmes, proprietor, are progressing favorably and steadily. At Sheep Ranch the Wallace & Ferguson is still proving itself one of the richest mines in the State.

EL DORADO.

An Amador Man's Notes.—Amador *Ledger*, Aug. 10: I have been traversing El Dorado county, and thinking the notes I have made may possibly be of some little interest to your readers I will place them before them. At Nashville I found that the Consolidated California company's mine had been jumped by a Mr. Curtis, he representing a company. The thing is at a standstill, but will retrieve itself under the auspices of the new company. The mines at Logtown are doing little or nothing, merely sinking shafts. I learn that the old Pocohontas will soon commence operations, a Burleigh drill having been received. Mud Springs is very prettily situated, but there is not much business transacted there. Placerville is very dull. Taking it all in all, El Dorado does not compare favorably with our own county. But little mining is going on along the Comumnes. The Phœnix, or rather Empire mine is not running to its full capacity, though 30 stamps are run by steam pressure, scarcity of water being the cause. The Pennsylvania is not running at the present writing; no water.

FRESNO.

Letter from Coarse Gold Gulch.—*Republican*, Aug. 10: One of the richest mines in the new district near the summit has recently been found by a party who left here some two weeks ago. The owners, Mike Baker, James Hansen, Harry Kirkwood and John Singo, give the following facts: The mine, which is located on this side of the county line of Fresno, is called the Eureka, and has a five-foot vein. The assays, by the local assayer in that district, gives it at $81.54, in silver, per ton, 62% in lead, which is supposed quite sufficient to run it through a smelting furnace. The assayer stated that it was the best vein as yet discovered in that section. This mine is on the north side of the San Joaquin, and known as Walker's sheep range (the ore is in soft blue slate) Lake District, Pine City, eight miles to post office. Mining in this vicinity is progressing slowly but surely. Texas Flat mine is being sunk at the rate of one foot per day in a shaft of 12x6 feet, with an increasing vein from the top, of two feet to four feet, at the depth of 40 feet. The indications of the ore to the prospectors are satisfactory, who are going on with it. Hill & Hutchings have started their crushing mill, which is located on an extension of the Texas Flat, and they seem to be doing well. The Confidence mine will start up soon again. Several parties are working on the Lady Heller mine, which was for a long time abandoned, but now shows good prospects. McKenzie & Rhule have commenced working on their Last Chance mine with fine prospects.

INYO.

Water for Belmont.—*Independent*, Aug. 3: The Emigrant company have purchased the pipes and machinery of the Cerro Gordo water works, now to be used in conveying water from a spring, also recently purchased, to the company's mill now being erected directly at the mines, the Cachus and Valentine. The pipes will pass within four or five miles of the Belmont mines, which can be supplied. The ores from Belmont can be taken to the Emigrant mill, after the construction of a mile or so of wagon road. On the whole, things look bright for Belmout and the Emigrant.

Rex Montes.—The five-stamp mill is waiting for the winze from tunnel No. 3 to reach the new tunnel No. 4. This connection may be made in a few days. The winze is in good ore almost all the way, and there is no doubt that the new tunnel will render available a large quantity of the same. It will probably require still another tunnel to determine anything very satisfactory as to the permanency of the mine.

Items.—A tunnel 105 feet long has tapped a very rich gold ledge in a mine called the Orion, located in Alahama district. The Independence tunnel will cut several fine ledges within the first 400 feet, and so on at short intervals clear to the Rex Montes series, less than 2,000 feet distant, and at a depth at that point of about 1,400 feet. A number of these ledges, known to be rich from surface prospects, belong to the tunnel company. Several adjoining claims, particularly two belonging to McDermott and others, are highly valued, one of them showing a rich ore vein three feet in width. As it is an established fact that the Potosi series, to be cut by this tunnel, yield ore of a very high grade, and that even back to the Mountain View, which crosses the very summit, the mines are at present almost inaccessible, the wisdom and necessity of the tunnel is too manifest to be gainsaid. M. J. Byrnes has just returned from San Francisco and gone over the Inyo range to his mines at Deep Springs. He is accompanied by a party who will examine the property with a view to purchase. The ledges are rich, the ore assaying from $200 to $800 per ton. The Hidalgo mining company, of Darwin, last week filed in the County Clerk's office its certificate of incorporation.

LOS ANGELES.

Black Star.—Santa Ana *Times:* In this mine there is a shaft sunk down about sixty-five feet, and in sinking this shaft two veins of excellent coal were discovered. The first vein is at a depth of about twenty-seven feet and is now being very actively worked. A tunnel is run in from the side of the hill, through which cars bring out the coal to the dump. Drifts or chambers run in nearly every direction from the main tunnel, and in about three weeks there will be work for about one hundred miners. Mr. Witte says that in about that time they would be able to take out one hundred tons of coal per day.

The coal of the Black Star Mine has been tried by a great many different parties and is pronounced to be equally as good an article as the Sidney or Seattle coal, and it can probably be put down in Los Angeles at least from two to five dollars per ton cheaper than either of the above-named.

The vein that they are now working is about three feet in thickness and the other vein is at least four and a half feet.

MONO.

Various Mines.—Bodie *Standard*, Aug. 7: Since last report work in the McClinton has progressed favorably in the north drift, and the distance advanced is 18 feet; total, 291 feet. Work has been stopped for the present in this drift, and sinking the shaft commenced. The shaft will be driven down 200 feet further. The main shaft of the Blackhawk has gained eight feet the past week, making a total depth of 356 feet. The ledge is improving in quality, though about the same width, the rock continues very hard. There are still three shifts at work. Still cribbing in the South Standard shaft, and very fair progress is being made. It will take nearly two weeks more to complete the contract. The hoisting works will reach here in a few days. The work of sinking the Goodshaw shaft has not been resumed as yet, but cribbing progresses finely. The whim which was ordered some time since will arrive Wednesday. Work has been resumed on the Wide Awake, and the main shaft has now attained a depth of 68 feet. The shaft will be driven down as rapidly as possible. The Owyhee prospects well; the progress made goes to show that the owners are determined to develop their mine, and show all it contains in a short time. Work on the Champion was resumed last week. The contract calls for sinking the shaft 300 feet. The force at work on the Paris is making fine headway. The drift is now in 62 feet, and the face looks well. The main incline in the Hayes has attained a depth of 85 feet, and the ledge is between three and four feet wide, and of good average ore. The Bulwer steps forward with rich developments. There is report of a rich body of ore being uncovered in the Belvidere. There are strata in the ledge of that mine which assay from $1,000 to $5,000. The Booker shows a fine four-foot vein, assays proving it to be rich in mineral. The Richer looks first-rate, and the best indications exist for opening up a rich ledge.

NEVADA.

Monthly Review.—Grass Valley *Union*, Aug. 6: The mining situation continues favorable, and for the month past some decided improvements are noticeable. The New York Hill mine, which has been in the dumps for a long time, has made a surprising and gratifying change by striking a new and very rich chute of ore at a low depth. The Centennial, which has shown itself to be a favorable prospect for a year or more, continues to develope richly, and gives promise of making a rich and reliable mine. The developments in the Alaska are also very encouraging. The improved prospects of these mines is consequent upon deeper sinking, and when a few months more have passed, in which time new levels will be opened, we will be enabled to make a gratifying exhibit of the new developments. Prospecting is being extensively carried on, and the custom mills are kept constantly busy with their stamps. Mill men say that it is a much more busy season with them than last year. As heretofore noticed, Osborn Hill and the country immediately south of Massachusetts Hill, are the present favorite prospecting fields. Both of these localities are literally seamed with quartz ledges, which are yet destined to yield enormous treasure when a well digested system of tunneling and drainage is perfected. Osborn Hill is so situated that it could be drained by a tunnel from the Frenchb Lead and above as far as Scadden's Flat, that would subserve a similar purpose of drainage for a system of ledges which have been very rich in the past. Co-operation, energy, and spirit are needed.

PLACER.

Items.—Dutch Flat *Forum*, August 10: Operations have been again commenced on the Lincoln coal mine. Quartz prospecting is reported to be lively in the vicinity of Auburn. Bell's mine at Auburn, the bonanza of Placer county, is still showing gold in abundance.

Cinnabar.—*Argus*, Aug. 10: A ledge of cinnabar is reported to have been discovered at the site of the 20-mile house, on the Auburn and Sacramento road, in this county. The Mayflower mine has at least two beds of gravel, one varying in thickness from eight inches to three feet, the other being about fourteen feet thick, and yielding an average of five to ten cents to the pan.

Yankee Jim's.—*Herald*, Aug. 10: There are some placer claims in the district that still pay, though for want of water none of them are worked at this season of the year. Some quartz ledges have been struck a short distance below town, and on these work is being prosecuted. The Live Oak, owned by the Gilbert Bros., has shown some fair prospects, and is being further developed. Another quartz ledge in the same vicinity, known as the Mastadon, owned by Messrs Tubbs, Durning & Mondoza, is being opened by running a tunnel into the ledge from the side hill. Another ledge, also in the same vicinity, known as the narrow gauge, and owned by Charles Trafton, is being prospected by means of a shaft sunk on the ledge. All these ledges are parallel to each other, and in the opinion of some they are separate seams of one grand mother ledge.

PLUMAS.

Bell's Bar.—*National*, Aug. 10: The company at work at this place have at last got their machinery on the ground and will soon have it running. They have a large boiler and engine, and a pump which is thought to be sufficient to handle all the water they will have to contend with, and more, too. The shaft is now about 90 feet in depth, and the indications were strong that it was about through the lava when the water drove out the workmen. We await developments by this company with some degree of anxiety, for if they get bed-rock it will show what the big blue gravel lead is worth.

The Jamison Shaft.—Work has again commenced on the big shaft in Jamison creek, the company having put up a pump which it is thought will manage the water. This is the third pump they have used. The chances are strong that they have a rich mine if they can only get to the bottom.

SIERRA.

Bunker Hill.—*Mountain Messenger*, Aug. 10: Bunker Hill mining company, near Brandy City, commenced sinking a shaft in their tunnel, 900 feet in, but were unable to go down more than 35 feet on account of water. They will have a meeting on the 17th, to take measures to go ahead, as they feel sure they have a good paying channel below them. When work was stopped the shaft was in a kind of blue gravel and cement, which was considered a good indication of a channel not far below.

Oriental.—The Oriental quartz company, near Alleghany, struck a ledge of very rich quartz last week. Upon examination and comparison, it was found to be identical with the rich quartz found in the North Fork mine, at Forest City. The ledge, so far as can be determined, is about five feet thick, and carries gold in about the same proportion as the North Fork. This will be encouraging to both companies, as it proves the existence of a permanent quartz deposit in the North Fork, which can be found by going down. The Empire claim, at Howland Flat, is worked out.

TUOLUMNE.

Harris Mine.—*Union Democrat*, Aug. 10: The new 10-stamp mill near this mine has just been completed. The capacity of the mill is 15 tons of ore in 24 hours. The mine has been worked by Mr. Harris the past four or five years. He went to work to see if he had a mine before building a mill, and when he was satisfied on that point, erected the necessary improvements. He has a pile of ore on the dump, estimated at 700 tons, which gives him plenty of material to work on. It is situated on or near the mother vein, and is undoubtedly a very valuable property. The ore is a mixture of slate and quartz, easily crushed. It contains free gold and sulphurets.

The at present worked drift in the Jefferson mine, at Garrote, is about half way in to the destination chute. In about 10 days the mill will be started on some ore already out.

Quartz Mountain.—*Independent*, Aug. 10: The Quartz Mountain gold mining company have struck a rich vein, about 18 inches wide, east of the mother lode, literally bespangled with gold. We understand that the vein at this place is about 12 feet wide and the pay streak about 18 inches. Further development will no doubt disclose something better than the owners of quartz mountain stock have ever seen.

A Curiosity.—*Independent*, Aug. 3: Bonnefoi & Co., of the Empire tunnel claim, mining in Table mountain, last week, struck in the forks of a hollow pine tree, measuring about two feet through, standing erect on the shore of the old river, some 100 feet under the pipe clay and lava formation. The company have sunk a vertical shaft, and are tunneling from the bottom to strike the old Caldwell channel, which proved so immensely rich in early days. They have already struck a shore, as indicated by round washed gravel and boulders, but too high for bed rock, as disclosed by the forks of the pine tree above mentioned.

Nevada.

WASHOE DISTRICT.

Con. Virginia.—Gold Hill *News*, Aug. 11: The daily yield of ore is from 200 to 250 tons. The ore is being sent to the mills for reduction as fast as extracted. Owing to the drying up of the water in the Carson river, the Morgan mill was obliged to stop, the Bacon and Trench mills at Silver City being substituted in its place. The repairs to the Consolidated shaft are being pushed energetically ahead, the heat still being intense and the progress slow. The long-continued spell of severely hot weather on the surface has, however, a very discouraging effect on all the operations of the lower levels. The north and south drifts on the 1850 level, between crosscuts Nos. 2 and 3, have completed a connection, which very materially assists the ventilation of that portion of the mine. The repairs to the main southwest drift connecting with the C. & C. shaft on the 1650 level are making good progress. The repairs to drifts on the 1300, 1500 and 1550 levels are all advancing rapidly.

California.—Daily yield, 250 to 275 tons of ore per day. There is no change of interest whatever in any portion of the ore-producing sections of the mine. Sinking the C. & C. shaft has made the usual fair rate of speed, and to day is down to the 2050 level. The flow of water is still strong. As soon as the shaft can be sunk deep enough to form a sump, opening the 2050 station will be commenced, after which a drift will be started to the westward to cut and prospect the ore vein. The repairs to the Consolidated shaft are making steady progress, but it will take several weeks yet to complete them.

Bullion.—Sinking the main incline is making excellent progress, the bottom still in quartz of a fine character. The upper part of the shaft is in quartz and low grade ore, while the bottom is in the clay of the footwall. The face of the east drift on the 1700 level is being steadily advanced, and is showing some fine stringers of quartz.

Sierra Nevada.—Sinking the south incline has made good progress during the past week, having passed entirely out of the ore into vein porphyry until yesterday morning, when a little ore and quartz were again struck in the lower southwest side of the shaft. It is now down 50 feet on the incline below the 2100 level. It is the intention to push the incline on down to the 2200 level before crosscutting the ore vein.

Ophir.—East crosscut No. 2 and the southwest drift on the 2000 level have been stopped temporarily, in order to furnish a supply of air sufficient to start up the 2000 winze. This crosscut had penetrated the quartz vein, and at the time of the suspension of the work was in soft vein porphyry, carrying streaks of quartz, and might or might not be through the ledge, the character of the formation being such that no correct judgment can be formed beyond the actual developments made. Sinking the joint winze below the 1900 level on the California line is making much better progress, the water in the bottom being almost entirely drained by the diamond drill hole on the 2000 level. Sinking the main incline was resumed again yesterday morning.

Justice.—The flow of water at the bottom

of the main incline has almost entirely ceased, it being necessary to run the pumps only about two hours per day to hoist the water coming from the drifts and seeping from the sides. The most important prospecting operations in the mine are being carried forward on the 1300 level, where the ledge shows a vastly improved and more favorable appearance.

LADY WASHINGTON CON.—The north drift on the 1300 level is steadily advancing, the face in quartz and low-grade ore of a favorable character. The prospects are that when crosscutting the ledge is fairly commenced, valuable ore developments will follow. The amicable settlement of the difficulties of the Alta, Benton, Boyle and Lady Washington companies, gives the Lady Washington a splendid opportunity to develop its valuable ground without any further dispute. By the terms of the compromise, the Lady Washington stockholders get 180 shares each of the new consolidated stock for each 100 shares held of the old stock, also the right of prospecting their mine through the Alta shaft by paying the cost of the same to the Alta company.

VERMONT CON.—Excellent work is being done by the contractors in sinking the shaft, about three and a half feet per day being the average progress. The timbering is being done in a very substantial and workmanlike manner throughout.

LEVIATHAN.—On the 750 level the lateral drifts both north and south are now in the black dyke formation immediately underlying the ore vein. Good stringers of quartz giving low assays are being continually cut through.

SUTRO TUNNEL.—During the past week the header has made very good advancement, running through easy-working porphyry and quartz, showing streaks and bunches of good ore. Within a very few days connection will be made with the main Savage incline, completing the best air circulation yet effected in the deep workings of this section. The header is to be continued beyond, when deemed advisable, but the probabilities are that the large water drain throughout the bottom of the tunnel will have to be made before running into any very heavy west wall water risks.

NORTH CON. VIRGINIA.—The shaft has been drained of water, the machinery all put in the best of working order, what repairs to timbers was necessary have been made, and work was regularly resumed with a full force of men at the bottom yesterday morning.

BELCHER.—The prospecting operations on the lower levels have been delayed somewhat during the past two days by the putting in of another large lift pump in the main north incline shaft. That will be finished in a very short time, when everything will be in the best condition for commencing the long deferred crosscutting of the ore vein on the 2360 level.

UNION CON.—Sinking a joint winze has been commenced at a point 515 feet east in the joint Mexican east crosscut on the south line on the 1600 level. This winze is intended to connect with the north drift on the 1700 level of the Ophir.

SAVAGE,—The repairs to the main incline and perpendicular shaft are each making good progress. The pumps have lowered the water until it is down to the long drifts of the 2100 level, which are being gradually drained as the water is lowered.

MEXICAN. — Cutting out for the winze chamber in the face of the joint Union Con. east drift on the 1600 level, at a point 515 feet east of its starting place, has just been commenced.

GOULD & CURRY.—Sinking the main incline has been resumed and is making slow progress. The flow of water at the bottom is intensely hot.

CALEDONIA.—The attempt to drain the water from the joint winze on the Caledonia line by means of the diamond drill has not so far been very successful, but promises to be more so in the next few days.

OVERMAN.—The 1600 station is completed. The east and west drifts on the 1600 level are rapidly approaching each other and as soon as joined together will greatly assist the ventilation of the level.

TROJAN.—The second station has been yielding a small amount of good ore, and the indications at this point are that a good paying body of ore will yet be found. At the fourth station the south drift has cut through a very heavy body of clay, and into a body of lively, white quartz, giving fair assays.

CROWN POINT.—The north drift on the 2300 level is making rapid progress toward the north line, having advanced during the week past at the rate of eight feet per day.

SILVER HILL.—The quartz and ore developments in the north crosscut from the north drift on the 800 level continue of a very favorable character.

HALE & NORCROSS.—The pumps are kept steadily running, and the water is now reduced to the long drifts on the 2100 level, so that the rapid progress with which the water has been extracted during the past few days is likely to be interfered with to some considerable extent, although if nothing happens to prevent, the 2100 level will soon be again ready for prospecting.

JULIA CON.—The water is drained down to the 2000 level, and the mud and debris is being cleaned out, preparatory to a resumption of work in the drifts and crosscuts on that level.

CHERRY CREEK DISTRICT.

THE MINES.—*Independent*, Aug. 3: Affairs at the Star mine are generally looking better. The lower drift on the 460 level, going west, has attained a distance of 138 feet, the face showing over four feet of fine milling ore. The winze on the 360 level is down 62 feet, and shows a fine vein of rich ore about four feet wide. The east drift on the 360 level shows streaks of mineral, and the prospect is good for a body of pay ore in that portion of the mine. The Star company's mill is temporarily shut down for a few small repairs, but will start to-morrow. The Lookout mine at Ruby hill has reverted to the owners, Messrs. Bird & Fitzhugh, through the failure of Mickle & Co. to pay the $5,000 for which it was originally bonded. One year ago Messrs. Bird & Fitzhugh were willing to take $5,000 for the mine, but now place a value upon it of $50,000, the result of developments in the meantime.

NEVADA ITEMS.—The copper mines, Railroad district, are said to be improving. The new Martin White mill is expected to bring back much of Ward's prosperity. A specimen estimated as worth $5,000 per ton has been taken from the Moosac mine. Tests of what was supposed to be pyrite cubes on ore taken from the Revenue mine have averaged upward of $11 per ton, 10% gold. The Cortez chloriders are shipping a portion of their ore to Salt Lake. The Excelsior mine on Prospect mountain has struck black metal assaying in the thousands. The Alexandria continues to hoist and ship ore which is netting them about $200 per ton. The Pride of the West, a mine south of the Jackson, is raising some fine ore. There are favorable prospects in the Industry and Piute mines.

NYE.

RICH STRIKE. — Belmont *Courier*: Within the last few weeks we have heard rumors of something big in the way of a mining strike, in a new locality within 25 or 30 miles from Belmont, but could obtain nothing definite in regard to locality or character of the ore, except reports of assays from outside places. About two weeks ago our County Clerk and Assayer went off mysteriously, but returned in a few days with a smiling but awfully sunburnt face; then came a display of ore from the new district which had been formed during his absence from town, and the announcement that it lay near the south end of the Toiyabe range—less than 25 miles from Belmont; that wood and water are abundant, that seven or eight locations had been made on ledges of free milling ore, assaying in some instances as high as $800 per ton, and several others on what is known as base ledges containing carbonate ore. The latter is considered by mining men and experts the best prospect for a surface development in the country; the lode is traceable for three-quarters of a mile, and opened across measures full 15 feet from wall to wall. The ore resembles the Gila ore from Reveille district, and persons who saw the Richmond and Eureka Con. when first discovered, say that the prospects of the California mines are much superior; of course there has been a rush out that way, and everyone who has returned tells the same story. Recent assays from the California, owned by Nicholl and Oder, range from $12 to $430 per ton; a sample from the croppings of the same ledge (Etna Co.) owned by W. H. Morgan & Co., assayed $58.71.

Arizona.

TAVAPAI.—Prescott *Enterprise*, Aug. 7: Mining industry is suffering on account of the drouth. Still our mines are not without hope. The Tiptop company's mill, at Gillett, is crushing ore with good success. Reports from the mines are highly encouraging. It is thought here by those who ought to know that the mill will keep on running regularly, and yielding a great deal of bullion. If so, the stock will soon take a step upwards and dividends will soon be in order. The Peck mill is allowed few spare moments. The shipments of bullion every week recorded in these columns give proof that the property is paying. Developments are still being made in the Tiger mine, which is said to be looking real well. There is a rumor in effect that the Signal company's mill will be removed to the Tiger. The Senator mill cannot be run, owing to the scarcity of water. The Aztlan mill is also idle. So is the Crook mill. John Holmes and other miners of Turkey Creek district, are working away. John says the district is all right. Several ledges are yielding good ore. News from Black Hills, Big Bug and other districts continues good. The placer miners of Lynx, Hassayampa, and the other auriferous creeks are not complaining. They very often arrive here with well-filled buckskin purses. Mr. Clarke and others recently struck very rich gravel in Bigelow's bar, below Lynx creek.

MOHAVE.—The Signal mill and mine are idle. The McCrackin mill is crushing about 100 tons of ore daily, which yields between $60,000 and $80,000 per month. A fine body of rich ore was recently discovered, so that everything down there is still all right. The Palmetto company are negotiating for a mill to crush their ore, which is said to be very rich. The Hackberry mill, in the northern part of the county, is doing well. The miners of Mineral Park and vicinity are still shipping ore to San Francisco. The newspapers of Yuma, Maricopa, Pinal and Pine counties, print good news in relation to mining and prospecting.

PECK AND TIGER DISTRICTS.—Mr. Cherry, who has just returned from a trip through the Bradshaw district, expresses a very favorable opinion of the mines there. He also visited the Peck, Black Warrior, Silver Prince and Crook, examining in all, between 40 and 50 mines. Says this is one of the best mineral sections in the country, and that one mistake made by mine owners and others here, is their cry about the scarcity of water. Our mountains are reservoirs, and it is only necessary to sink shafts of ordinary depth, and more water is obtained than can conveniently be gotten rid of. He would not hesitate to put up machinery on any mine which had been sunk on 100 feet, for fear of lack of water. Judge Silent, who accompanied Mr. Cherry, gave it as his impression that the Tiger district, including Bradshaw, ought to give employment to between 8,000 and 10,000 men, and the Peck district, within a radius of six miles, of from 5,000 to 8,000 men. The country is well situated for mines, both as to distinctness and permanency of ledges and facilities for working, fuel, lumber, water, etc. From Bradshaw basin the mineral outlet is evidently to the south. He thinks that unless the people of this section move in the matter, by opening up proper and increased facilities of communication, etc., that the business of these districts will be lost to Prescott, and that it is a matter of enough moment to merit some attention from business men. Says it is a part of the country for Arizonians to be proud of.

News in Brief.

THE Kansas wheat crop is especially fine.

FLOODS in India are causing great distress.

THE Hawaiians are complaining of too much rain.

THE Bear Paw placers are said to be worked out.

A NEW cuban loan will be issued in Madrid soon.

THERE has been a fresh outbreak of natives at Acheen.

GREAT mortality is reported on the west coast of Africa.

THE citizens of Yuma have had a touch of the Indian trouble.

THE treaty of Berlin has not brought entire peace to Europe.

JOHN H. P. HOYT, of Michigan, has been appointed Governor of Idaho.

THE Estremadura insurgents have been defeated by General Darmario.

CUBAN merchants and planters complain of the high Spanish duties on sugar.

THE grasshoppers cannot damage Minnesota crops seriously this season.

A NEW palace is to be built for the King of the Sandwich Islands at an expense of $50,000.

SPARKS from a thresher burned up about $7,000 worth of property on Arque's ranch, Hollister.

SMALL-POX is prevailing in Salt River valley, Arizona. Two deaths have already occurred from the disease.

GEN. GRANT has been received everywhere in Norway with extraordinary enthusiasm, crowds following him about.

SIX HUNDRED journeyman shoemakers of Chicago struck, August 6th, for an advance of $3 per week.

SEATTLE shipped more coal in July than during any previous month, the total being 14,001 tons.

THIRTY thousand dollars' worth of books were added to the Princeton College library during the last year.

IT is said that a new silver and electro-gilt counterfeit in the shape of a quarter eagle is in circulation.

A PROTECTIVE association of flour men, to prevent wholesalers from retailing, has been formed in Philadelphia.

ASSESSORS' returns from 90 Massachusetts towns show a loss in valuation of nearly $2,000,000 the past year.

A BILL allowing women to vote in school meetings has passed both houses of the New Hampshire Legislature.

GOVERNOR IRWIN has offered a reward for the arrest and conviction of the Grand Island murderer or murderers.

THE town of Alta, Utah, which was destroyed by fire on the 1st inst., is being rapidly rebuilt in a more substantial manner.

THE Hawaiian Legislature has made an appropriation of $38,000 as a subsidy to the Pacific Mail Steamship Company.

FLOODS have so damaged roads and railways, that communication is entirely suspended between Moldavia and Wallachia.

ON August 6th, the coal shed of the Copperopolis railroad, Stockton, was burned together with its contents, 100 tons of lone coal.

THE Porte has warned the Powers that the Mussulmans in the districts annexed to Montenegro and Servia, will rebel.

THE passenger train which left Pittsburg August 7th, collided with a freight train. Several killed and many wounded.

THE officers and directors of the Bank of New York have taken the initiatory steps to reduce its capital from $3,000,000 to $2,000,000.

IN the House of Commons, August 6th, Northcote, moving the supplementary estimates, said the House must provide for a deficit of £4,300,000.

AT Boston the car shed of the Eastern Railroad Company was burned on August 5th, with six passenger cars and two Pullman cars. Loss, $55,000; insured.

A PROCLAMATION has been issued in Herzegovina, announcing that all persons who offer resistance to the Austrians will be tried by drumhead court-martial.

IT is said that 47,000 Russians are sick in Bulgaria, and constant reinforcements are necessary to keep up an effective army. General Todleben is down with typhus.

The demand for the standard silver dollar is rapidly on the increase.

More attempt will be made to obtain artesian well water in Stanislaus county.

THE new American Theater, Philadelphia has been sold by the Sheriff for $70,000.

AN overissue of Pennsylvania State Sinking Fund bonds has been discovered.

FEVER is increasing at Nicoria, Cyprus, which place is unquestionably very unhealthy.

ANOTHER revolutionary plot has been discovered and guarded against in Venezuela.

AUGUST 12th, a Russian cutter exploded in the harbor of Nicolaieff, killing 34 persons.

THERE were 104 deaths from yellow fever, and 66 from small-pox in Havana in July.

THE grain crop of Montana promises a larger yield to the acre than for several years past.

THE town of Napa is to receive 2,000,000 gallons of water per day from Rector canyon.

AUGUST 12th, fire destroyed about one-third the town of Shasta. Total damage about $50,000.

SUITABLE stone has been found at The Dalles for the construction of the locks at the Cascades.

ENGLISH government proposes to give careful consideration to administrative reforms in Asiatic Turkey.

AUGUST 11th, fire about eight miles south of Marysville destroyed about $1,400 worth of wheat and barley.

A FINE quality of buhr stone has been discovered on Bald Peter mountain, near Sweet Home valley, Oregon.

AN installment of Mexican awards will be paid claimants of the State Department on and after September 5th.

GOVERNOR IRWIN offers $500 reward for the capture of the murderer of Schrumm, lately killed in Round Valley.

THE radicals of Southwark, England, propose to nominate Miss Helen Taylor for Parliament at the next general election.

PIECES of wreck supposed to belong to the schooner *San Diego*, were found last year in Cook's Inlet.

THE State Bank of Nevada at Pioche closed business on the 1st. About 30 days will be required to wind up its affairs.

THE Nile is rising favorably. It is estimated that the cotton crop will yield one hundred and twelve million pounds.

About fifty persons presented themselves Aug. 8, for admission to the newly founded Hastings Law College of the University of California.

IT is estimated that, during the last two years, 5,000,000 sheep, valued at $12,500,000, were lost in Australia through the drouth.

DEADWOOD, out in the Black Hills, has just organized its first national bank, with a circulation of $50,000, and claims to be growing fast.

THREE thousand Montenegrins have joined the insurgents in Herzegovina. There are indications of an intention to proclaim a holy war in Bosnia.

THE Topeka National Bank closed its doors August 6th. This is caused by the failure of Masten's Bank. It is believed it will pay in full.

NAKED lights caused an explosion August 7th, in an English coal mine. Fortunately no more than one of the miners was dangerously hurt.

THERE are over 25,000 flouring mills in the United States, giving employment to 60,000 men. These mills turn out annually 50,000,000 barrels of flour.

A VIRULENT fever has broken out among American laborers at Madeira & Mamore railroad, Brazil, and numbers of them are dying daily.

AT the Royal Yacht Squadron Regatta, August 6th, the *Enchantress*, American schooner, came in first, but the *Formosa* won by time allowance.

TWELVE children out of 17 attending the public school at Walker Valley, Mendocino county, have died within a few months of diphtheria.

THE Chicago and Northwestern railroad had for the year ending May 31st, a surplus of $508,453 out of earnings amounting to $14,751,062.

THE principal question to be considered at the Conference of the German Finance Ministers at Hoidelberg is the expediency of establishing a tobacco monopoly.

REPORTED that on June 23rd the French bark *Calcutta*, bound for Tahiti from Bordeaux, went ashore on one of the Society Islands. The Captain committed suicide. No other lives lost. Vessel total loss.

IT is reported that an explosion has occurred in the mine among the fortifications of Kars, resulting in fire which destroyed the best portion of the city.

THE Russians have discovered that of 3,500,000 roubles subscribed to the volunteer fleet fund, more than half of the sum found its way into the pockets of the organizers.

REV. A. DRAHNN, of Reno, sues the Virginia and Truckee railroad for $10,000 damages. He and his wife were ejected from the company's cars. They tried to pass lay-over checks after the time thereon specified was over.

THE new steel dispatch vessel *Iris*, of 4,000 tons and 7,000 horse-power (nominal), that has just been added to the British Navy, has been tried, and proved to have a speed of 21 miles an hour.

A COLORED man in Texas, believing when the eclipse came on that the end of the world had arrived, hastened his own and his little son's journey over Jordan by the aid of a hatchet and a razor.

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of their money would be distributed in the vicinity of the forest. The instances of farming operations being successfully conducted by corporations or even by absentee landlords are very rare, but the conditions of arboriculture are somewhat different and the disadvantages of corporate management are by this plan reduced to a minimum. This plan is based on the gain to be derived from the aggregation of small savings, which has been so conspicuously illustrated by our Philadelphia building associations, which have, in fact, proved to be the most successful application of the principle of co-operation.

City mechanics have spare money, but about the only spare commodity that farmers have is time. If they could invest a fraction of each year in the stock of a forest corporation, it would grow into money in due course. The legislature should provide cheap processes for the legal organization of such associations, and the idea becoming sporadic, we should see it, all over the State, in suitable localities, take root and thrive.

In some places fence timber would pay the best dividend; in others railroad ties could be grown to a profit; whilst in others the more valuable kinds, such as ornamental woods, like black walnut, would be the only kinds that would pay. A "State forester," whose services could be had at, say, $2 per day and expenses, could give valuable advice in the selection of grounds as to aspect, soil, etc., the proper kinds and methods of planting and culture, and, ultimately, as to marketing. In Europe, the initiative to industrial movements is often given by the government by the establishment of schools, etc., but in this country the people are competent to the initiative in every enterprise of pith and moment, and these neighborhood forests would constitute in themselves objective schools, awakening and producing a liberal interest. The Forest Boards would come to be no mere wooden figure heads, but fully equal to every tough, knotty subject, and their discussions and processes would awaken a great deal of attention to this very important subject.

The farmer, from his isolation, has heretofore been denied participation in co-operative movements. He is fast learning the advantages to be gained from combined and concerted action. Such forest corporations, as are here suggested, would prove additional centers of usefulness and incentives to self-helpfulness. There would be no reason for citizens to fear to supplement the capital of the farmers, provided the latter contributed at least 50% of the capital at the start; indeed such investments would probably constitute the very safest and best that could be made. HORACE J. SMITH.

George's Hill, Philadelphia.

A Native Textile Plant in Merced County.

EDITORS PRESS:—I send you herewith a sample of the fiber, dead stalk and green leaf, of a textile plant which I find growing on the bottom lands of the Merced river, in the vicinity of Snelling. The plant is here known as *shoestring*—the name no doubt being suggested by the stringy and ragged appearance of the dead stalks after being exposed to the winter storms. This sample of fiber was stripped from the decaying canes of last year's growth, and is perhaps not seen under the most favorable conditions to afford a correct estimate of its value; nevertheless, I believe that its great strength, even in its present condition, and the large yield of the plant, are qualities which render it worthy of investigation.

The plant is perennial. It grows luxuriantly on all the good corn lands along the river, and by all corn cultivators is voted an intolerable nuisance, as it strong roots have to be grubbed out of the way of the plow. It is not uncommon to see from 50 to 100 ratoons from a single root; and they seem to go on increasing from year to year. I believe that it would only be necessary to plant it once, and then the chief employment would be to keep it from becoming too dense a growth. The canes, or ratoons, grow from six to nine feet high, and would evidently produce an immense quantity of fiber per acre.

I have said that it grows on all good corn lands. It is not, however, to be found there only, as I find it on the driest and most gravelly places on the river bottom lands, and I believe it will grow on any deep soil that will produce wheat or barley. Its mode of propagation is plainly suggested to everyone who has had to grub it out of the corn-field, as every piece of root that is left on the ground becomes a new plant, and in a few years, if not removed, an ever increasing thicket of canes.

If the fiber of this plant is found to be well adapted to the manufacture of the coarser qualities of sacks and cordage, a question of vital interest to the prosperity of the State would seem to be easily solved by its cultivation.

J. R. HORSLEY.

Snelling, Cal.

[The plant, as nearly as we could determine from the leaf, is probably *Psoralea macrostachya*. The fiber seems good and strong, but no better than that yielded by many other plants. There is little opportunity of turning it to account, because other material is so cheap. For paper making, for example, nothing is better than old manila rope, and this, the paper makers inform us, can be had for $20 a ton in as large quantities as they can use. The fiber which our correspondent sends could not be cleaned and prepared for nearly so cheap a price. There is no trouble in producing raw textile material; the difficulty lies in getting the expensive machinery which is needed to manufacture it and then produce enough of the finished article to make the investment of capital profitable, this is the problem to be solved.—EDS. PRESS.]

La Belle Cascade.

The engraving on this page gives the reader a glance at a pretty little piece of California scenery located in San Gabriel valley, Los Angeles county. The engraving is made from one of Mr. Watkins' admirable series of photographs of natural scenery in this State. The charming waterfall has a wide local fame, but is only one of many beautiful "bits of nature" which the locality possesses. For a description of the scene shown in the engraving we are indebted to an accomplished writer, resident in San Gabriel, who modestly styles herself "Ecila." She writes as follows:

LA BELLE CASCADE, SAN GABRIEL VALLEY.

A delightful trip, and one that the residents of the San Gabriel valley are fond of taking, is to the lovely little fall in Eaton's canyon known as "La Belle Cascade."

If you would like the jaunt you leave the Mission San Gabriel rather early in the morning—for you will need the whole day for your pleasuring—and drive or ride some six or seven miles on a good hard road to the mouth of the canyon in the San Gabriel range. Here you must leave your comfortable carriage and pet pony, and travel the remaining mile and a half on foot, for the canyon narrows very perceptibly at times, and you will come to places where the most experienced mountain horse could hardly gain a foothold.

Now you reach the stream which you will cross 20 or 30 times, creeping along the trunks of fallen trees, or jumping from rock to rock on to the slippery stones—very likely giving your feet a dip in the cool water, unless you have taken the precaution to wear rubbers.

How clear and sparkling is the water as it burries along, forming miniature cataracts and rapids!—forming also the still deep pools in which the wary trout finds a hiding place!

Near the stream grow the gorgeous scarlet larkspur and honeysuckle, and a dainty little flower of a delicate buff; and beyond, halfway up the steep hillsides, are yuccas in great profusion—the time of blossoming is past, however, and the immense peduncle bears only the green fruit—not a single waxen flower remains.

Meanwhile your pathway seems, at each step, to grow more rugged and stony. If you are unaccustomed to mountain climbing it appears impossible to keep your footing on that barren ledge. You look up and see huge rocks threatening to topple over and crush you out of existence. You are half inclined to turn back, and doubt if any waterfall could repay you for this long, wearisome tramp. Still you press on, not to be outdone by the rest of the party, and as you round a vast mass of rock and earth covered with a thicket of tangled vines, "La Belle Cascade" smiles upon you. In front of the fall are immense stones, worn smooth by the waters, where you can rest while you enjoy the charming picture.

The cascade is rightly named "The Beautiful" as it flows from a cleft in the rock, and descends some 30 or 40 feet in a sheet of white foam; and then the streamlet rushes along over the boulders, creating a succession of bewitching little waterfalls.

On either side and beyond the cascade tower rocky walls, all their ruggedness softened and beautified by a covering of fairy-like moss, maiden's hair ferns and delicate trailing vines.

On all sides the lofty hills seem to shut you in, and directly overhead you catch a glimpse of the blue California sky; but the most pleasing part of the whole scene is the foaming water as it pours down over the walls of living green.

Well has it repaid your toilsome trip through the briars, and your scramblings over the slippery rocks, and you would willingly journey twice as far, provided you could find another waterfall as charming as "La Belle Cascade."

A Wine Exhibit at the Mechanics' Fair.

J. H. Culver, Secretary, has issued the following circular to wine producers, concerning an exhibit of native wines at the Mechanics' Institute fair, which will open August 13th:

After mature consideration by the Board of Managers, it has been decided to invite wine growers and merchants to co-operate with them in rendering the exhibition of pure native California wine at the forthcoming fair as worthy of the occasion as possible; and also for the purpose of having them submitted to experts, *not for competition*, as between individual growers or merchants, but mainly with a view to obtain a report on their respective characters and general vinous properties.

The jury will be composed of gentlemen who have no personal or pecuniary interest, but only a scientific one, in wines. A gentleman from Australia, the Rev. Dr. Bleasdale, who is residing here for a time, who, it is well known, has done much to foster and advance the vineyard industry in Australia, and whose critical judgment upon pure wines has long been recognized and highly esteemed, both in Australia and England, has agreed to take part in the present exposition, and also to favor the Managers with a report upon the samples submitted. The Managers consider that such an independent report by a distinguished savant would benefit the wine industry both in this country and abroad, by giving reliable information on the extent, variety and goodness of the results obtained hitherto in this branch of California agriculture.

It will be sufficient to send three bottles of each kind to lay before the judges; but it would be well to send also some empty *labeled* bottles to place on shelves in the hall. The wine should be sent with the least possible delay, that it may have time to rest and recover condition. Young wines are specially requested.

I am to request vineyard proprietors residing at a distance, who may have agents in San Francisco, but who may not care to send samples, to authorize me to obtain from them the samples of wines which they consider most interesting and characteristic of their district, or of their methods of treating and maturing them. A blank form will be sent to each exhibitor, upon which he is to give some facts concerning his manner of growing the grapes, etc., and the kinds of grapes used to make the samples of wine shown. A full and complete report will be prepared, published and sent to each exhibitor. All packages to be marked "Wine Exhibit," 13th Industrial Exhibition, San Francisco, Cal., and the charges prepaid.

The blank accompanying this circular has spaces from which to answer the following questions:

1. Name of wine, and number of samples sent in?
2. Age of wine, or date of vintage?
3. Name of vineyard?
4. Approximate yield per acre?
5. Name of locality or district?
6. Names of kinds of grapes generally grown in the district?

Space is also provided, in which to give any information as to the character of the soil, and the details of the system of cultivation.

Better Than a Bonanza.

We have been shown some specimens of zinc blende taken from the Gold Hill mine, Boise county, Idaho, which, besides the usual base metals common to that mineral, carry a large percentage of gold and silver. The particles of gold in this ore show a tendency to arrange themselves in an acicular form, some of the larger of these needle-like shoots being over an inch in length and the tenth of an inch in diameter, from which size they dwindle to a mere down of microscopic dimensions. This mineral occurs in the lode from which these samples were taken in small bunches, very little having been met with until a depth of 100 feet was reached. Below that level it has been found to increase at a rate that promises to ultimately very much augment the gross production of the mine.

But the above, though a curious feature, is by no means the point of greatest interest connected with this Gold Hill property. It has a history from which some useful lessons may be gleaned. In the first place, this mine lies afar off from San Francisco, its principal base of supplies, and near the center of a Territory more distinguished for its failures than for its successes in vein mining. This enterprise has never enjoyed the advantage of newspaper notoriety, if that be an advantage. Very rarely has anything been said about it by the local press of that region, nor have the Commissioners of Statistics more than alluded to it in any of their volumes. And this is all proper enough, for the Gold Hill is by no means a great mine. It has revealed no bonanza, created no millionaires and sent off no startling shipments of bullion. There has been nothing sensational or showy about it. The proprietors have simply developed here a medium sized ledge of fair grade ore, on which they have run their 25-stamp mill continuously for eight years, keeping in their employment, meantime, at good wages from 40 to 60 white men, who have received their earnings in cash at the end of every month. The owners, commencing with but little capital, have paid for this mine and some eight or nine others supposed to be equally as good, have defrayed the expense of opening it up and outfitting it with steam mill and hoisting works and made some money besides; the whole having been accomplished with the net profits derived from working this one ledge, and that under about as many disadvantages as usually surround undertakings of this kind.

It may be asked, What is the lesson to be drawn from these facts? Simply this: They tend to show how little success in mining is dependent on extraneous conditions and almost wholly on the character of the men who engage in it. They tend to show that if a small company of the right kind of men take it upon them to go out on our mineral lands and there build up a paying mining enterprise, they will be pretty sure to accomplish that end, even though their pecuniary means be limited and they have many difficulties to contend with at the start. They tend, moreover, to illustrate how possible it is for a company of that kind to dispense with the machinery of the Stock Exchange, and even the aid of the capitalist, if only they take hold with a will and manage their affairs with honesty, energy and economy. There are in Idaho hundreds of ledges just as valuable as the one from which this Gold Hill company have obtained these tolerably good results. Arizona, Utah, Nevada, and, in fact, our whole metalliferous domain abounds in lodes which, as in this instance, require but the application of persistent, well-directed labor, supplemented by some small means to insure equally good returns.

With this company the strictest economy has from the beginning been a cardinal point. They have never let their expenditures get ahead of their receipts, nor have they improved beyond the requirements or obvious prospects of their mine. They have had no salaried officials nor fine offices in San Francisco; no shares for sale

on the Stock Board, and no useless and oppressive assessments. But while frugal they have not been niggard. They have never sought to cheapen wages nor to supplant white by Chinese labor. The profits of their mine have been widely distributed, having been largely shared with their own workmen and the surrounding community. Nothing has been unjustly taken here from the poor who could ill spare it to be given to the excessively rich who did not need it.

The ledge of this company, though a regular contact vein, is, as before mentioned, not a very large one, its average width being not over six or eight feet. The ore is a highly sulphureted, gold-bearing quartz, so decomposed that it can be mined and milled at a small cost. The vein has been quite thoroughly opened by means of shafts and tunnels to a depth of 300 feet, being 250 feet below the line of permanent water. The mine is outfitted with a 25-stamp steam mill and steam hoisting works, all first-class in every particular. The ore here yields about $10 per ton in free gold, besides a large percentage of sulphurets. Of the latter some 6,000 tons have been accumulated at the mine, which, after concentration, range in value from $25 to $150 per ton. Being inexperienced and without apparatus for the treatment of these sulphurets, the owners of this mine are desirous of contracting with competent parties for their sale or to have them worked on such terms as might be agreed upon, and which on the part of the company we are prepared to say would be exceedingly liberal. As the facilities for cheaply handling these sulphurets are here very great, water being abundant and wood obtainable at very low rates, this opportunity ought to attract the attention of the process men on this coast. Thomas Mootry, Jr., one of the principal owners of this mine, is now in San Francisco and ready to negotiate with parties prepared to reduce these sulphurets successfully.

Wire Tramway in Chile.

From plans, photographs and descriptions furnished us by Mr. John Samson, an engineer lately in the employ of the Chilean government, we are enabled to give the following account of a wire tramway put into successful operation some years since on the coast of Chili by that gentleman.

The object of the tramway is to carry the coal from the mines on the Pacific coast a few miles south of the port of Lebu to the harbor of that town for shipment. Lebu is south of Valparaiso; its harbor opens to the north. The shore from the town to the mines is very precipitous, and of such material as to preclude the possibility of running an economical railroad. Moreover, the ocean is frequently so rough that the coal could not be transported by water. The only practicable plan was to construct a tramway.

The system employed is, in the main, that invented by Chas. Hodgson, of Loudon, but some necessary improvements have been made by the engineer who carried the work through. The main principle of the tramway is, of course, known to all our readers. An endless wire rope is made to pass around large drums at each end of the road, and is supported at about every 60 yards on vertical grooved wheels upon the tops of substantial posts. On this rope the articles to be transported are suspended in buckets. The attachment of the buckets to the rope is described as follows: The attachment consists of a "rope-saddle," which is a block of wood about a foot long and three inches thick, and having a groove cut in it longitudinally. As its name indicates, it rests on the rope like a saddle * * * and has a pair of little wheels fitted on each side. The box is connected with the saddle by an iron hanger so shaped that the load always hangs in equilibrium beneath the rope. On arriving at a wheel, the rope-saddle slides easily over it, while the box passes clear beneath it. The adhesion of the saddle depends wholly on the frictional adhesion between the wood and the wire rope. The coefficient of friction determines the steepest practicable grade of the tramway. Mr. Samson found that one in six was about the limit. With rubber saddle-boxes it might be one in three. With a steeper grade, the boxes on approaching a wheel would slide back. At loading and discharging stations, the boxes require to be taken off the rope and brought to a standstill. For this purpose an iron rail is fitted up on each side of the rope at such points. On the arrival of a box the little wheels, with which the saddle is provided, run on to those rails, by this means raising the saddle clear of the rope, and the box may be then taken to any point desired.

The main tramway is two and one-half miles long. It makes two considerable curves, one of 20°, the other of 29°. These are passed by the buckets by means of iron rails, such as are used at the stations, but bent and inclined so as to carry the buckets by their own gravity and momentum around the curves. The route is so irregular that, in some cases, posts of great hight have to be used, some being 60, 70, and even 90 feet. One of the spans is remarkable for its length. It is over a deep gorge on the coast; the rope is stretched for 1,080 feet, with but one intermediate support, and that below the line of the posts on either side.

The line is driven by a double cylindered engine of 24 horse power nominal. The driving drum is 12 feet in diameter and wood-lined. The rope is of steel and about an inch in diameter. The boxes contain about 350 pounds of coal, and weigh, with hanger and rope saddle, 180 pounds. The rope is driven at the rate of four miles per hour. In 1873, the average daily carriage was 100 to 150 tons. The terminal are on the same level; the rope passes over a ridge 390 feet high. The ascending and descending buckets balance each other so nearly that the engine is relieved of much labor.

At the end of the main tramway on the coast the buckets are switched off, by means of the iron rails, on to a branch rope which carries them down the bank to the mine. At various stations along the main rope, coal is received from intermediate mines.

Notwithstanding the large amount of work accomplished by this tramway, it works without the slightest noise. The constant, busy, yet quiet circuit of the loaded and unloaded buckets, up and down the incline, is said to present a very pleasant picture. But it is from an engineering point of view that the work is most remarkable. In it we see great natural difficulties overcome; steep gradients, curves and wide spans have been passed, rough ground without levelling, ravines without bridges.

Useful Information.

A Substitute for Gutta-Percha.

The *Polytechnic Review* translates from the German of Dr. W. Reigler an account of "balata," a substitute for gutta-percha. Balata, which has only been known for a short time, is inferior in the extent of its uses to caoutchouc, but surpasses gutta-percha, and is said to have already become an important article of commerce. It is the milky sap of the bully-tree, that flourishes on the banks of the Orinoco and the Amazon, in South America. The operation of winning the gum is similar in every respect to that employed with caoutchouc and gutta-percha. It resembles gutta-percha so closely in its general properties, that much of it is shipped from Guiana and sold yearly for gutta-percha, although it has many points of superiority. It is tasteless, gives an agreeable odor on being warmed, may be cut like gutta-percha, is tough and leathery, is remarkably flexible, and far more elastic than gutta-percha. It becomes soft, and may be joined piece to piece, like gutta-percha, at about 120° Fahr., but requires 270° Fahr. before melting (higher than gutta-percha).

It is completely soluble in benzole and carbon disulphate in the cold. Turpentine dissolves it with the application of heat, while it is only partially soluble in anhydrous alcohol and ether.

It becomes strongly electrified by friction, and is a better insulator of heat and electricity than gutta-percha, on which account it may find considerable application for electrical and telegraphic uses.

Caustic alkalies and concentrated hydrochloric acid do not attack it; but concentrated sulphuric and nitric acids attack it as they do gutta-percha, which it closely resembles in all other properties.

We have in balata, says Dr. Riegler, a body characterized not so much by the possession of new properties, but rather a new member of the group of useful elastic gums, taking rank between caoutchouc and gutta-percha, which may, under many circumstances, be found to be more valuable than either; and it is a matter of congratulation that the world has been supplied with another and abundant source of elastic gum to swell the supply which the rapid destruction of these trees threatened to seriously diminish.

Imitation Shell and Pearl.—Imitations of lapis lazuli, tortoise shell and mother-of-pearl have been manufactured in Austria for more than 12 years. The "shell" imitation, which is in greatest demand, may be made on glass, and consists of a layer of clear gelatine, on which the characteristic markings of the tortoise shell are produced by dotting it with a concentrated solution of vesuvine (aniline color) to which a handsome reddish shade may be given with fuchsine; or the solution is spattered over the surface and the drops allowed to run together. When dry, the whole is covered over with a coating of glue. The imitation of mother-of-pearl is more difficult. It may likewise be made on glass, and contains in the first gelatine layer a concentrated solution of some salt. Several salts may be chosen for this purpose, such as white vitriol, epsom salts, etc. After the crystallization of this salt solution, and when dry, essence of pearls is spread over the whole. The latter material is made from the exceedingly fine and silvery-shining belly scales of the bleak, which are scraped off and washed out thoroughly. To the gelatine layer thus prepared, a coat of glue is applied and the article is then complete.

Tula Silver.—The composition of tula silver, which was long kept a secret, has been discovered, at last. It consists of nine parts of silver, one part of lead, and one part of bismuth. The metals, in the proportions stated, are melted together. The addition of sulphur gives the beautiful steel-blue tint, for which it is so highly prized.

Telephonic Carbon.—The carbon disk in the telephone is lampblack, collected from kerosene or other light hydro-carbon. It is compressed into a button under great pressure.

Millstones.

In the proceedings of the Fifth Annual Convention of the Millers' National Association, held in Indianapolis, in May last, there appears a valuable report on mill machinery, prepared by Mr. Joseph F. Gent, of Indiana. Among the practical suggestions given are several relating to millstones. In selecting a stone, Mr. Gent counsels preference for a medium stone in every particular, not too porous or open, and neither extremely hard nor soft. If a close stone is desired, one should be selected that has every block close alike; if an open stone is preferred, the same rule should govern, but in no case should a stone be chosen in which the openings or porous parts exceed one-tenth of the whole face.

As regards dress, one in which every furrow runs to the eye, is preferred for high grinding, and in no case is a dress advisable which makes less than every other furrow a leading furrow. For most kinds of wheat grown in the northwest, furrows should be eight-sixteenths inch deep at the eye, and one-sixteenth to three-thirty-seconds deep at the skirt. They should be wide enough to insure perfectly cool grinding, and to discharge the chop free and round. With stones grinding on winter wheat, the furrows required are equal to very nearly two-thirds of the entire surface of the stone. Draught can only be decided upon when the dress to be put in, the amount of grain to be ground per hour, and the speed and diameter of burrs, and quality of stone are considered. Mr. Gent states that, with a medium close stone, four feet in diameter, at a speed of 130 revolutions per minute, to grind five and a half to nine bushels per hour, every furrow leading to the eye, three and a half inches would give probably a satisfactory result.

If the old-fashioned stone, with small eye, is used, the eye blocks should be kept a little below the face of the stone; or, in other words, after applying the redstaff, it should touch the whole face of the stone, but show heaviest at the skirt, not in spots, but all the way around. If a stone, while grinding the proper amount of wheat, runs hot and glazes, the trouble is not enough furrow. The stone should, therefore, be taken up, and the furrow widened, until the proper amount is ground cool.

Anatomy of a Piano-forte.—A writer has taken the trouble to give the actual material used in constructing a piano-forte. In every instrument there are 15 kinds of wood, viz., pine, maple, spruce, cherry, walnut, whitewood, apple, basswood and birch, all of which are indigenous; and mahogany, ebony, holly, cedar, beech and rosewood, from Honduras, Ceylon, England, South America and Germany. In this combination, elasticity, strength, pliability, toughness, resonance, lightness, durability and beauty are individual qualities, and the general result is voice. There are also used of the metals, iron, steel, brass, white metal, gun metal and lead. There are in the same instrument of seven and one-half octaves, when completed, 214 strings, making a total length of 787 feet of steel wire, and 500 feet of white, covering wire. Such a piano will weigh from 900 to 1,000 pounds, and will last, with constant use, not abuse, 15 or 20 years.

Photographs on Silk.—Messrs. Allard & Gupot, silk manufacturers, of Lyons, are introducing a new industry—the production of photographic impressions on stuffs. They sent to a recent meeting of the Photographic Society several pieces of silk with a variety of photographic pictures printed on them—among others, some large medalions representing pictures of the old masters. These specimens are no less than 40 meters in length. The process by which they are produced is not given, but there is reason for believing that the prints are made with salts of silver. But however that may be, this application of photography, which, ever since the discovery of the art has been sought after and made the object of numerous, more or less successful, experiments, appears now to have been successfully realized.

Good Health.

What Banting Believed.

Now that newspapers, which indulge in the profit to be derived from quack advertising, are filling their columns with notices of nostrums for reducing corpulence, it may be well to call to light again the legitimate work which has been done to effect the desired leanness. Some time ago, William Banting, an Englishman, wrote a pamphlet on this subject, which is of a very practical nature, being chiefly confined to experiments on himself to reduce obesity. By dieting, he reduced his weight in a year from 202 pounds to 156, without any inconvenience whatever. He ate all kinds of meat, except pork and veal, all kinds of fish, except salmon, eels and herrings, and abstained from potatoes, parsnips, beetroots, turnips and carrots. Fruit was freely indulged in, and toasted bread. Green vegetables were not prohibited, neither soft-boiled eggs; cheese was sparingly used. He states confidently that quantity of diet may be safely left to the natural appetite, and that it is the quality only, which is essential to abate and cure corpulence. He tried rowing, gallons of physic and liquor potassæ, horseback riding, sea air and bathing, change of climate, but experienced no relief until he changed his diet.

In his pamphlet, he gives a tabular statement of the average of stature and weight of 2,648 healthy men, obtained from statistics prepared for the use of an insurance company. A condensed form of this may suggest to our readers about how much each one of them should weigh.

Stature.	Weight.
5 feet 1 should be	120 pounds
5 feet 5 should be	142 pounds
5 feet 8 should be	155 pounds
5 feet 10 should be	169 pounds
6 feet should be	178 pounds

Those who are desirous of increasing their weight will find abundant hints for doing so in what is above written. Some are by nature and constitution lean, and no amount of dieting could produce corpulence in them; but there are none who tend to obesity, that cannot, by a proper regimen, bring their weight within manageable limits. It is not advisable to make sudden changes in one's diet, or such changes as impair the general health. Experiments, carefully conducted, will soon satisfy the accurate observer what for him is the wise course. Mr. Banting advises that the experimenter in diet should have himself weighed every fortnight or month, regularly, that he may be encouraged by the steady loss in weight to persevere in his dieting, until he has obtained the goal of his desires.

Suicide and Insanity.

Probably the most exhaustive study ever made of the subject of suicide, in its medical, moral and legal aspects, is the article by Dr. John P. Gray, in the July number of the *American Journal of Insanity*. It is one of his lectures before the Bellevue Medical College, and may be taken as conclusive on several points of discussion connected with suicide. Dr. Gray has been professionally called in such cases more frequently, perhaps, than any other medical man in the country, and the conclusions he reaches are the sum total of his long experience and observation.

Dr. Gray contests the popular opinion that suicide is always an insane act. It is always an unnatural act; but in the large proportion of cases, if not in a majority, it is committed by sane persons. Dr. Gray does not undertake to deny that the mental state must be more or less abnormal, in the serious contemplation of suicide; but the differences between the mental condition of sane and insane suicides, is too obvious to be avoided. Delusion is "the test and touchstone in the diagnosis of insanity." When this state is present, the insanity of the suicide is beyond question. But the circumstances under which suicide is generally committed are not delusions, but facts. Overwhelming financial disaster, the commission of crime, the fear of impending disgrace, something of this nature generally drives to the desperate act; and that act proves not so much a state of mental derangement, as a deficiency in the moral education. Dr. Gray dwells with much earnestness upon the influence of education, and concludes that it is controlling, in all cases where the suicide is not insane. The moment the moral barrier is broken, the question of responsibility to a future for the act, the prudential reasons of family relations, of business with other men, character, etc., are quickly disposed of.

The discussion of this branch of the question leads Dr. Gray incidentally to a consideration of the influence of example in suicide. He sums up the result of his observation on this point by saying that "education and custom being powerful influences in overcoming the instincts of nature, and in inducing to suicide, the wide-spread publication of the names of suicides, the age, the sex, the mode, and the reasons, promote suicide by inducing imitation, and by lessening the horror of the act by familiarity with it."

The Health of San Francisco.—Valuable statistics relative to disease and mortality are given in Dr. Meares' report, showing the operations of the Health Office during the fiscal year. On a basis of 300,000 population, the death-rate was 18.35 per thousand. Last year the rate was 20.56 on the same basis of population, against 17.6 the previous year, on a basis of 272,345 population. The death-rate per thousand of the other populous cities the same year was as follows: London, 21.79; Liverpool, 26.56; Dublin, 27.94; Glasgow, 24.70; Edinburg, 21; Naples, 31.73; Munich, 33.90; Calcutta, 32.46; Vienna, 33.06; Havana, 40.86; New York, 24.32; Brooklyn, 21.52; Boston, 20.63; Providence, R. I., 18.81; New Haven, Conn., 19.70; Philadelphia, 18.80; Baltimore, 22.04; Washington, D. C., 25.42; Richmond, 21.27; New Orleans, 22.97; Cleveland, 17.91; and Chicago, 17.83. The rate was reduced over the preceding year at San Francisco, New York, Brooklyn, Boston, New Haven, Philadelphia, Washington, Richmond, Cleveland and Chicago. The rate was increased at Providence, Baltimore and New Orleans.

Cramps from Alkali Water.—A correspondent of the Fresno *Republican* says: Two men in the employ of Dunn & Donnelly, while driving sheep across the plains, were taken with cramps, and came very near going to their last resting place. Cause, drinking too freely of the creek water, which is warm and strongly impregnated with alkali and other substances equally injurious to the system, and which nearly always makes one sick. Sheep herders drink it, however, without any apparent ill effect.

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NEW ADVERTISEMENTS.

C. Leonard, Pattern and Model Maker, S. F.; Scientific Books, E. & F. N. Spon, N. Y.; Assessment Notice—Gover Mining and Milling Co., W. O. Wilson, Sec'y, S. F,

The Week.

The principal local event of the week has been the opening of the Mechanics' Institute Exhibition, which is now in progress. As yet everything is not in smooth working order, but will be in a few days. We ehall note what there is of general iuterest to our readers during the continuance of the fair,or that those unable to visit it may know something of the salient features. An item of interest in connection with mining mattere this week occurred at the meeting of the Julia mine on Wednesday. A resolution was passed to the effect that as the Julia company was pumping water and raising rock at heavy expense, and the Sutro tunnel was completed to a point near the deep working shaft of the company, the directors wore requosted and conetituted to make arrangement with the Sutro tunnel company for the epeedy construction of a lateral tunnel to connect with the Julia ehaft, for the purpose of draining the water and transporting the ore and mining material, and to improve the ventilation of the mine.

We notico that in making repaire in tho Consolidated shaft, where the heat is intense, a system has been adopted of taking the platforms ont of the shaft for eight hours during each day, which is fouud to greatly assist in cooling and ventilating the lower levels. We see that the effect of findiug a new ore body in Sierra Nevada has heen to infuse new energy into the prospecting operations, and the Directors have decided to work a large three-compartment working winze in the 600 crosscut eouth on the 1700 level. This winze is 600 feet east and the same distance south of the main shaft, which will locate it ahout 1,000 feet southeasterly of the perpendicular shaft. At that point it will be necessary to sink psrpendicularly a depth of 1,000 feet to reach the west wall. This shaft will probahly cut the north end of the new ore hody, and will he made the main working shaft, it heing the intention to erect powerful hoisting machinery over it.

The Philosophy of Slickens.

Everythiug in nature says to man, "Don't try to go too fast," and sverything points him to the uecessity of that which be has, in a mood of slack morality, allowed himself to call the "curse" of labor. He forgets his lessons as soon as he hears them. He is almost as ready to strive after perpetual motion to-day as he was to seek the philosopher's stone in the days of alchemists. When he hegins to learn about a pulley, he opens his eyes with wonder at the ease with which, as he helieves, he can create power and plans to lift the world. But enthusiasm cools when inevitahle experience forces it upon him that his apparent gain in power is a loss in velocity. He invents a machine that will make so many pius that he need hire now only half a dozen lahorers, where before he had a hundred. Immediately he discharges 94 pin makers, when he finds he has to hire about an equivalent nnmher of machinists to mannfacture and take care of the new inventious. He creates a corner in some market, say he huys up all the potatoes, and confidently hopes that, heing able to fix his own price, he is on the sure road to wealth. But he soon learns that while 10 persons may take a pouud of potatoes at oue cent, not half that numher will take it at two cents, and, may he, only one-tenth at three cents; and his career is checked. He is advised that by constant saving he can surely become rich. It is a great discovery. He does nothing hut save, and, at the end of a life time, a cramped, one-sided character holds up before him the narrowness of his aim. In everything an ahnormally large development in some one direction results in ahnormal want of development in some other direction, and every change of condition in any one department soon makes known a needed eorresponding change in every other department. When the miners found gold in gravel which they did not have to crush, hut needed only to wash, their advance was wonderfully rapid. With admirable energy they conducted water for hundreds of miles to serve their own purpose only. They hegan to wear down the mountains, and to fill their pockets with the gold. But stop, do uot go too fast! One condition of the problem was forgotten in their eolution. A voice of complaint comes up from the valleys miles away, and man's ingennity and energy must he taxed anew to overcome the latest difficulty.

The Carbon Transmitter.

On Monday, at the office of the American District Telegraph Co., 222 Sansome St., we had the opportunity to observe the surprising results gained by the use of Edison'e improved carbon transmitting and Phelp's receiving telephones. We heard clearly, at a distance of 15 feet from the instrument, although there was considerable noise in the room at the time. Whispering was also clearly heard hy puttiug the instrument near the ear. By the new apparatus, we are assured by Mr. Sahine, the manager, singing can he heard so clearly that a room full of people can enjoy it..

Those who remember the illustrated article on the telephone which appeared some weeks ago in the Press, will he interested to note the change which Mr. Edison has made, to secure the gratifying results which are uow realized. The following is a description of the new and the old forms :

In the latest form of transmitter which Mr. Edison has introduced, the vihrating diaphragm is done away with altogether, it having been found that much hetter results are ohtained when a rigid plate of metal is substituted in its place. With the old vihrating diapbragm, the articulation produced in the receiver is more or lese muffled, owing to elight changes which the vihrating disk occasione in the pressure, and which probably results from tardy dampening of the vihrations after having been once started. In the uew arrangement, the articulation is so clear and exceedingly well rendered, that a whisper even may readily he transmitted and understood. The inflexible plate, of course, merely serves, in consequence of its comparatively large area, to concentrate a considerahle portion of the sonorous waves upon the small carbon disk or hutton ; a much greater degree of pressure for any given effort on the part of the speaker is thus brought to bear on the disk than could he ohtained if only its small surface were nsed.

Chrome Iron Ore.—In our next issne will appear an article on the chrome iron ore on our coast. It will he prepared with a view to furnishing useful practical information to those who have the ore to eell, and who feel dissatisfied witb the present market.

It is expected that the Dayton, Sheridan & Grand Ronde railroad, Oregon, will he completed to Sheridan by September 1st, and to The Dalles by Octoher 1st.

Over 100 students have applied for admission to the University this summer; 90 succeeded in entering.

Superintendent Gillette reports ventilation in the Savage mine connection with the Sutro tunnel to he of great value.

Opening of the Mechanics' Fair.

We give helow the addrasses of Irving M. Scott, President of ths Mechanics' Institute, at the openiug exercises of the Thirteenth Industrial Exhibition, August 13th. Also the oration of J. W. Winaus, Esq., on the same occasion.

ADDRESS OF IRVING M. SCOTT:

Ladies and Gentlemen:—On opening the Thirteenth Industrial Exhibition, we resume the story of mechanical advancemeut, and meet to review the progress of the past yaar.

The story ie replete with the incidents of successful encroachment upon the domain of the unknowu. A numerous and persistent army of explorers have invaded the ehadow realms, and forced the heavens to yield part of their secrets; and hurrowing amid the inner recesses of the earth, have laid hare facts and couditious, which enables the scientist to resolve from the domain of thought, laws and principles heretofore unknown.

No year passes without extending the knowledge of mechanical principles, and ohtaining new victories over the forces of uature, making possihle the improhable. And the shadows of the past hecome the tangable realities of the present. Inventions and improvements take a step forward, during periods of financial and commercial prostration, universal depression releases from the iron grip of business drudgery hrains aud fingers, whose cunning takes from the field of speculation, and harnesses to the practical the suhtle elements of the uuiverse.

The past 12 months has been the openiug of a new hook, and a startled world is looking down a new vista, through the gates ajar, unlocked hy the discoveries of Edison. The enlarged knowledge of the science of souud bas swept the telegraph with its cumbrous, doubly-written, faulty messages aside, aud substituted the telephone. Will the phonograph of the future he a substitute for failing eyesight? Will the megaphone quicken tbe dulled organs of hearing? Shall the choicest gems of literature he transmitted through the medinm of mechanism.

In the future of mechanical science the inflections of the voice will be transmitted. The blind shall see, and the deaf hear!

Looking hack at what mechanic art has been, knowiug what she is uow, and seeiug all the professions, her willing handmaids, bringing their laurels to her feet; and from this standpoint looking forward aud upward to the future, the constructing engineer is the Colossne in the coming time.

The machinery of transportation and its twin sister, the telegraph, have destroyed the old conditions of supply aud demand. And from the old order of keeping a supply on haud, we pass to the new order of manufacturing on demand. This trausition has for a time disturbed the financial, commercial, political and social conditions; and it has hoen a year of adjustment. The relations of the mechanical classes to the governing classes are undergoing a change, which, when consummated, will prove the wisdom of a systeu, in which the humblest citizeu shares with the highest the duties of government.

The nation's interests will he safe with the mechanics, who have been taught to take the crude materials aud shape them iuto a harmonious whole. Taught to construct, taught to build up, taught to accomplish; trained to direct their energies in one direction for a common purpose. For they will take this discipline with them into the council chambers, aud prove that the strength of the Republic rests with the producers.

The civilization of this coast has done but little towards providing suitable amusements for the people; the theater on one haud, the saloon on the other, or worse, is all that this eommunity offers to the youug. These iudustrial exhibits supply the one great want of our social system; where amply arranged and sheltered from the cold, Industry brings her trophies, Science her laws, Art her progress, and, hlending in one harmonious whole, iuvites your attention, and promises to interest, to instruct and to amuse yon.

With these hopes and au abiding faith in the future, the Trustees decided to hold the Thirteenth Industrial Exhibition. The space applied for and occupied, the sale of tickets, the generous coutributions in every department, promise a euccessful issue. The Board of Managers are pledged to the most rigid economy. All partisan feelings and differences have been settled in favor of the hest interests of the Institute. Peace, order, harmony, law aud energy have joined hands and are pushing forward the goed work. And, with the support of the public, there is no euch word as fail.

ADDRESS OF J. W. WINANS:

Gentlemen of the Mechanics' Institute: It is a source of mingled pride and gratulatiou to this fair city, which sits enthroned upon the margin of the Occident, that an institution so beneficent as yours has grown up in ber midst into such a magnitude of usefulness and power. What more exalted object can we desire to contemplate thau a Mechanics' Institute, wbich seeks, by the force of combination and co-operative uuion, with patient, persevering and uuselfish effort, to promote the welfare of the great industrial mass, to cherish art, to foster manufactures—to crown labor king? For a brief interval the community has abaudoned the mart and the exchange—the brain has ceased to pulsate and the hand to toil in the pursuit of gain—that here, within these halls, ths people may meditats upou your civic triumphs, and exult in the achievements which your zeal and enterprise bave wrought. The field in which you labor, although exhaustless, is not new or unexplored.

Discovery and Development of Art.

Beforetime, in the earliest annals of our race, while yet the world was young, the euergies of man were concentrated on the discovery and the development of art. Not art alone in the loftier and more snhlimated types of its ideal beauty, hut universal art, including those more practical and useful forms, wherein it manifested all the skill and cunning of the craftsman'e hand. If Praxiteles could summon from the marhle, and Zeuxis from the canvas, the grandest creations of the sculptor's and the painter's art, the genius of Daedalus was no less potently impressed on the rare mechanisms he contrived. The Seven Wonders of the World, those miracles of human power, still hold an undisputed sway over the works of each succeeding age. Nor do these grand examples staud alone. The might, the ingenuity, the skill of man, were uo less prominent in the perfection which the useful arts attained. Many of these, although of world-wide notoriety and use, have been entirely lost. In vain do we strive to reproduce or rival the Tyrian purple or the Corinthian brass. The inscrutable texture of the ancient coins of bronze defies our craftiest attempts at imitation. No modern applications of skilled labor can construct an Appian Way; no nice artificer can fashion an Etruscan vase. Anon, when the shadows of the mediæval era had dispersed, and that long, starless night had ended in the dawn of art revival, the wood engraving of Durer and the superb devices of Celini, attained to such perfection as no later skill could rival. Yet the glory of the present age lies not in the pre-eminence which human genius can achieve or has achieved in isolated cases, hut in the generalization and diffusion which a common desire for the cultivation, not less than the extension of the mechanics' arts, and the promiscuous pursuit of those high objects, have established among the masses of mankind. It was a world of theory, that ancient world, but this modern is a world of practice.

The Necessity of Daily Toil.

In that earlier day the alternative of human labor was not the price of human life; hut now necessity prompts man to toil, and "necessity is the mother of invention." Yet though this originates in man's primal need for food and and raiment, it end not there. With the attainment of what is absolute for the support of life comes that "*auri sacra fames*," the inexorable greed of gain. Impelled by this, as a fresh and still more powerful incentive, the mind is constantly alive to plan, the hand to execute, those almost infinite contrivances which science aud invention bring to light, and labor consummates, for the aggrandizement of the coutriver, the comfort and enjoyment of the race. Hence railroads span the continents and telegraph structures stretch through air and ocean until the very ends of earth are brought together, and the varied nations of the globe are growing homogeneous by fusion. Hence the machinery of iron and the artillery of steam are superseding with their swift results the slow and labored processes of manuel employment. Hence new conceptions, new discoveries, clutching within their comprehensive grasp the little and the large, are modifying all our lives and changing the very conditions of our being. Alas! that learning and philosophy, and the devotion of the mind to litcrary themes, should be so grimly thrust aside hy the spirit of utilitarianism as it rushes onward in its stern career. And ever, as the age swings on, the abstract hardens into the concrete. Over crumbling theories and broken speculatious, over the ruins of metaphysical inquiry, over the reveries of the dreamer and the wrecks of the imagination, drives the car of progress. Yet we rejoice in our era, and expatiate admiringly upon the world's advancement.

"We are gods by our own reckoning and may well shut up the temples.
And wield on, amid the incense steam, the thunder of our cars,
For we throw out acclamations of self-thinking, self-admiring,
With, at every mile run faster—O, the wondrous, wondrous age!
Little thinking if we work our soul as nobly as our iron,
Or if angels will commend us at the goal of pilgrimage,
Why, what is this patient entrance into Nature's deep resources
But the child's most gradual learning to walk upright without bane?
When we drive out, from the cloud of steam, majestical white horses,
Are we greater than the first men who led black ones by the mane?"

Strange Mental Mutations.

Enceladus, nerved by a renovated etrength, renewe his struggles, thrilling the uations with his smoke and flame. Can you forbear to note what strange mutations the prevailing tendencies are working in the operations of the mind? There is less heed of the infinite in the more engrossing contemplatiou of the finite. Thought is busied with research into those means whereby the material elements can be converted iuto increased facilities for aiding humanity iu its pursuit of luxury and ease. The highest good for the greatest number is no longer a mere political maxim; it seeks to subject the whole realm of uature to the wants of man. Side by side with the heroes of the world no less exalted in its annals, side by side with the great and giant intellects, and

the famous men of every age, stands the noble army of inventors, as hallowed in the popular regard as the noble army of martyrs.

It is not my purpose, nor is the time congenial, to discuss the subject of mechanics, or the mechanical arts, in learned and didactic disquisition. I have only to commend a topic which, through your expositional display, reveals its character and teaches its lessons by examples. Here, at this periodic and imposing demonstration, this carnival of labor, examples multiply on every side. The click of the needle, the rumble of the wheel, and the sonorous din of the machinery, all speak their usefulness "with most miraculous organs," and tell us what results they are achieving for the welfare of the people in terms more forcible than scientific dissertation, in commendations more sincere than verbal eulogy, in tones more eloquent than rhetorical harangues. This life abounds in instances where the voices of Nature, and of Art, discourse a language more significant than speech. I can only point to your strenuous efforts in the past and urge you forward in your noble work by hortatory words which, though they glow but feebly on the lips, are prompted by the heart.

Relationship between Utility and Beauty.

As we wander through the spacious halls and labyrinthine avenues of that huge Pantheon of art which you have reared—as we listen to the clangor of its instruments of brass and the music that reverberates from its grand choir of iron voices; as we gaze up on the gorgeous panorama which these gathered works of art display in their variety, magnificence and beauty; as we stray through the gardens, teeming with fruit and flowers, luxurious with the foliage and growth of every clime; as we behold the costliest and rarest products of the loom, the multiplied creations of machinery, the strange and subtle emanations of inventive skill; as we survey the chambers quaintly ornamented with the garniture and decorations of the Gothic Age, the age of the Renaissance, the ages of the Louis, and the showy reproductions of Versailles; as we contemplate the gallery whose walls are studded with the delineations of pencil and brush, as we linger near the plash of fountains, or move amid the gay and brilliant throng that congregate around us in the festive spirit of the time, we realize in that seeming Palace of Aladdin, lit with its thousand lamps and glittering with mechanical splendors, how close is the relationship between utility and beauty; how intimately the capacity and love of man for labor, and its infinite creations, have identified themselves with his esthetic nature.

California is a marvel to the nations, alike from her material formation and the suddenness with which she sprung into the ranks of empires. Between her cloud-capped mountain ramparts on the east, and that vast ocean, whose surges lash her western strand, she lies, in her sweet isolation, a world within herself, secluded from the world without. Far and wide, throughout her spacious confines, the mineral and vegetable kingdoms have developed their most opulent resources. No other single State or realm upon the globe displays the wealth of nature in such countless forms or such abundance and perfection. To gather from each portion of her wide domain, from her vine-clad hills and fruitful valleys, her copious productions, diversified by the variance of her latitudes and climates; to collect from everywhere within her borders the rarest fabrications of the artisan and craftsman, and present them in a sparkling mass upon these annual occasions, inspiring thus the zeal of emulation by the contagion of example, and bringing the whole people into a consciousness of the extent of these resources, is but the beginning of your work. Yours is a broader empire and a loftier ambition. By systematic combination and properly directed effort, it is your purpose to increase the demand for labor while multiplying its results; to elevate the condition, extend the usefulness, promote the prosperity of the producing classes. Organization is power. In stimulating industry, not merely through the premiums which you bestow upon successful competition, but through the richer rewards that spring from the notoriety and patronage which industry acquires by your exertions, you augment production. Increase of production generates extension of demand.

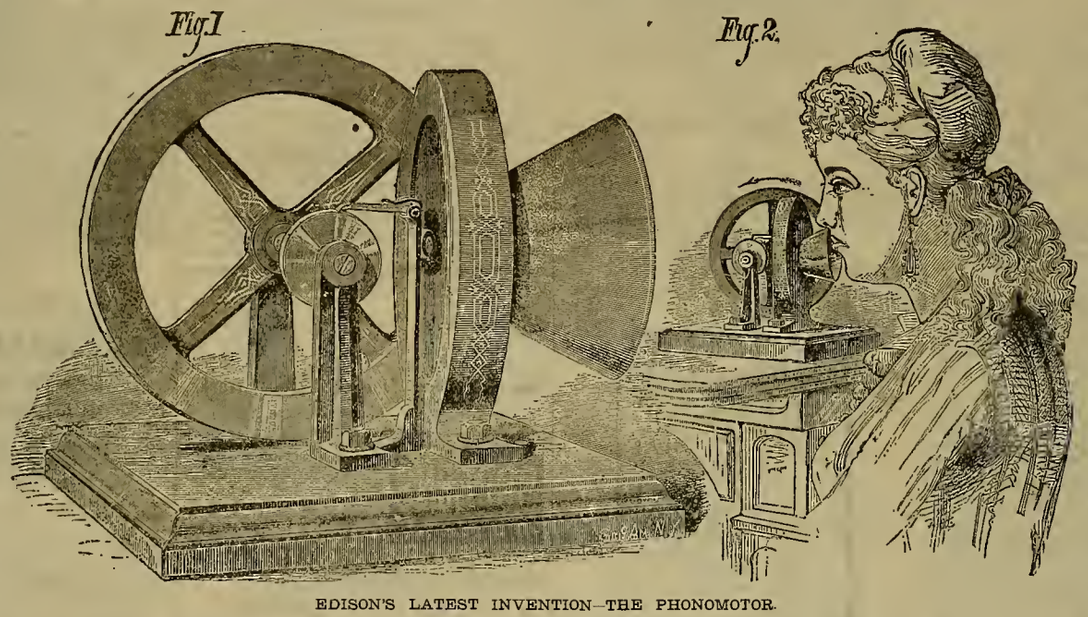
Sustaining the Rights of Labor.

In sustaining the rights of labor you give new courage to its faltering steps, new hopes to its desponding spirit. You lift it up to a closer equality with capital. You banish alike the arrogance of the consumer and the humility of the producer, so that the invidious and class distinctions of society are swept away, and the whole community, except where ignorance or vice creates depressions, is brought to stand upon a common platform. Well may the millions toil when roused to such a manly pride, when lifted to such lofty aspirations, when opened to such channels of success as your organization is creating. Even among the lowest ranks of men, these valued influences, while they ameliorate the condition, cultivate the moral sense and excite a thirst for knowledge. No stress of adverse fortune can force that man who clings unto his self-respect from realizing for himself and for his children the benefits of education. In the furtherance of this great principle you have collected on your shelves a library which you are constantly augmenting, and which, for rarity, extent and value, has no superior perhaps, save one, on the Pacific coast.

We come to-day to offer our homage at your consecrated altar. Your institution, prevailing over all the discouragements and obstacles which attended its creation—those influences which have crushed so many noble enterprises—has passed from the trials into the triumphs of time, and eventuated in a permanence of prosperity and power. Like Hercules struggling with the serpent in his cradle, you bore yourselves manfully, even in the very outset of your being; like him you have accomplished your 12 labors—those great industrial exhibitions which you have annually consummated during 12 revolving years. In this Institute, which has loomed up into such distinguished prominence and grand proportion, you have reared for yourselves a memorial more enduring than a monument of brass. Though the sword of the conqueror may fascinate and dazzle, yet it shines ever with a lurid and baleful gleam. Your honors are gathered from the plaudits of the people as the reward of earnest and successful effort, and, like the sunshine, they enliven while they glow. Flinch not, nor falter in your high resolve, but remain forever faithful to your trust, and let that venerated maxim, which the centuries have made immortal, *"Improbus labor omnia vincit,"* be graven in flaming characters upon your shield.

Edison's Phonomotor.

"Weak things have been chosen to confound the things that are mighty." Every once in a while the truth of this old Bible saying flashes suddenly upon us with new light. In every department of life we see once and again corroborated, and in no department, and among no class of men more frequently than in great inventions, and among great inventors. A student, struck with the idea that he is a genius, is given a difficult problem in mathematics. He sits down with his pencil, and, as if imagining that the complexity of the solution must be proportioned to the reported difficulty of the problem, he seeks his instruments and methods from the recondite branches. Arithmetic and geometry must be too simple for the unraveling of a knot that has such a reputation. So he applies analytics, and calculus and trigonometry. He gets a solution, indeed, but is a solution that covers folios with figures, and requires a day for each application. Meanwhile, some less aspiring youth, who dares not so much as lift up his eyes towards the sublime altitudes of calculus and her companion, smites upon his breast that he can use but the simpler forms of arithmetic, geometry and algebra. But he, too, brings out a solution. It is just as effective as the other, and is accomplished by the drawing of half a dozen well-advised lines. The mighty things are confounded. So, in contemplating the great inventions of the world, how many may have said: "If I had only had the slightest idea that it was so simple, I would have thought of that long ago." This is true of the steam-engine and of the telegraph. And it has, no doubt, occurred to thousands that the same is equally true of such of Edison's inventions as are likely to prove of most universal utility. It is, indeed, rather hard for one whose electrical bump has not been developed, to comprehend how Edison, or anybody else, can make two messages at a time go each way on a telegraph wire. The microphone and tasimeter require some little study to understand what principles lie at the bottom of them. But the phonograph is, to any one that understands the telephone, simple as the almost accidental way in which it was discovered. And so it is with the instrument which we are about to describe. In fact, the invention is so simple that a glance at the engraving taken from the *Scientific American*, is sufficient to explain the whole thing.



EDISON'S LATEST INVENTION—THE PHONOMOTOR.

The Phonomotor.

The phonomotor is a machine in which the vibrations produced by the human voice are applied so as to produce visible motion. The vibrations are allowed to first produce corresponding vibrations in a regular phonograph diaphragm (as shown in the figure). By means of a piece of rubber tubing placed against the diaphragm, the vibrations are then transmitted to a spring, which in turn vibrates in unison with the diaphragm, and thus with the voice. To the spring is attached a pawl. If any of the uninitiated do not know what a pawl is, they may be referred to the capstans of steamers. Those little hinged irons that, when the capstan has been turned a few inches, fall down with a click, and prevent the capstan from turning back again, will give one a very good idea of what a pawl is. The pawl on the phonomotor spring rests on the edge of a notched wheel. When the vibration of the voice vibrates the diaphragm, which in turn pushes the spring out, the pawl catches in a notch of the wheel, and pushes the wheel around a distance corresponding to the distance the spring vibrates. When, in its vibration, the diaphragm goes back, the spring goes back also, and with it the pawl. The pawl, in returning, catches on one of the other notches, and when the diaphragm comes forward again, the spring is ready to push the wheel around still further. So the phonomotor, with the power exerted by the voice alone, the wheel may be set into quite rapid motion, and after a careful series of experiments with this new invention it will become possible to measure and compare voices with regard to their strength and pitch. Many interesting discoveries concerning our vocal machinery will no doubt be made by careful observation of this instrument. And even before any careful and exhaustive experiments have been made, it may become possible to apply the machine so that, in some kinds of work, the voice may supply the place of hands, in which case, those poor armless and one-legged soldiers from the Tyrol and other ports of Ireland and the United States, who sing about our streets, may be set at some profitable employment, and the hand-organs on our street corners may be used to grind corn.

The engravings on this page which are taken from the *Scientific American*, show how simple the contrivance is. Fig. 1 shows the phonomotor displayed so that all its mechanism appears. Fig. 2 shows the way in which the sound is applied to produce the motion.

WHAT AND HOW?

In this column are printed all sensible inquiries relating to subjects connected with mining or relating to any matters of general scientific interest; also the answers to them as dictated by individual experience, or as furnished by correspondents.

On Suggestions for Inventions.

EDITORS PRESS:—In your last issue I see a letter from a farmer suggesting the invention of a "bean harvester." Now, this is a class of letters which I would like to see more frequently in the columns of the scientific papers. We all know that there are many intelligent men engaged in the practical operations of the arts, who, overcoming the tendency which habit brings to fall into routine, think of their work and reason on its processes. Such are the men who are most likely to see the imperfections of the present means employed and also the difficulties which stand in the way of improvement. But it may be that though at times a thought crosses their mind as to whether such and such a thing might not be done better still they have neither the time nor the faculty to act on their idea. But if they would publish their suggestions, vague though they might be, they would confer a benefit not only upon the particular art which they practice, but upon the world of inventors.

Every author must have felt at times, when he had to supply a certain amount of "copy," at a loss for a subject upon which to write, and he has been grateful for a lucky hint. So it is with the inventors. There are men amongst us who are "brimming over" with the inventive faculty, who pine for action, and who only seek a field to display their genius.

Let, then, the SCIENTIFIC PRESS assist in directing this force. It has already done much service in letting inventors know what has been done, and observant men are less likely than formerly to be treading in each other's footsteps. But still the young inventor is almost discouraged when he sees the long list of patents every month, and is led to wonder if there is anything left to invent.

The forthcoming Mechanics' Fair will most likely be visited by practical men from every part of the State. In looking at the machines exhibited, they will no doubt express their opinions; and these opinions, picked up by the quick ears of a reporter, and recorded in the columns of the *Mechanics' Fair Daily*, will give more than a passing interest to that periodical.

JOHN SAMSON.

Inquiry for Government Land.

EDITORS PRESS:—There is probably much land still open to pre-emption and homestead among the foothills suitable for fruit-raising. If some of your subscribers in San Luis Obispo, Ventura, or other coast counties, living in the vicinity of government lands, would give the information through the PRESS, they would confer a favor on many strangers in the State.—J. M. M., Orange, Cal

We have always encouraged statements of this kind. Any one knowing of good land subject to pre-emption, and desirous of building up neighborhoods by the incoming of settlers, will find us ready to print his account of the opportunities which may be found in his region.

BULLION SHIPMENTS.—Since our last issue shipments of bullion from the prominent mines have been as follows: Northern Belle, Aug. 5th, $5,176.43; Aug. 9th, $3,436.64; Aug 10th, $3,616.05; total for July, $109,678.56; Bodie, Aug. 8th, $31,500; California, Aug. 7th, $34,585.53; total for July, $348,191.68; Independence, Aug. 12th, $7,976.03; Tybo Con., Aug. 5th, $4,630.95; total to date, $9,978.72; Aug. 7th, $4,559-29; Aug. 9th, $4,546.14; Christy, Aug. 9th, $4,748; Leopard, Aug. 10th, $4,100; Con. Virginia, Aug. 9th, $91,626.78; total for July, $216,348.17; Standard, Aug. 9th, $37,661.60; total for July, $104,049.76; McCracken, Aug. 12th, $9,100.70; Manhattan, Aug. 13th, $11,400; Raymond & Ely, Aug. 5th, $7,326.16; Star, Aug. 9th, $2,642.33; Ontario, Aug. 5th, $5,672.74; Aug. 6th, $3,016.55; Aug. 7th, $2,604.12; Aug. 8th, $2,972.65; Silver Reef, Aug. 5th, $6,275.68; Aug. 6th, $2,750.66; Aug. 7th, $1,437.73; Aug. 8th, $11,552.15; Germania, Aug. 6th, $3,400; Old Telegraph, Aug. 7th, $1,000; Alexander, Aug. 15th, $4,501.74.

THE LEGAL TON OR BUSHEL OF BITUMINOUS COAL.—The recent Legislature of Pennsylvania passed the following bill in reference to what constitutes a bushel or a ton of bituminous coal. Heretofore a bushel of coal was 70 pounds. Now a bushel is 76 pounds, and a ton 2,000 pounds.

THERE are over $2,500,000,000 in railroad bonds and stocks which pay the owners nothing. There is $500,000,000 in iron furnaces and manufacturing establishments, and $600,000,000 in shipping, hopelessly tied up.

RHINISH CANAL.—A canal is to be made from Amsterdam to the Upper Waal (the southern branch of the Rhine), an undertaking which will doubtless prove of considerable importance to the towns on the Rhine.

Mining and Scientific Press Patent Agency.

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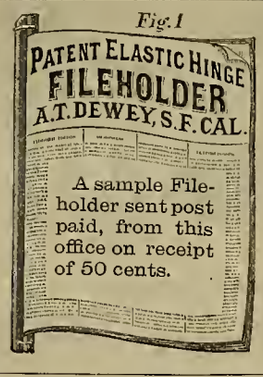
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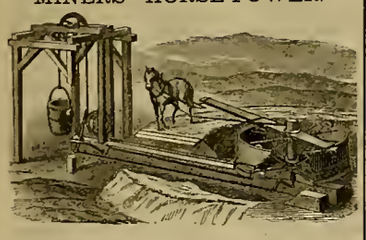

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Name of Company.	Week Ending July 25.		Week Ending Aug. 1.		Week Ending Aug. 8.		Week Ending Aug. 15.	
Alpha	10½	9	11	9½	16½	10	14½	10½
Alta	7⅛	7⅛	9½	7½	11	8½	12	8⅝
Andes	40c	35c	35c	25c	80c	35c	50c	40c
Alps	60c							
Argenta	50c	45c	50c	45c	50c	40c	70c	45c
Baltimore Con								
Belcher	4.45	3.95	4.60	4.05	10	4.45	9½	4⅛
Belmont	1	70c	1	65c	2.75	90c	1.80	75c
Best & Belcher	15⅞	14½	14⅝	13¾	17⅞	14⅝	20	14½
Bullion	5½	3.80	5½	4.60	8⅛	5½	9½	5
Bechtel	1.40	80c	1.90	1½	5	1.80	3¼	1.60
Bodie	10½	7	17½	10	25	17	46	17
Benton	2.15	1.90	3.40	1.90	3.90	3.40	6½	3.10
Caledonia	2.15	2.05	2.15	1.85	3.35	2.15	3⅝	2.10
California	10½	7½	10	7½	12½	9¼	12½	9½
Challenge	1	75c	1	75c	1¼	1	2.15	1¼
Chollar-Potosi	32	25½	30	28	35½	29⅞	38¾	29
Confidence	6	5	5½	5½	7	5	6¾	4⅞
Con Imperial	75c	65c	70c	60c	5	70c	1¼	85c
Con Virginia	8⅜	7	9	7	10¾	8½	10⅝	8¾
Crown Point	7⅜	5½	8¾	6⅞	9¼	7¾	11¼	8
Dayton	20c				50c	25c	50c	30c
DeFrees	25c	15c	15c		2.c	10c	25c	15c
Day	40c		50c	40c	1	40c	1	45c
Eureka Con	53	34	48¾	44	48	44	48¾	42½
Exchequer	3.40	2¼	4.15	3.20	5½	3.90	6	4
Endowment	70c	50c	95c	65c	2	1	1½	90c
Gen Thomas			15c					
Grand Prize	3.85	3¼	3.55	3¼	3.60	3¼	6¼	3¼
Gila	60c	50c	60c	35c	55c		55c	50c
Golden Chariot	25c	20c	30c	20c	25c		50	25
Gould & Curry	8	6¾	7¾	6⅜	9	7⅜	11½	7
Hale & Norcross	7⅛	7	7¾	7	9¼	7	11	7⅛
Hussey	55c	40c	50c	45c	90c	55c	90c	45c
Julia	7½	6	8⅜	7	12½	8	13⅜	8
Justice	5½	4.95	5½	4.40	8	5½	7¼	5½
Jackson			5	4	4½	3½	5	3½
Joe Smith								
K K Con								
Kentuck	3.60	3	5½	3.40	6	4½	6¾	4⅜
Kossuth					5c		30c	10c
Lady Wash			3		8	8	12	8½
Leopard	1.10	80c	1	75c	1.55	1	1½	95c
Leviathan	45c	35c	45c	40c	95c	40c	75c	60c
Leeds	1		40c		1	25c	1	90c
Modoc	35c	25c	35c	25c	30c	20c	35c	25c
Manhattan	6½	6	6	5½	5½	5½	8½	5½
Meadow Valley								25c
Mexican	14½	14½	13½	12½	24½	13½	26½	13½
North Con Virginia			1.60	75c	5½	1.45	4½	1½
New York	60c	50c	1.10	50c	1½	95c	1.70	1
Northern Belle	11	10½	10½	10½	10½	9	11½	9½
New Coso	40c		45c	40c	40c		45c	40c
Navajo	55c	40c	50c	40c	50c	45c	65c	45c
Occidental				1.40		1.40	1	1
Ophir	59	42	45	36	46	33¾	48	41
Overman	11½	10½	12½	9½	18	11½	18	11¾
Panther					20c		20c	
Raymond & Ely	3		3		3.95	3	4	2.85
Rock Island						2½	3	
Savage	11½	10⅜	10½	9½	13	10½	14	11⅜
Sag Belcher					26½	22	30	35
Sierra Nevada	9⅜	7½	12½	7⅜	33½	13	31½	11⅜
Silver Hill	90c	75c	1½	60c	2	1	1.65	1.90
Succor	1.20	1	1.05	90c	2.70	1.05	2½	1.10
Solid Silver	23	21	22	25c	4	2.40	4.30	4
Star	1½	1	1		2½	1	3	1
Trojan	50c	40c	50c		45c	65c	50c	55c
Union Con	9⅜	7	9⅜	6⅞	30	10c	28½	9
Utah	11½	9½	11⅜	8½	16	10½	16½	11½
Wells-Fargo	10c	5c	10c	5c	20c	5c	20c	15c
Woodville	90c	35c	60c	35c	75c	60	85c	45c
Yellow Jacket	11⅞	9½	10⅞	9½	16	10½	16	10½

Sales at S. F. Stock Exchange.

Friday A. M., August 9.

945 Alta.....10¾@10
1040 Alpha.....13½@14½
740 Best & Belcher...19@18¾
2315 Bullion.....9@8½
3720 Belcher.....9@8½
3395 Con Virginia.....10½@9¾
1246 California.....12@11¾
410 Chollar.....35@38
3130 Crown Point.....9½@10
750 Confidence.....5¼@6
7275 Con Imperial.....15@11
4565 Exchequer.....5½@4.35
2325 Gould & Curry.....10¼@11
2360 Hale & Nor.....10¾@11
4190 Justice.....7½@8
2310 Julia.....10½@8½
1685 Kentuck.....3@5¼
3330 Mexican.....23@19
890 Overman.....16@18
850 Ophir.....45¼@43
5115 Sierra Nevada.....21@23
20 Sag Belcher.....30@31
850 Savage.....13@13¾
575 Succor.....21@2
6540 Union Con.....25@22½
615 Utah.....14@13½
2345 Yellow Jacket.....15@13¾

AFTERNOON SESSION.

700 Argenta.....50@51
1545 Andes.....80@85
1080 Benton.....4@4½
1810 Bechtel.....3½@2.60
430 Bodie.....24½@27½
1030 Belmont.....1.45@1.40
4300 Belle Isle.....25@30c
2030 Boyle.....1½@1.90
1570 Combination.....30@35c
1210 Challenge.....2.15@1.90
1685 Kentuck.....3@5¼
3330 Mexican.....23@19
890 Overman.....16@18
850 Ophir.....45¼@43
5115 Sierra Nevada.....21@23
20 Sag Belcher.....30@31
850 Savage.....13@13¾
575 Succor.....21@2
6540 Union Con.....25@22½
615 Utah.....14@13½
2345 Yellow Jacket.....15@13¾

AFTERNOON SESSION.

700 Argenta.....50@51
1545 Andes.....80@85
1080 Benton.....4@4½
1810 Bechtel.....3½@2.60
430 Bodie.....24½@27½
1030 Belmont.....1.45@1.40
4300 Belle Isle.....25@30c
2030 Boyle.....1½@1.90
1570 Combination.....30@35c
1210 Challenge.....2.15@1.90
3330 Mexican.....23@19
890 Overman.....16@18
850 Ophir.....45¼@43
5115 Sierra Nevada.....21@23
20 Sag Belcher.....30@31
850 Savage.....13@13¾
575 Succor.....21@2
6540 Union Con.....25@22½
615 Utah.....14@13½
2345 Yellow Jacket.....15@13¾

Saturday A. M., Aug. 10.

930 Alpha.....13¾@14
2325 Alta.....9½@8¾
3110 Bullion.....9@8¾
650 Best & Belcher...18¾@18
2130 Belcher.....8½@8¾
795 Bodie.....28@23½
945 Bechtel.....2.40@2
385 Belmont.....1½@1.80
1630 Con Virginia.....9¾@10
1230 California.....12½@12

495 Grand Prize.....6¼@6
1200 Gila.....50c
250 Golden Chariot...45@50c
825 Hussey.....60@70c
280 Hillside.....3½
100 Homestake.....9
1650 Justice.....6@6½
1630 Indepeudent...1.40@1.55
500 Kossuth.....10c
50 Leeds.....1
1290 Leopard.....1.10@1.15
1350 Lady Wash.....3@2½
675 Leviathan.....75@65c
500 Lee.....55c
2000 Modoc.....30@35c
200 Mides.....2
555 Manhattan.....7
900 Meadow Val.....50c
170 Martin White.....4
2350 McClinton.....2½@2
235 Northern Belle...10@10½
400 New Coso.....45@40c
1235 North Con Vir.....2½@2
1355 New York.....1¼@1.15
1045 Navajo.....45@60c
200 Occidental.....1.10
300 Peytona.....1¼
370 Raymond & Ely...3@3½
1350 Lady Wash.....3@2½
700 Red Cloud.....2@2½
75 Scorpion.....2½@2
450 Solid Silver.....4
1335 Silver Hill.....1¼@1.65
75 Summit.....2½
300 St Louis.....50c
1000 Silver Prize.....15c
650 Star.....1½@1½
1825 Tiptop.....1
1500 Trojan.....75@70c
1110 Toga Con.....2½@2
1100 Vermont Con.....1
670 Woodville.....75@60c
2750 Wells-Fargo.....20@15c
2780 Ward.....3½@3

Tuesday A. M., Aug. 13.

2230 Alpha.....13¾@12
2355 Alta.....9¾@10
330 Andes.....75@65c
480 Best & Belcher...18¾@18
1260 Belcher.....9@8¾
1635 Bullion.....8½@8¾
1410 Benton.....3@3½
245 Boyle.....1.70
3255 California.....12¾@12
890 Con Virginia.....9¾@9¾
9235 Con Imperial...1.05@1.10
120 Confidence.....6@5½
1745 Brown Point.....11@11½
530 Caledonia.....2.35@2.40
305 Chollar.....35@37
550 Challenge.....1¼
250 Con Washoe.....50c
600 C P Ravine.....20c
300 Dayton.....50c
1970 Exchequer.....5½@5¼
715 Gould & Curry...10¾@10¾
1015 Hale & Nor.....10@9¾
2640 Justice.....5½@5¾
775 Julia.....12½@12
430 Kentuck.....6@5½
500 Kossuth.....10c
505 Leviathan.....65@70c
500 Lady Bryan.....1.15
500 Lady Wash.....9½@9¾
2410 M Con.....23½@23
200 Mides.....2
1540 North Con Vir.....2½@3
685 New York.....1.10@1.15
160 Ophir.....44
460 Overman.....14½@14¾
300 Rough & Ready...3@2½
2000 Sierra Nevada...23½@23¾
960 Savage.....13¾@13¾
1700 Succor.....1¼@1.40
5 Seg Belcher.....33
1170 Silver Hill.....1.40@1.30
350 Scorpion.....2
200 St Louis.....25c@30c
1070 Trojan.....85c@70c
1760 Union Con.....26½@25½
360 Utah.....15
450 Vermont Con.....3½
350 Ward.....3.30@3.35
150 Woodville.....45c
1510 Wells-Fargo.....15c@20c
1460 Yellow Jacket...15c@15¾

AFTERNOON SESSION.

550 Argenta.....65@70c
1110 Alta.....11¾@11½
450 Best & Belcher...18½@18
1700 Belmont.....1¼@1.60
400 Belle Isle.....25c
4955 Bechtel.....2@2½
560 Belcher.....9½@9¾
130 Bulwer.....15
1095 Bodie.....45@46
200 Benton.....6½
275 California.....11¾@11½
525 Con Virginia.....9¾
200 Combination.....25c
1535 Crown Point.....10¾@11
2600 Con Imperial...1.05@1
850 DeFrees.....20c
2870 Day.....1.05c@95c
225 Eureka Con.....44¾@44
1900 Endowment...1.40@1.55
400 Gila.....55c
420 Gould & Curry...9¼@10
100 Golden Chariot.....40c
775 Grand Prize.....6¼@6¾

SALES OF LAST WEEK AND THIS COMPARED

Thursday A. M., Aug. 8.

805 Alpha.....13½@15
1750 Alta.....10¼@11
880 Andes.....75c@80c
880 B & B.....17½@17½
1975 Bullion.....7⅞@7⅞
4250 Belcher.....8½@9
1050 Chollar.....34¢@35
2220 Con Virginia.....9
1235 California.....11¾@12
1815 Caledonia.....3¼@3.35
2170 Crown Point.....9¼@9¾
16665 Con Imperial...1.10@1.
1300 Challenge.....1¼
645 Confidence.....5c@6
10 Dayton.....25c
2460 Exchequer.....4.70@5
1900 Gould & Curry.....8½@9
1140 Hale & Nor.....8¾@9¾
2020 Julia.....6½@6¾
2685 Julia.....10c@11
1240 Kentuck.....5½@6
1300 Lady Wash.....8½@8¾
3370 Lady Bryan.....2@2.10
1450 Mexican.....16½@17½
200 Mides.....2
975 New York.....1.40@1¼
775 Overman.....17@18
350 Ophir.....42@42½
250 Occidental.....1¼@1.40
1350 Succor.....2½@2.20
970 Savage.....12¾@13
20 Seg Belcher.....26½
2100 Silver Hill.....1½@2
14465 Union Con.....22@30
435 Utah.....14@15
3100 Wells Fargo.....15c@20c
50 Woodville.....60c
1280 Ward.....2.90@2½
2325 Yellow Jacket...15@16

AFTERNOON SESSION.

300 Argenta.....40@50c
2175 Belmont.....1.30@1½
690 Bodie.....23¼@24
1875 Bechtel.....2.80@3.10
2950 Benton.....3½@3¾
1730 Boyle.....1½@2
400 Combination.....25c
1030 Con Virginia.....10½@10¾

2025 Hussey.....65@75c
650 Hillside.....3½
200 Homestake.....8½
2210 Independent...2.30@2
100 Jackson.....4½
1650 Justice.....6@6½
2625 Leopard.....1½@1.35
1140 Lady Wash.....10¼@10¾
100 Leeds.....90c
1545 McClinton.....2½@2.40
635 Manhattan.....7¼@7½
175 Meadow Valley...60@50c
970 Mexican.....22@22½
2120 Modoc.....30@35c
50 M White.....4
300 New Coso.....40c
170 Northern Belle.....11
1610 Navajo.....65@60c
370 Ophir.....45½@45½
500 Panther.....20c
10 Raymond & Ely.....3¾
650 Red Cloud.....3@3½
100 Star.....1½
530 Summit.....2½@2
370 Sierra Nevada...29@28½
1050 Silver Prize.....15@20c
1000 Tiptop.....1¼@1.00
2655 Tioga Con.....3.80@3¾
520 Union Con.....25½@25½
1000 Ward.....3.30@3¾

Wed'sday A.M., Aug. 14.

460 Alta.....11@11¾
1400 Alpha.....13¾@13¾
455 Con Virginia.....9½@9¾
4120 Caledonia.....2½@2.10
2350 Con Imperial...95c@85c
460 Confidence.....5c@4¾
650 Best & Belcher...16@17
2115 Belcher.....8½@8¾
3305 Bullion.....8¾@7¾
1585 California.....11¼@11¾
455 Con Virginia.....9½@9¾
1100 Crown Point.....9½@9¾
380 Chollar.....33c@32
4120 Caledonia.....2½@2.10
2350 Con Imperial...95c@85c
460 Confidence.....5c@4¾
1430 Hale & Nor.....8½@8¾
2315 Justice.....5¼@5¾
1350 Julia.....12@12½
2355 Exchequer.....4½@4.15
1400 Gould & Curry...8½@8¾
2365 Mexican.....20c@22c
700 Belmont.....1.45@1.60
600 Belle Isle.....25c
700 Belmont.....1.45@1.60
600 Belle Isle.....25c
1925 Benton.....5½@5¾
1525 Bodie.....2.30@2.35
2465 Bechtel.....2@2¼
700 Belmont.....1.45@1.60
600 Belle Isle.....25c
1925 Benton.....5½@5¾
1525 Bodie.....2.30@2.35
230 Bulwer.....16½@17¾
300 Con Washoe.....45c
800 Combination.....25c
500 Comanche.....60c
1100 Challenge.....1¼@1¾
2410 Concordia.....1¼
200 Dayton.....40c
650 DeFrees.....20c
965 Day.....95c@1
200 El Dorado S.....20c
1655 Endowment...1.20@1.05
2255 Eureka Con.....43c@42½
1650 Goodsha.....1¼@1¾
285 Grand Prize.....6@5¾
1100 Gila.....50c
300 Homestake.....8½@8¾
3100 Hussey.....75c@90c
1795 Hillside.....3½@3¾
2775 Independent...2½@2.40
725 Jackson.....5c@4¾
300 Kossuth.....30c
500 Lee.....55c
1160 Leopard.....1.30@1¼
900 Leviathan.....60c
895 Lady Wash.....12@11¾
550 Manhattan.....7¼@8
40 M White.....4¼
1000 May Belle.....2
895 Modoc.....35c@30c
1110 Alta.....11¾@11½
300 Meadow Valley...30c@25c
100 New Coso.....40c
300 N Con Virginia.....3@3¼
505 Navajo.....60c
170 Northern Belle...11¼@11
300 Overman.....18
220 Raymond & Ely...3¼@4¼
400 Red Cloud.....3c@2½
670 Rough & Ready...2½@2¾
1005 Silver Hill.....1.20c
1580 Summit.....2½@2.35
670 Silver Prize.....20@15c
250 Solid Silver.....4.20@4¼
1815 Tioga Con.....3¼@3.60
500 Tiptop.....90c@1
200 Woodville.....50c
9200 Wells-Fargo.....20@15c
500 White Cloud.....1
2910 Ward.....3@3.30

Thursd'y A.M., Aug. 15.

945 Alta.....10¾@11
340 Alpha.....13¾@13¾
200 Andes.....60c
540 Best & Belcher...17½@18
1840 Bullion.....9¼@9¾
175 Benton.....5½@6
1155 Belcher.....8½@9
1900 Boyle.....2
3260 Con Imperial...95c@1
760 California.....10¾@11
815 Con Virginia.....9¼@9¾
20 Confidence.....5c@5½
210 Chollar.....34c@36
1720 Crown Point.....9¼@9¾
1275 Caledonia.....2.80@2.90
300 Con Washoe.....70c
3200 Challenge.....1.30
2155 Exchequer.....5½@5¾
1045 Gould & Curry...9c@9¾
605 Hale & Nor.....8¾@9
1135 Julia.....13¾@13¾
1440 Justice.....6¼@6¾
370 Kentuck.....4.2@4.90
1150 Leviathan.....70c@65c
240 Lady Wash.....11½@12
650 Lee.....65c
250 Mides.....2
10.0 Mexican.....22½@22¾
475 Mexican Star...19@20c
715 New York.....1¼@1.70
130 North Con Vir.....3¼@3¾
335 Ophir.....44c@44¾
370 Overman.....13¾@13¾
30 Occidental.....1.65
700 Rough & Ready...2½
560 Succor.....1.10
2095 Sierra Nevada...30c@31c
420 Savage.....12½@12¾
270 Scorpion.....3c@3½
1725 Silver Hill.....1.30@1¾
325 Solid Silver.....4.40
1100 Trojan.....65c@60c
210 Utah.....14¼@15
2385 Union Con.....24@25½
1000 Vermont Con.....4c@4.10
1100 Wells-Fargo.....19¾@20c
895 Ward.....3.60@3¾
400 Woodville.....50c
1135 Yellow Jackct...13¾@13¾

AFTERNOON SESSION.

150 Argenta.....60c
860 Aurora Tunnel.....20c
200 Alpha.....13¾@13¾
1275 Belmont.....1.60@1¾
930 Bechtel.....2@2.10
500 Bodie.....37@38
1050 Boyle.....2.40@2.60
960 Bullion.....9½@9¾

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS—STOCKS ON THE LISTS OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt. Sale.	Secretary.	Place of Business
Alps S M Co	Nevada	13	1 00 May 21	Aug 14 Sept 10	O D Squire	331 Montgomery st
Alta S M Co	Washoe	12	1 00 July 18	Aug 22 Sept 10	W H Watson	302 Montgomery st
Belcher S M Co	Washoe	15	1 00 July 17	Aug 20 Sept 10	Jno Crockett	419 California st
Bullion M Co	Washoe	7	1½ 50 Aug 12	Oct 7	J Gruss	418 California st
Boyle M Co	Nevada	1	15 Aug 1	Sept 4 Sept 23	Wm H Watson	302 Montgomery st
DeFrees M & M Co	Nevada	7	10 Aug 5	Sept 6 Sept 23	Thos E Atkinson	310 Pine st
El Dorado South Con M Co	Nevada	13	25 July 27	Aug 30 Sept 23	C A Sankey	331 Montgomery st
Grand Prize M Co	Nevada	1	1 00 July 9	Aug 15 Sept 5	R H Brown	327 Pine st
Gila Con M Co	Arizona	2	03 Aug 8	Sept 28 Oct 15	P B Pettigrew	419 California st
Hussey Con G & S M Co	Nevada	5	15 June 21	July 24 Aug 14	R H Brown	327 Pine st
Hale & Norcross S M Co	Washoe	59	1 00 Aug 13	Sept 18 Oct 9	J F Lightner	58 Nevada Block
Justice M Co	Washoe	26	1 50 Aug 13	Sept 18 Oct 5	R E Kelly	419 California st
Kentuck M Co	Washoe	13	1 00 Aug 7	Sept 9 Sept 30	J W Pew	310 Pine st
McCracken Con M Co	Arizona	1	50 July 10	Aug 24 Sept 28	H Aug Whiting	211 Sansome st
Modoc Con M Co	California	5	50 July 17	Aug 26 Sept 16	J W Pew	310 Pine st
Martin White M Co	Nevada	1	00 July 23	Sept 3 Oct 1	J J Scoville	309 Montgomery st
Mint G & S M Co	Washoe	22	20 Aug 8	Sept 11 Oct 2	D A Jennings	401 California st
New York M Co	Nevada	16	30 Aug 1	Sept 3 Sept 24	D L Thomas	419 California st
N Con Virginia M Co	Washoe	13	1 00 Aug 13	Sept 16 Oct 4	W M Hehnan	309 California st
Prospect G & S M Co	Washoe	6	25 July 18	Aug 20 Sept 10	Warner Craig	320 Sansome st
Silver Hill M Co	Washoe	3	50 July 18	Aug 22 Sept 12	W E Dean	419 California st
South Standard M Co	California	2	25 July 23	Aug 27 Sept 17	C A Sankey	331 Montgomery st
Sierra Nevada M Co	Washoe	55	1 00 July 31	Sept 4 Sept 25	W W Stetson	309 Montgomery st
Seaton M Co	California	11	75 00 June 26	July 30 Aug 21	J H Lightner	58 Nevada Block
Succor M & M Co	Washoe	19	50 Aug 12	Sept 16 Oct 5	W H Watson	302 Mongomery st
Tiptop S M Co	Arizona	3	50 July 15	Aug 21 Sept 18	D F Verdenal	327 Pine st
Wells, Fargo & Co	Washoe	10	10 July 22	Aug 23 Sept 9	W M Helman	309 California st
Young America M Co	Nevada	10	20 June 27	Aug 1 Aug 21	R H Brown	327 Pine st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Aurora T & M Co	Bodie	1	15	Aug 12	Sept 20	Oct 10 A Baird 304 California st
Almaden Quicksilver M Co	California	1	25	July 30	Aug 31	Sept 21 W J Forde 207 Sansome st
Benton M Co	Nevada	1	35	Aug 1	Sept 5	Sept 24 Wm H Watson 302 Montgomery st
Colorado River C & G M Co	Arizona	2	25	Aug 5	Sept 9	Sept 30 P A Whiting 211 Sansome st
California W W Co	California	20	10	Aug 13	Sept 24	Oct 15 G F Reinston 313 California st
Eagle S M & M Co	Nevada	7	15	June 24	July 9	Aug 19 R H Brown 327 Pine st
Excelsior S M Co	Nevada		25	July 16	Aug 20	Sept 6 Francis P Devine 304 Post st
Eagle S M & M Co	Nevada	9	15	July 13	Aug 16	Sept 6 R H Brown 327 Pine st
Father De Smet G M Co	Dakota	1	1 00	June 17	July 22	Aug 19 J A Quinan 404 Montgomery st
Gold Mountain M Co	California	6	1 00	June 22	July 24	Aug 15 Charles Dore 410 Pine st
Grover Oil M Co	California	37	50	Aug 9	Sept 23	Oct 21 W G Wilson ¶ 402 Front st
Golden Rule M Co	California	7	75	July 15	Aug 17	Sept 9 J B Russell 432 Montgomery st
Henrietta G M Co	California	3	10	June 7	Aug 12	Sept 6 F Klosterman 309 California st
King M & S Co	Nevada	1	25	June 24	July 29	Sept 19 Chas K Clark 111½ Leidesdorff st
Moore's Flat B G M Co	California	7	25	June 14	July 19	Aug 12 J M Buffington 309 California st
Morgan M Co	California	4	50	June 1	July 8	July 29 John J Raphael 533 Kearny st
Murchie G & S M Co	California	1	20	July 2	Aug 7	Sept 6 S D Rogers Merchants' Exchange
McElroy G M Co	California	2	10	July 23	Aug 28	Sept 17 Lewis Lillie 519 Montgomery st
Mariposa Land & M Co	California	14	1 00	July 10	Aug 12	Sept 9 Leander Leavitt 309 Montgomery st
McClellan Con G & S M Co	Nevada	2	25	Aug 5	Sept 5	Sept 23 Otto Metchke 328 Montgomery st
Newton H & D M Co	California	1	08	July 21	Sept 2	Sept 20 G W Cummings 330 Sansome st
Nevada Gravel M Co	California	2	10	July 8	Aug 10	Aug 28 J Pentecost 511 California st
Oak Grove M Co	Arizona	1	05	Aug 6	Sept 10	Sept 30 R D Sagart 16 Leidesdorff st
Oroville G M Co	California	1	10	June 14	July 27	Aug 22 Ph D Auh 417 California st
Orion M Co	California	2	70	July 9	Aug 9	Aug 24 P Conklin 28 Sansome st
Panther M Co	Nevada	1	8	June 21	July 27	Aug 19 J W Pew 310 Pine st
Real Del Monte M Co	Nevada	3	1 00	July 18	Aug 26	Sept 16 A Baird 304 California st
Summit M Co	California	4	05	July 17	Aug 19	Sept 10 J W Clark 318 Pine st
Sierra Sphur M Co	Nevada	3	5	June 14	July 18	Aug 13 F M McLaren 310 Pine st
Tiger M Co	Arizona	1	30	July 16	Aug 26	Sept 20 W H Lent 309 Montgomery st
Telegraph C & S M Co	California		03	July 17	Aug 19	Sept 9 I T Milliken 528 California st

MEETINGS TO BE HELD.

Name of Company.	Location.	Secretary.	Office in S. F.	Meetino.	Date.
Alta S M Co	Nevada	W H Watson	302 Montgomery st	Annual	Aug 15
Bodie G M Co	California	W H Lent	309 Montgomery st	Annual	Aug 15
Caledonia S M Co	Nevada	R Wegener	414 California st	Annual	Aug 21
Crown Point Ravine G & S M Co	Washoe	J M Buffington	309 California st	Annual	Sept 2
DeHaro M Co	Nevada	Frank Mayer	408 California st	Annual	Aug 14
El Dorado Slate Co	California	J R Jones	524 Sansome st	Annual	Aug 20
El Tesoro S M Co		W H Chickering	214 Sansome t		Aug 29
Independence M Co	California	R H Brown	327 Pine st	Annual	Aug 19
Julia Con M Co	Washoe	A Noel	419 California st	Annual	Aug 14
King M & S Co		Chas K Clark	111½ Leidesdorff st	Special	Aug 30
Little Panoche Q M Co	California	Geo R Spinucy	310 Pine st	Annual	Aug 23
Lucky Rock G M Co	Nevada	Chas S Healy	45 Merchants Exch	Annual	Aug 16
Meadow Valley M Co	Nevada	T W Colhurn	414 California st	Annual	Aug 22
Moore's Flat B G M Co	California	J M Buffington	309 California st	Annual	Aug 28
Navajo M Co	Nevada	R H Brown	327 Pine st	Annual	Aug 13
Nevada Gravel M Co	California	J Pentecost	511 California st	Special	Aug 30
Occidental M Co	Washoe	Alfred K Durbrow	309 Montgomery st	Annual	Aug 12
Silver Prize G & S M Co	Nevada	J C Bennett	111½ Leidesdorff st	Special	Aug 27
South Comstock G & S M Co	Washoe	J M Buffington	309 California st	Annual	Aug 19
Summit G & S M Co	California	C A Gould	611 Montgomery st	Annual	Aug 31
Steptoe Con M Co	Nevada	Ed F Stone	306 Pine st	Annual	Aug 15
Vancouver M Co		Frank Mayer	408 California st	Annual	Aug 14
Ward Beecher Con M & M Co	Nevada	D A Jennings	401 California st	Annual	Aug 20

LATEST DIVIDENDS—WITHIN THREE MONTHS

Name of Company.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Bodie G M Co	Nevada	Wm M Lent	309 Montgomery st	3 00	Aug 14
California M Co	Washoe	C P Gordon	Nevada Block	1 00	Aug 15
Con Virginia M Co	Washoe	A W Havens	Nevada Block	1 00	June 15
Eureka G M Co	California	R Wegener	414 California st	25	April 25
Excelsior W & M Co	California	Geo P Thurston	315 California st	50	July 15
Excelsior W & M Co		Geo P Thurston	315 California st		Aug 15
Kentuck M Co	Nev	W W Traylor	309 Montgomery st	3 00	July 20
Empire M Co	California	David A Jennings	401 California st	25	June 15
Georgia S M Co	Washoe	R Wegener	414 California st	3	April 16
Independence M Co	Nevada	R H Brown		25	July 20
Independence M Co	Nevada	R H Brown	327 Pine st	25	Aug 20
McMillen S M Co	Arizona	A C McMeans	Safe Deposit Bldg	5	June 20
Napa Con M Co	California	W W Farrish	Safe Deposit Building	10	Aug 15
Silver King M Co	Arizona	Wm H Boothe	320 California st	50	May 30
Standard G M Co	Cal	W Willis	309 Montgomery st	1 00	Aug 12

Pacific Board—Latest Sales.

Wed'sday A.M., Aug. 14.

130 Alpha.....11½@12
135 Alta.....7⅞
100 Best & Belcher...16¾@16¾
1045 Bullion.....8@7¾
370 Belcher.....8¾@9
120 California.....11¾@11¾
215 Crown Point.....9½@9¾
100 Con Imperial.....95c@1
300 Con Virginia.....9½@9¾
320 Caledonia.....2½@2.40
20 Chollar.....32½@33
600 Exchequer.....4½@4¾
210 Gould & Curry.....8½@8¾
110 Hale & Nor.....8¾@8¾
130 Julia.....12¼@12¾
115 Justice.....5½
40 Kentuck.....4½
420 Mexican.....20½@21
70 Ophir.....43@43½
25 Overman.....12
160 Savage.....13½@13¾
395 Sierra Nevada...27½@28
40 Union Con.....23¾@23¾
20 Utah.....13¾
140 Yellow Jacket...13¾@13¾

AFTERNOON SESSION.

10 Alpha.....12¾
100 Alta.....11½
50 Andes.....55c
200 Argenta.....65c
390 Bechtel.....2@2¼
175 Belcher.....9@9¼
50 Bullion.....8¾@8.65
100 Black Hawk.....85c
40 Best & Belcher.....17¾
35 California.....11¾@11¾
40 Con Virginia.....9¼
170 Caledonia.....2¼@2.80
2530 Con Imperial.....95c@1
220 Crown Point.....9½@9¾
120 Day.....1
100 Endowment.....1.20
230 Exchequer.....4.80@4.85
530 Gila.....50@55c
1550 Goodsh.....1.40@1.30
50 Golden Chariot.....40c
210 Grand Prize.....6¼@6¾
50 Hussey.....80@70c

Wed'sday A.M., Aug. 14.

30 Alpha.....13¾@13¾

AFTERNOON SESSION.

100 Andes.....65c
140 Alexander.....6¢@6¼
60 Alta.....11¾@11¾
60 Bullion.....8¾@8¾
20 Belcher.....8¾@8¾
30 Best & Belcher.....17¾
30 Bullion.....8¾
40 California.....11¾@11¾
30 Chollar.....33
130 Caledonia.....3¼
30 Con Virginia.....9¼
170 Con Imperial...1@1.05
90 Crown Point.....9¾@9¾
200 Coso Con.....40c
50 Exchequer.....4.70@4¾
50 Endowment...1.40@1.10
30 Gould & Curry...8¾
50 Hale & Nor.....9¼@9¾
100 Justice.....6¢@5¾
30 Julia.....12¾@12¾
30 Kossuth.....20c
320 Lee.....65¢@60
40 Mexican.....21¼@21¾
40 Ophir.....44¢@44¾
40 Overman.....13¾@13¾
200 Prospect.....10c
30 Savage.....13¾@13¾
40 Sierra Nevada...28¢@27¾
150 Spaulding.....2¢
70 Union.....24¼@24
1400 U Flag.....25¢@7¢

25 Jackson.....4½
130 Julia.....12¾@12½
180 Justice.....6¼@6¾
10 Kentuck.....5½
250 Leopard.....1.40@1.30
150 Mexican.....22½@22¾
30 McClinton.....2
440 New York.....1.45@1.15
140 Savage.....12¾
100 Succor.....1.15@1.20
30 Sierra Nevada.....29½
30 Silver Hill.....1
50 Tioga.....3½
100 Trojan.....65c
700

Mining Share Market.

Last week we reported increased activity, particularly in some half a dozen stocks. Activity continued to increase through Monday morning, Union Con. running ahead of the other three favorites of last week, Sierra Nevada, Mexican and Ophir, as far as number of transactions is concerned. This is accounted for by the as yet unsettled claim that the recently reported strike in the Sierra Nevada was within the Union Con. line. Nothing definite has been reported from these mines, and, as a consequence, the rise in prices could not be expected to continue long. It did last longer, however, than was anticipated by some. It was not until Monday afternoon or Tuesday morning that a reaction made itself felt. On Thursday Union Con. reached $30; on Friday it was down to $24.25; on Monday it had risen again to $27, but on Tuesday it fell constantly, reaching $25.25. On Wednesday of last week Sierra Nevada was up to $38; since then it has been as low as $23.25, but on Tuesday, the 13th, it was $28.50, showing, however, a regular decline. More news from the mines is the one thing needful. A big strike was reported in the Julia, but as yet has amounted to nothing. The Bonanza mines have kept very steady. Mexican at one time seemed inclined to rise, but has finally shared the general decline. Perhaps the greatest interest in inside stocks has been centered on the Sierra Nevada, Union and Julia. When the developments made by the crosscuts in these mines become known, greater movements up or down may be expected.

A rise has occurred in Lady Washington and Benton, caused by favorable developments. This makes three very hopeful regions on the Comstock: the north end, the middle or vicinity of Julia, and the south end.

Among the outside stocks Bodie has created most excitement, showing as it has a constant rise. It is said now that the rise is well grounded, the reported developments in the mine being bona fide.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch from Washington, D. C.

FOR THE WEEK ENDING JULY 30TH, 1878.

RAILWAY TRACKS—Amos Bowman, S. F.
CAMP STOVES—Wm. B. Collier, San Diego, Cal.
AUTOMATIC WATER LIFTER—Abraham Gregg, San Diego, Cal.
GRAIN THRESHER AND SEPARATOR—Byron Jackson, Woodland, Cal.
HARROW HINGES—Hugh S. Jory, Salem, Oregon.
SAMPLE CARDS—Sigismund Kutnow, S. F.
GLOVES—August Hesthal, S. F.
OIL CUPS—Alden D. Kilborn, Oakland, Cal.
FIRE HYDRANTS—Samuel Rainey, S. F.

TRADEMARKS.

ALE AND PORTER—Burnell & Simpkins, S. F.

——The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

The Fair Season.

The following is a partial list of the coming fairs. We shall be pleased to add to it if readers will send us the dates and locations of their respective exhibitions:

San Francisco Mechanics' Institute, San Francisco, August 13th to September 14th.
California State Agricultural Society, September 16th to 21st, inclusive.
Oregon State fair, at Salem, October 8th to 18th, inclusive.
Nevada State Agricultural, Mining and Mechanical fair, at Reno, October 7th to 12th, inclusive.
Montana Agricultural, Mineral and Mechanical fair, at Helena, September 23d to 29th, inclusive.
Sonoma and Marin district fair, at Petaluma, September 23d to 28th, inclusive.
San Joaquin valley district fair, at Stockton, September 24th to 28th, inclusive.
Northern district fair, at Marysville, September 23d to 28th, inclusive.
Golden Gate district fair, at Oakland, September 9th to 16th, inclusive.
Napa and Solano district fair, at Vallejo, September 3d.
Monterey county district fair, at Salinas City, October 8th to 12th inclusive.
Siskiyou county fair, at Yreka, October 2d to 5th, inclusive.
El Dorado county fair, at Placerville, September 13th to 15th, inclusive.
Santa Clara valley fair, at San Jose, September 30th to October 5th, inclusive.
Stanislaus County Stock Growers Fair, at Modesto, October 9th to 11th inclusive.
Southern California Horticultural Fair, at Los Angeles, October 14th to October 19th, inclusive.
Southern California Agricultural Society's Fair, at Los Angeles, October 14th to October 19th, inclusive.
Plumas, Lassen and Modoc District Fair, at Susanville Lassen county, October 21st to 25th inclusive.

Woodward's Gardens were never more attractive than at present. Besides three lions already mentioned, six monster living alligators, several iguanas and a boa-constrictor have just been added. New stars are constantly engaged for the Pavilion exercises. Rates of admission as usual.

A New Mining Enterprise.

A company will shortly be incorporated in this city with a large capital stock, for the purpose of acquiring and working mineral land on the Pacific coast of the United States and adjoining countries. The company will mine coal, iron, silver, gold and all other minerals, sink petroleum wells, make coke and establish iron manufactories, build railroads where necessary, own and run steamers, and seek in every profitable manner to develop the resources of this coast.

A gentleman of life-long practical experience in the coal and petroleum regions of the East will devote his services to the company as President. A special feature will be made of coal, the safest and most lasting of all the minerals. Arrangements have already been made for the acquisition of valuable and accessible coal fields on the northern part of the coast, work on which will be commenced without delay. It is intended before New Year's to lay down coal of the best quality in San Francisco at a lower price than has yet been done. The company will arrange for the immediate construction of large and powerful steamers suited for carrying coal, merchandise and passengers, thus ensuring the shipping of their coal at a small expense.

A sufficient working capital for all purposes will render further calls on the shareholders unnecessary, and no assessment will be levied on the stock. Every facility will at all times be offered for full examination of the company's affairs by individual shareholders. Gentlemen well and honorably known both here and in the East are interested in the undertaking, and their names are a guarantee that the affairs of the company will be conducted in a perfectly fair and honorable manner. A large amount of stock has already been applied for in this country and in Europe.

This will be the strongest company ever organized on this coast, and offers unequaled inducements for the safe and profitable investment of capital, the stability and sure rise in value of real estate being here combined with the profits of mining and manufacturing, whilst the variety of operations to be carried on reduces the risk to a minimum. It is not intended to list this company on the Stock Boards of this city, its shares being offered as an investment, not as a gambling proposition.

Further particulars will be announced in these columns in the course of a few weeks.

San Francisco, August 15th, 1878.

To Mill and Mine Owners.

Having complete arrangements with competent and reliable parties in Washington City, by which we are able to secure prompt and careful attention to law business there, we are prepared to assist Mill and Mine, Canal and Ditch owners in securing patents for their lands, mines and claims, in addition to our general line of patent business.

Many who are acquainted with the manner in which this business has heretofore been conducted, (with or without assistance by local attorneys), will see at once the great advantage of patronizing an establishment that is thoroughly organized and has its representatives in Washington to look after and prosecute their applications before the Commissioner of the General Land Office. The business on this Coast will be attended to personally by a member of our firm, and satisfaction will be given in all respects.

Correspondence from persons desirous of securing patents for Lands, Mines, Mill Sites, Canal and Ditch property, promptly attended to.

DEWEY & CO.,

Solicitors of Patents for Lands, Mines and Inventions, MINING AND SCIENTIFIC PRESS OFFICE, No 202 Sansome St., San Francisco.

EVERY new subscriber who does not receive the paper and every old subscriber not credited on the label within two weeks after paying for this paper, should write personally to the publishers without delay, to secure proper credit. This is necessary to protect us and subscribers against the acts and mistakes of others.

EXAMINE the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.94. Lewis C. Grover, President; L. Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

MODEL MAKER AND MACHINIST.—I. A. Heald, No 514 Commercial St., San Francisco, (fourth floor).

Take the paper that stands by your interests.

METALS.

[WHOLESALE.]

WEDNESDAY M., August 14, 1878.

IRON.—	
American Pig, ton	28 00 @30 00
Scotch Pig, ton	23 00 @30 00
White Pig, ton	23 00 @ — —
Oregon Pig, ton	— — @ — —
Refined Bar, ₱	2½@ 3
Horse Shoes, keg	5 00 @ — —
Nail Rod, ₱	—@ 7
Norway, Oval, ₱	—@ 7
COPPER.—	
Sheathing, ₱	34 @ 35
Sheathing, Yellow, ₱	21 @ —
Sheathing, Old Yellow, ₱	12 @ —
Composition Nails, ₱	24 @ —
Composition Bolts, ₱	24 @ —
STEEL.	
English Cast, ₱	13 @ 14
Anderson & Woods, ordinary sizes, ₱	15 @ —
Drill, ₱	15 @ —
Flat Bar, ₱	14 @ 19
Plow Steel, ₱	8½@ 12½
TIN PLATES.—	
10x14 I C Charcoal	7 50 @ 8 50
Banca Tin, ₱	23 @ — 24
Australian, ₱	17 @ 17½
ZINC.—	
By the Cask, ₱	9 @ — —
Zinc, Sheet 7x3 ft, 7 to 10, lb	9 @ — 10
7x3 ft, 11 to 14	10 @ — —
8x4 ft, 8 to 10	11 @ — —
8x4 ft, 11 to 10	11 @ — —
NAILS.—	
Assorted sizes, ₱	3 15 @3 25

LEATHER.

[WHOLESALE.]

WEDNESDAY M., August 14, 1878.

Sole Leather, heavy, lb	22 @ 29
Light	20 @ 24
Jodot, 8 Kll., doz	48 00 @50 00
11 to 13 Kll	65 00 @76 00
14 to 18 Kll	80 00 @90 00
Second Choice, 11 to 16 Kll	55 00 @70 00
Cornellian, 12 to 16 Kll	57 00 @67 00
Females, 12 to 13 Kll	63 00 @67 00
14 to 16 Kll	71 00 @76 00
Simon Ulmo, Females, 12 to 13 Kll	58 00 @62 50
14 to 15 Kll	66 00 @70 00
16 to 17 Kll	72 00 @74 00
Simon, 18 Kll	61 00 @63 00
20 Kll	65 00 @67 00
24 Kll	72 00 @74 00
Robert Calf, 7 and 9 Kll	35 00 @40 00
Kips, French, lb	1 00 @ 1 35
Cal. doz	40 00 @60 00
French Sheep, all colors	8 00 @15 00
Eastern Calf for Backs, lb	1 00 @ 1 25
Sheep Roans for Topping, all colors, doz	9 00 @13 00
For Linings	5 50 @10 5
Cal. Russet Sheep Linings	1 75 @ 4 50
Boot Legs, French Calf, pair	4 00 @— —
Good French Calf	4 00 @ 4 75
Best Jodot Calf	5 00 @ 5 25
Leather, Harness, lb	35 @ 38
Fair Bridle, doz	48 00 @72 00
Skirting, lb	33 @ 37
Welt, doz	30 00 @50 00
Buff, ft	18 @ 20
Wax Side	17 @ 18

LUMBER.

WEDNESDAY M., August 14, 1878.

CARGO PRICES OF REDWOOD.

Rough, M	13 00
Refuse	9 00
Clear	23 00
Clear Refuse	13 00
Rustic	23 50
Refuse	18 00
Surfaced	20 00
Refuse	14 00
Flooring	29 00
Refuse	12 00
Beaded Flooring	23 00
Refuse	13 00
Half-inch Siding	16 00
Refuse	14 00
Half-inch Surfaced	20 00
Refuse	14 00
Half-inch Battens	16 00
Pickets, Rough	11 00
Rough, Pointed	12 50
Fancy, Pointed	18 00
Shingles	1 75

PUGET SOUND PINE.

RETAIL PRICE.

Rough, M	18 00
Fencing	18 00
Flooring and Step	28 00
Narrow	30 00
2d quality	25 00
Laths	3 50
Furring, lineal ft	¾

REDWOOD.

RETAIL PRICE.

Rough, M	18 00
Refuse	14 00
Pickets, Rough	15 00
Pointed	16 00
Fancy	22 50
Siding	20 50
Surfaced & Long Beaded	30 00
Flooring	30 00
Refuse	22 50
Half-inch Surfaced	30 00
Rustic, No. 1	30 00
Battens, lineal ft	
Shingles, M	2 00

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by SUTRO & Co.]

SAN FRANCISCO, August 14, 3 P. M.

LEGAL TENDERS in S. F., 11 A.M., 99¾@99.90. SILVER, 1½@1¾. GOLD in New York, 100¾.

GOLD BARS, $90@$10. SILVER BARS, 3@15 ₱ cent. discount.

EXCHANGE on New York, ¼% on London bankers, 49@49½. Commercial, 50; Paris, five francs ₱ dollar; Mexican dollars, 94@95.

LONDON Consols, 95⅝; Bonds, 106¼.

QUICKSILVER in S. F., by the flask, ₱ lb. 42½@45c.

Signal Service Meteorological Report.

Week Ending August 13, 1878.

HIGHEST AND LOWEST BAROMETER.

Aug 7	Aug 8	Aug 9	Aug 10	Aug 11	Aug 12	Aug 13
29.94	29.93	29.92	29.88	29.86	29.84	29.83
29.90	29.88	29.85	29.85	29.79	29.78	29.79

MAXIMUM AND MINIMUM THERMOMETER.

64	71	72	63	63	67	63
53	54	55	54	53	53	55

MEAN DAILY HUMIDITY.

74.7	70	71.3	80.3	78.7	80	85.3

PREVAILING WIND.

SW	SW	SW	SW	SW	SW	SW

WIND—MILES TRAVELED.

307	236	257	289	264	253	270

STATE OF WEATHER.

Fair.	Clear.	Clear.	Clear.	Clear.	Fair.	Cloudy

RAINFALL IN TWENTY-FOUR HOURS.

Total rain during the season, from July 1, 1878, .01 in.

OUR AGENTS.

OUR FRIENDS can do much in aid of our paper and the cause of practical knowledge and science, by assisting Agents in their labors of canvassing, by lending their influence and encouraging favors. We intend to send none but worthy men.

J. L. THARP—San Francisco.
B. W. CROWELL—California.
A. C. KNOX—Pacific Coast.
C. N. WEST—Santa Cruz, Monterey and San Benito counties.
A. C. CHAMPION—Tulare, Fresno and Inyo counties.
W. D. WHITE—San Bernardino county.
J. W. A. WRIGHT.—Tulare, Fresno and Kern counties.
E. M. DENNY,—Oregon.
H. E. HALLETT.—Mendocino county.
G. W. MCGREW.—Santa Clara county.
RICHARD ALLEN.—British Columbia.
R. D. NUNNALLY.—Siskiyou County, Cal.
DR. W. G. ALBAN.—State of Nevada.

BUSINESS LETTERS should be addressed to the firm. Individual members are sometimes absent.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Gover Mining & Milling Company.—Location of principal place of business, San Francisco, California. Location of works, Amador County, near Drytown, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the ninth day of August, 1878, an assessment (No. 37,) of fifty cents per share was levied upon the capital stock of the corporation, payable immediately in gold coin or legal currency of the United States, to the Secretary, at the office of the Company, Room 8, No. 402 Front Street, San Francisco, Cal.

Any stock upon which said assessment shall remain unpaid, on Monday, September 23rd, 1878, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, October 21st, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

W. O. WILSON, Sec'y.

Office, Room 8, No. 402 Front Street, San Francisco, Cal.

Seaton Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Drytown Mining District, Amador County, California.

NOTICE.—There is delinquent upon the following described stock, on account of Assessment (No. 11) levied on the 20th day of June, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Thomas, W., Jr.	72	15	$1125 00
Thompson, W., Jr.	79	10	750 00

And in accordance with law and an order of the Board of Directors, made on the twenty-sixth day of June, 1878, so many shares of each parcel of such stock as may be necessary will be sold at public auction, at the office of the Company, Room No. 58 Nevada Block, northwest corner Pine and Montgomery streets, San Francisco, California, on Wednesday, the twenty-first day of August, 1878, at the hour of one o'clock P. M. of said day, to pay said delinquent assessments thereon, together with costs of advertising and expenses of the sale.

JOEL F. LIGHTNER, Sec'y.

Office, Room No. 58 Nevada Block, Northwest corner Pine and Montgomery streets, San Francisco, California.

Office South Comstock Gold and Silver Mining Company. Notice.—The annual meeting of the stockholders of the South Comstock Gold and Silver Mining Company, for the election of Trustees and the transaction of such other business as may be presented, will be held on Monday, the 19th day of August, 1878, at two o'clock P. M. of that day, at the office of the Company. Transfer books will be closed on Saturday, August 10th, 1878, at the hour of 12 M. of that day.

J. M. BUFFINGTON, Secretary.

Office—Rooms 3 and 4, second floor, No. 309 California street, over Aetna Insurance office.

Summit Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the Seventeenth day of July, A. D., 1878, an assessment, (No. 4,) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of said Company.

Any stock upon which this assessment shall remain unpaid on the 19th day of August, A. D., 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the Tenth day of September, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors. J. W CLARK, Sec'y.

Office, No. 318 Pine Street, San Francisco, Cal.

Telegraph Copper and Silver Mining Company.—Principal place of business, City and County of San Francisco, California. Location of works, Gopher Mining District, Calaveras County, State of California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 17th day of July, 1878, an assessment of three (3) cents per share was levied upon the capital stock of the Corporation, payable immediately in United States gold coin, to the Secretary, at his office, Room 2, 528 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 19th day of August, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the Ninth (9th) day of September, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

I. T. MILLIKEN, Sec'y.

Office, Room 2, 528 California street, San Francisco, Cal.

Vigorit Powder Company.—Location of works, California City, Marin County, State of California. Location of principal place of business, City and County of San Francisco, California.

Notice is hereby given that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 1) of fifty cents (50c.) per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, Room No 1, 109 California street, in the City and County of San Francisco, California.

Any stock upon which this assessment shall remain unpaid on Thursday, the twelfth day of September, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the second day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expense of sale.

JAS. W. BAKER, Sec'y.

Office, 109 California street, Room No. 1, City and County of San Francisco, California.

The "San Francisco Law Journal."

Published weekly, in 8vo size—like the California Reports—contains ALL the decisions of the California Supreme Court, soon as rendered, with syllabus and statements of facts; and also, important decisions of other courts of last resort. Two volumes each year, commencing September first and March first, with full index, so it can be nicely and cheaply bound.

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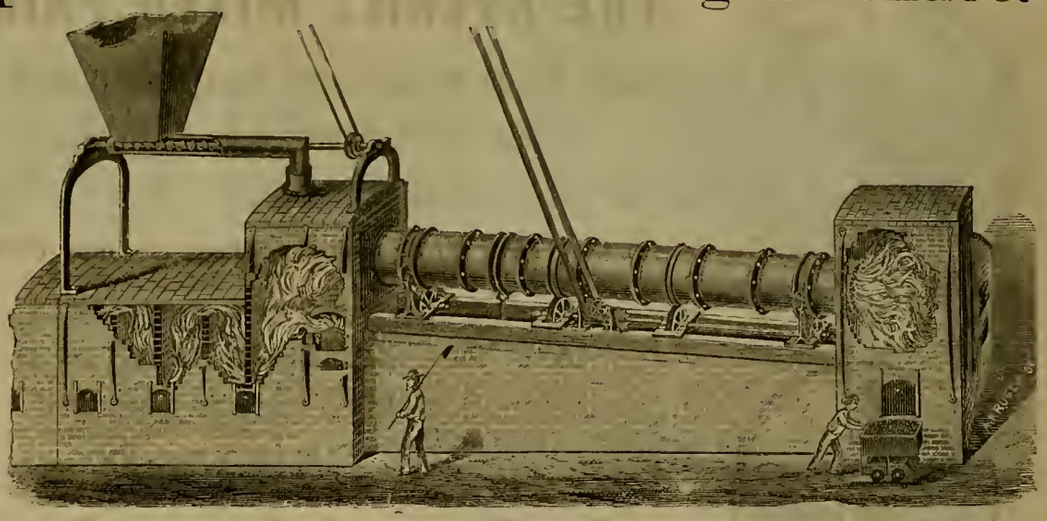

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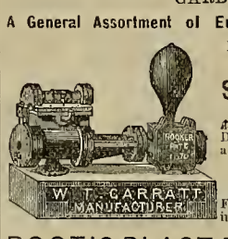

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Publishers. SAN FRANCISCO, SATURDAY, AUGUST 24, 1878. VOLUME XXXVII Number 8.

The Kendall Quartz Mill.

The engraving on this page represents an improved quartz stamp, recently invented by Stephen Kendall, of Jackson, Amador county, and which is now being introduced to the mining public. The improvement consists in a novel construction and operation of the cam which serves to lift the stamp, and in the employment of a peculiarly-shaped tappet, which is secured to the stamp stem, so as to revolve with it in a horizontal plane and be acted upon by the cam to raise the stamp. The stamp stem is made square at or near the top, to receive the driving pulley, and this form, or an equivalent feather, allows the stem to rise and fall without deranging the action of the pulley. The cam is mounted upon a cushion to prevent jar, and the mortar is fitted with sockets, so that the battery frame may be supported directly upon it. The stamp is raised by the tappet rising on the incline or cam, and as it drops off the cam, a grinding action is produced by the rotation of the stamp until it again rises. By this means, both a crushing and grinding motion are produced in the stamp.

The mortar is constructed in such a manner as to accommodate one stamp only, and having one or more discharge openings, in which are the screens. The upper portion of the mortar is curved inward, and in the rear upper portion is formed the feed hole, through which the ore is fed. Attached to, or formed on the sides of the mortar, are the sockets, into which are stepped the lower ends of the vertical frame posts, which are held in place by the straps or bands secured by bolts, as shown. A timber across the top joins these frame posts together, so that all the frame work necessary to guide the stamp stem and support it is attached to the mortar.

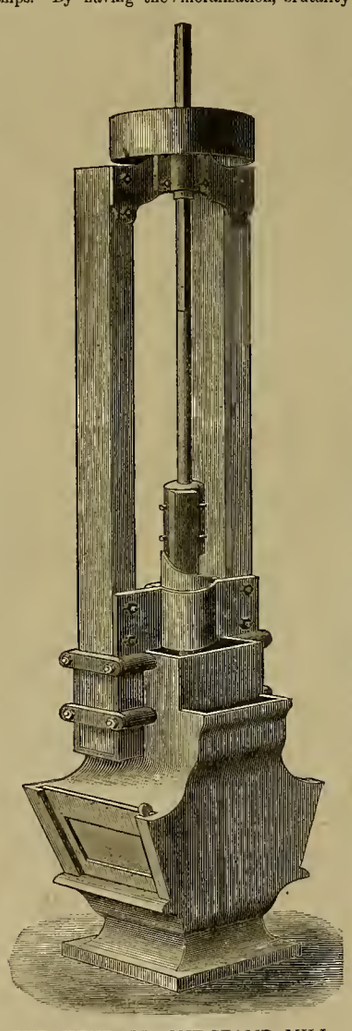
The stamp, shoe and die are the same as in any ordinary battery. Across between the vertical timbers and above the mortar is placed a guide or girt, which is of cast iron, and through which the stamp stem plays. On one side of this girt is formed a curved projection, which has a curved slot formed in its upper surface. In this curved slot rests a horizontally-placed incline or cam. This cam has its lower end made on a horizontal plane, so that it will rest in the bottom of the slot in the projection. In the bottom of this slot, or in the bottom of the cam, is a rubber block or bed, which forms a cushion for the cam, so that when the tappet strikes it in rapid revolution, no jar will be experienced. A spring may be used instead of the rubber, if desired.

Upon the stamp stem, at the proper point above the girt with its cam, is secured a tappet, having a beveled flange or cam-like projection on its lower edge. When the stamp stem is rotated by the pulley on its upper end, this flange in the tappet engages with the cam, and by moving up the incline, raises the stamp. As soon as the highest point in the cam is reached, the flange on the tappet leaves the cam and the stamp drops, which operation is repeated as the stamp stem is revolved. In order to allow the vertical motion to the stamp stem necessary in this device and at the same time admit of its rotary motion, the upper part of the stamp stem is made square, or has a feather formed on it. In the present instance, it is shown as square in shape and passing through a collar, journaled in the upper cross timber.

Attached to this collar is the horizontal pulley through which the square or fastened end of the stem also passes, the hole through the collar and center of the pulley being formed to correspond with the shape of the stem. As the pulley is revolved by the belt, the stamp stem, stamp and shoe will be revolved, and at the same time a vertical motion of the stamp stem is possible, so as to admit of the flange on the tappet rising up the incline of the cam on the girt timbers and raising the stamp.

By this method of construction and operation it is possible to obtain a very rapid stamping motion by a correspondingly rapid revolution of the driving pulley. Moreover the act of crushing is supplemented by a grinding motion of the shoe on the die, since, when the flange on the tappet falls off the cam and the stamp drops, the stamp has a rotary grinding motion on the quartz or ore under it, until it is again lifted by the flange rising on the incline or cam as described.

The stamp thus alternately grinds and crushes, and is therefore capable of greater crushing power than when a drop alone is used. With this device the number is enlarged to construct a single stamp battery for prospecting purposes, which may be run by water, steam, horse or hand power, and which will be more efficient in its action than the ordinary appliances used for the purpose. The principle may also be applied to large mills where a number of stamps are used, by using a suitable line shaft and gearing for the stamps. By having the front and both sides of the mortar made open, a large discharge or screen surface is gained, and the mill may be used for either dry or wet crushing as desired. The stamp mill may be made in sections for facility in transportation. Where large mills are used, it is proposed to have a mortar for each stamp as described, so that each stamp may be operated from the line shaft independently. The whole mill need never then be closed down for cleaning up or repairs. By throwing a single stamp out of gear, the tappet may be raised, new shoes or dies put in, the mortar cleaned up, etc., without interfering with the remainder of the mill. In a large mill of this kind, having a number of these stamps, the owners might dispose of each stamp separately in case of the enterprise not proving profitable, as each stamp then forms a separate mill. As mines are being developed, one stamp at a time may be added to the mill as the capacity of the mine increase, whereas by the present system, at least five stamps must be added at once. By the peculiar crushing and grinding motion of this mill, and its capacity for rapid crushing and grinding, it is claimed that the single stamp has as much crushing capacity as a five-stamp battery of the common construction, where a drop only is used. The hight of drop may be regulated in the usual manner by means of the tappet.



THE KENDALL ONE-STAMP MILL.

By the method employed of placing a rubber band or spring under the tappet, a great deal of the jar is avoided, which it has been impossible to overcome by the old method. The grinding action of the stamp is very advantageous in crushing the quartz, since as soon as the blow is struck and the quartz crushed under the stamp, it is immediately ground finer, and any particles of gold under the stamp are brightened or polished, so as to put them in proper condition for perfect amalgamation.

An experimental mill of this character has been run some eight months with great success, and several of the mills have been constructed at the Pacific Iron Works in this city and set at work. The operation of the mill has excited favorable comment from a number of milling experts, and as it has the crushing action of the stamp and grinding action of the arastra combined, its crushing capacity is greater than one would suppose. Messrs. Rankin, Brayton & Co., of the Pacific Iron Works, have, in addition to the mills sent off to work in the mines, built one which may be seen in motion at their works in this city, and those interested in such devices are invited to call and examine it.

Have a Care Ye People!

If we have not now reached the sub-cellar of infamy in the administering of public offices, may God help the people! Can the structure of official corruption and administration possibly extend farther down into the depths of utter demoralization, brutality and heinous crime? It is hard to conceive it possible. It will be hard to imagine a thought and action which lays a stronger hold upon the corner stones of perdition, than those which the last week brought to light.

The public administrator of Sacramento county, a man chosen according to the law, to act as guardian over the property of the friendless dead, stands the confessed planner, promoter and purchaser of the murder of a lone old man, in order that he, the public administrator, might get possession of the old man's property, and gorge himself with fees and stealings. With cool persistency, they labored to accomplish their hellish object—this public administrator and his hired assassins. It began in a joke, so his story goes, in this wise: His low-lived associates would rally him by asking, forsooth, what percentage he would allow to those who put out of the way friendless rich men that he might "administer their estates." A "commission" on the results of a murder! California, cursed with "commissions," knew no such ghastly commission as this, before last week. Well, the joke lingered in the thought of the public administrator. About him gathered men who boasted of their foul hutcheries, and who "would kill any man for $100." The idea did not displease this public administrator, this representative of the sacred honor of the people. The joke called forth the wish; the wish the thought; the thought the plan, and the plan pursued with fiendish calmness and ingenuity, ended at length in the brutal murder of a friendless old man, in broad day light, on his lonely ranch beside the turgid waters of the Sacramento. Did the public administrator strike the blow or fire the shot which clave the old man's skull as he sank among the rushes on the river bank? No. But he went out at nightfall along the river to meet his hired murderers, "whistling a song," as he drove along in his buggy, that they might know him; and as he met his bloodstained hutchers, this public administrator, embodiment of the people's care for the discharge of sacred trusts, bestowed this devilish plaudit upon his servants: "Boys, you have done pretty well. I would like to have had a band in it myself. I am going to stand the oysters on this!"

Oh, shame! Shame upon humanity that it could conceive a thought, mature a purpose and promote a deed like this we have described. And yet is it wholly unintelligible? Does it come like a storm from a clear sky? We grieve to say it does not. Is it anything more than the perfect fruit of an evil growth of corruption in public offices, the fetid odor of whose blossoms has often warned the people of its progress? What was the seed whence has sprang this evil growth? It is the idea that a public office is a thing to be employed for the advantage of the officer, and oblivion to the fact that an office is in reality a trust from the people to be discharged for the people. Standing at this point of view it is easy to follow the results of the growth of this idea. It begins with the greedy strife for office, because of its emoluments. Its first leaves are the petty stealings of policemen, clerks and minor civil officers. Its trunk, perhaps, is the appropriation of millions of dollars to personal aggrandizement, under the guise of carrying out vast internal improvements. It has branched and blossomed, as we have said, in the hundreds of malfeasances, embezzlements and perversions in government contracts, in savings banks and the like. Its natural fruitage is the sacrifice of human life, when life alone stands between it and its accomplishment.

Does the murder at Sacramento seem less startling when it is read in the light of the lurid glare of the perdition which is wide spread in our public service? By no means. It has a much darker and deeper significance when thus interpreted. It must be that the people needed this ghastly spectacle before it would fully perceive the evil tendency which is so alarmingly extending. Will it be heeded now? We know nothing of the circumstances attending the choice of this man in Sacramento county for the important trust of public administrator. We know not what party nominated him, nor do we care. The practical inquiry which is now pertinent is this: Was there nothing about the man or his surroundings which would have forewarned the upright citizen against trusting him? Did he grow all at once into association with professional criminals? Was he so upright a man that any citizen would have entrusted to him his estate without a doubt of his honest management of it? If there was a doubt of any of these things, then he was not the man to name for a public trust, not the man to receive the people's votes. It comes to this, and this only. The safety of the people's life and the people's property, the honest administration of the law, depend upon the choice for office of men about whom hangs no suspicion of evil, and whose life, surroundings and companionship are such as would warrant the imparting of individual as well as public trusts. This is the only safeguard which remains for the purity of our public service. If this lesson be learned in this State from the events of the last week, then the lone old man on the Sacramento will not have died in vain!

BULLION SHIPMENTS.—Since our last issue shipments of bullion from the prominent mines have been as follows: Northern Belle, Aug. 17th, $5,500.16; Ontario, Aug. 9th, $3,050.83; Aug. 10th, $2,982.60; Aug. 12th, $6,117.65; Aug. 13th, $6,121.28; Aug. 14th, $2,954.85; Aug. 15th, $5,823.45; Silver Reef, Aug. 9th, $1,202.32; Aug. 13th, $9,221.98; Locke's Mills, Aug. 10th, $800; Hampton Mine, Aug. 15th, $600; Eberhardt & Aurora, Aug. 6th, $8,114.64; Aug. 15th, $7,225.19; total for August, $15,339.93; Tyho Con. Aug. 14th, $4,848.92; Aug. 16th, $9,514.74; total to date, $38,245.78; Standard, Aug. 17th, $20,439.42; Silver King, Aug. 19th, $10,000; Wenhan, Cortez District, Aug. 14th, $5,544; Star, Cherry creek, Aug. 14th, $2,500; Bodie, Aug, 15th, $31,400; Aug. 21st, $16,000; total for August, $431,000; Black Jack. $4,162.39; Graham, Silver City, $7,336.14; Monarch, Atlanta, $4,425; Independence, Aug. 13th, $7,976; Richmond, Aug. 14th, $13,938.78; Indian Queen, Aug. 14th, $4,504.58; Extra, Shasta county, $2,450.80; Hackherry, Aug. 12th, $11,000; Aug. 19th, $5,000.

DURING the week ending August 13th, 43,552 pounds of sulphur and 24,570 pounds of quicksilver was shipped by rail from Calistoga to San Francisco.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—EDS.

Vancouver's Island, B. C.

As promised in your last issue, I now give your readers an account of my travels over the Vancouver Island, when examining quartz veins, and may say that, after suitable preparations, we proceeded on board the comfortable little boat *Cariboo Fly*, from the city of Victoria, which, as you may know, is situated on the southeastern and inner side of the island, and then steamed northerly in serpentine passage between many very interesting and beautifully picturesque isles, until, favored by the Captain's courtesy and an Indian's canoe, we landed on an open beach near the Qualicum river, about 45 miles north of the celebrated coaling town of Navaimo.

Thus far it was a pleasant dream and congenial voyage of surpassing beauty, as well as instruction in the various rock formations of the many islands; but we had to awake to the really earnest toils of life, and brace our minds and muscles for three weeks' violent exercise, traveling through dense undergrowths, over hill and dale, and patient endurance of the most miserable foods, bread baked in a frying pan and fat bacon.

Whilst the four Indians were equalizing and arranging their packs, which contained our blankets and sufficient food for the double journey, I strayed aloug the pebbled shore to see what kinds of rocks had been washed by the river from the interior, and was somewhat disappointed to find them of igneous origin. We started at about one o'clock for crossing the island to what is called the Alberni canal, or more properly, the navigable head of the Barclay sound, an extremely beautiful and well-wooded valley, which forms that deep-water inlet from the western, or outside coast, of Vancouver's Island. The first day's travel was by the Government trail, which, though much obstructed by this year's undergrowth and fallen timber, was not difficult for pedestrians, and after passing about half over the island; we camped by a splendid sheet of water, about six miles long hy a half mile wide, and which, excepting at the Qualicum river outlet, is surrounded hy steep mountains.

The pebbled shores of the lake also exposed various igneous rocks. We made an early start on the following morning, and after a hard journey around the north side of the lake and over the mountain beyond, in which a young Indian fairly broke down, at 6 P. M. we reached the Alberni canal and some kind-hearted, hospitable farmers, located upon a horizontal region, about five miles in diameter.

This flat district will probably yield coal, as the proper indications are in some places exposed hy the washings in the gulches. The monntain passed over and those surrounding this coal measure are, however, too igneous for coal or vein formations. Notwithstanding this, I was informed that no less than 12 parties have left Victoria at different times for the prospection of this mountain for ciunabar, but I saw nothing there or *en route* having the least similarity to that mineral. There was, however, a great deal of very hard red jasper in places, but always in the wrong country rock, and therefore could not he regarded as being indicative of the mineral of mercury.

Our next day's journey was hy an unstable canoe over the deep waters of the Barclay sound, ahout half way out toward the ocean, to the mouth of the Ashlet river, a rapidly falling and powerful, but unnavigable stream.

Having supplied ourselves with another lot of Indians in place of those broken down, we proceeded up the 32 miles loug, and terribly rough canyon of this river, guided by "hlazed" trees, across innumerable slopes of side-hills and tributary valleys, through almost everlasting confusions and profusions of undergrowths, as ferns, mosses, the poisonous and prickly plant, appropriately named "devil's club," and various wild fruit trees, which frequently, by interlacing and spreading over three or four deep of fallen timber, renders travel so uncertain hy day as to be a "caution to snakes" and even hears; whilst the living forests of timher were so densely thick that their entangled hranches often returned such unnatural groanings to the wind as to prevent sleeping at night.

These are the general natural characteristics of this country, so different to the mineral States of U. S. America, where you can ride almost anywhere, and to make it even worse, we had a pelting raiu which rendered the undergrowths detestable, on the third day's travel up this valley aud the sixth and last of our journey to the source of the river and our destination, which I named Bear Basiu. It may be also stated that a prospector cannot judge of either distant or close lying rocks by appearance, as they are almost invariably covered with moss or a very thin encrustation of vegetable growth, so that the hammer must he used continually for breaking, to expose the interior and true character of the stone.

In this profusion of vegetation there is exceedingly little for men or animals to eat, as game is either scarce or too much concealed, and grass, for some reason, is substituted by the more persistent and apparently useless mosses, ferns, etc., which prevail over every available surface.

Bear Basin and the Ashlet river may be said to resemble a large spoon with a long crooked handle, running westerly, the margin of which, particularly at the upper end or hasin, is composed of steep mountains, 4,000 or 5,000 feet high, which receive the snows of winter as reservoirs, that dissolving in summer, form several waterfalls, which sink beneath the gravel debris of the basin, to reappear in forming the sonrce of the river.

The rock formations of the margin of this river and basin do not materially differ from those described before, only in showing occasional patches of trachyte, with the more general bed of trap.

In reference to the so-called qnartz veins I went to examiue, which were said to lie in granite and slate, you may readily imagine them worthless in the igneous rocks described; they were really just as many inches wide as feet stated, and running very irregularly but a few feet in length, and if they were found good it would have required at least $30,000 to make a road for delivering a suitable mill for working the mines.

Passing the matter of vein mining, I found more sulphuret of iron disseminated through the bedrock, than I have ever seen elsewhere; and an immense deposit of gravel in this basin and the upper and adjoining parts of the river, which had been concentrated and deposited at remote periods of time, by the heavy washings of gradually receding ocean waters which then played upon the declivities of these mountains, and we located for the company 40 acres of the basin and 2,500 feet down river for hydraulic and ground sluice mining, by the unusually convenient and abundant falls of headwaters and the river's outlet for discharge of tailings. I have rarely seen a more interesting gravel deposit, and as the approaching section of the ancient bottom of the river channel may be easily and cheaply proven by "ground sluicing" for ahont $2,000, I strongly advised its accomplishment, and as it is now heing executed, it is very probable that profitable results will be attained; and if so, not only will there be a long run on the river, but a large and very valuable property heyond for future "hydraulic" mining.

Be this as it may, 60 persistent pioneering Chinamen have been working the lower half of this same river for years, by much more laborious "wing-dams" and "crevicing," where they are evidently doing well.

All the leading streams from the interior of the island have produced gold. Before leaving this region I climbed to the top of the very steep mountam margin of the Bear hasin, where I discovered a small lake and a river's headwaters, which ran southerly, hut neither was marked on the map.

Heavy ranges of monntains lie southeasterly, as a kind of hackbone, where minerals may be fonnd if the rocks are congenial.

Very large snow-capped mountains lie near the north end of the island, whence the waters of the river, after forming a large lake three miles long, runs into the Alberni canal and Barclay sound.

Trails should be cut to these enticing mountains by government, so that those inclined for exploration may have au opportunity for their examination, as so little is known of the lofty interior, and hy far the most interesting portions of the island for minerals.

I was shown a very good specimen of mineral bearing blue carbonate of lime, which had been taken from a hill in a northerly bearing inlet, lower down and near the mouth of the Barclay Sound.

It should be stated that the large lake alluded to can be reached by rowing up the river from Alberni, in canoes; and it is probahle that a much shorter trail may he made from thence to the said northern mountains than from the ocean shores.

After spending about six days on and around the ground, examining, etc., we had to retrace our path homeward which was much less difficult and more speedy, for the reasons of having less weight to pack, more down hill, and a desire to get out of the woods. And on reaching the salt water, on the second day, sailed up the Sound the same evening hefore a strong wind and heavy sea, in a weak and light canoe, as guided through the drenching, dangerous spray hy an Indian and his squaw, when we momentarily expected to have to swim for our lives, but arrived safely at Alberni ranches and a large encampment of Indians who were arranged in a circle, greatly enjoying the excitement of gambling in clamorous accents at the sound of a rudely-extemporized drum.

After appreciatiug a supper from the Indian's hroiled salmon and a good night's rest in the farmer's straw, we hreakfasted early and started across the island with the determination to reach the other side that night; and although our ardor was much dampened hy a day's rain and no canoe at the right end of the Horn Lake, we reached Uncle Tom's camp just after dark and dried our dripping garments by the fire hefore turning into our wet hlankets.

Worse fare than ever, for ours was all eaten; and all that Tom and his better half, squaw or clntchman could offer, was a choice hetween salt clams smoked and dried until as tough as leather, on a continuously suspended string, or some stewed herring spawn just cleaned from seaweed and filth as taken from off the shore, where it accumulates at the proper season in enormous quantities.

They however did all they conld, none could do more, and "all is well that ends well!" You will think it strange traveling, and although I have made two trips on horsehack, the one in Nevada 30 days, and the other in Colorado 35 days, I enjoyed this better for its novelty; and after all was astonished to find that I had wasted only from 202 to 201 pounds.

There are two things I must not pass over without honorable mention, which are first the "chinook" or classical language of these various tribes of Indians and white inhahitants, and secondly the fact that we traveled in perfect safety with and through Indians who were fully armed when we were not. This language was, as you know, introduced for trading purposes hy the Hudson Bay Co., and it has now become generally known by the old Indians, English, and even the Chinese, whom the Indians despise and ridicule at every opportunity.

I think the convenience for explanation hy this jargon has greatly aided the civilization of these men, and peaceful occupation of this vast county hy such an exceedingly small community.

We slept soundly, and boarded the welcome *Cariboo Fly* in the morning on her upward trip to Comox, so as to use her as a boarding house until she returned to repeat the delightful trip through the labyrinth of waters and woods to Victoria.

J. S. PHILLIPS.

Changes and Improvements at Eureka.

EDITORS PRESS:—Having returned to this camp after an absence of two years, it may be of some interest to your readers to note the changes and improvements that have taken place in the meantime. Two years ago the Richmond was the only paying mine in the county. Other mines, that are now productive, were then unworked, and all, even the Eureka Con. were levying assessments. Since then, the number of men employed in mining and the products accruing from their labors have fully trebled. New enterprises have sprung into existence, with an energy and intrepidity characteristic of the place, and with every prospect of success in the near future. This may well he said of the Albion.

The Albion

Joins the Richmond on the northwest. It was located last March. There are four locations, each 1,500 feet long by 200 feet wide. At the time of locating, the locaters were foremen in the Richmond, but they immediately resigned their positions and went earnestly to work to develop their own property. Complete hoisting works have been erected; the shaft has been sunk 335 feet, and a drift is now being run across the ledge. The ore formation has already been cut into, and early developments are confidently expected. The Albion is on the great Ruby Hill lode. It is the opinion of miners and experts that the ore bodies found in the Eureka Con. and Richmond mines extend northward into the Albion ground, and, in consequence, the property is considered of great value.

The Richmond.

So much has been said and written concerning the Richmond within the past year, that it will not he necessary for me to go into details. As soon as it was known that the result of the "big lawsuit" was unfavorable, the Richmond managers, having been estopped from working their principal ore body, directed their attention to prospecting in other parts of the mine. Drifts and winzes were run in all directions. Ore was found at every point. So extensive have been the developments, that, notwithstanding the adverse result of the lawsuit, the Richmond stock commands higher prices now than ever before. Nor are those prices unduly inflated. They are based upon real merit. They are sustained by the appearance of the mine, and hy the returns and dividends during the past year. The ore yield is nearly 200 tons daily, enough to keep four furnaces in constant operation.

It is now two years since the Richmond shaft was sunk to its present depth, which is 900 feet. Since then all the ore extracted was taken from above that depth. The Managers feel that productive as the old levels have been, they are not exhaustless, and in order to keep up the present production, it will be necessary to sink the shaft deeper and extend the workings downwards. With this end in view a large air compressor has been ordered.

Eureka Con.

The Eureka Con. is *par excellence* the mine of the district. It occupies the most central position on Ruby Hill. It is worked to a depth of 1,000 feet. The present daily ore product is 240 tons, which is extracted on all the levels from the 11th upwards. The incline shaft has recently heen sunk to the 12th level, a station chambered out, and a drift started for the ledge. There can be no douht that the ore continues down to the 12th, as it has already heen prospected nearly to that depth from the levels above. The mine is supplied with all the modern appliances for deep mining, Burleigh drills, air compressors, and machinery powerful enough for continning the workings to a depth of 1,500 feet.

Excluding the honanza mines, the Eureka Con. has paid more in dividends during the past 12 months than any other mine on the Pacific coast. There are 50,000 shares; a monthly dividend of $3 per share has heen paid. This aggregates the grand total of $1,800,000. This is surely a good showing. This good showing is to be mainly attributed to the superior management of Mr. Henry Donnelly, and to his skill in selecting competent assistants. As soon as Mr. Donnelly was appointed superintendent he sent for a Cornish "captain" and made bim foreman of the mine. The gentlemanly "captain" is an old miner, a man of practical experience in underground workings. At that time the mine was in a bad fix. It had previously been worked with a view to getting out all the ore in sight and easy of access, regardless of consequences. Accidents were of frequent occurrence. There was no regularity, no system adhered to. It took some time to put the mine in order. Then the lawsuit came; it, too, interfered a good deal with operations. Since its settlement everything has gone smoothly. There is some local feeling manifested against Mr. Donnelly for employing almost exclusively aliens in working the mine. But the merchants in Eureka and the stockholders have no cause for complaint. As a class, Cornish miners are sober, industrious and intelligent. Their employment in the Eureka Con. mine has resulted in complete success. Every month the dividend comes as regular aud as surely as night follows day.

The K. K. and Phenix.

Owing to an accident to the machinery the K. K. is at present shut down, on which account your correspondent was unable to gain admission to it. The Phenix joins the K. K. on the south. This company, after a rest of nearly six years, are making active preparations for a fresh start. They are grading and building roads, erecting new hoisting works and machinery. The machinery will be placed on the old shaft. The shaft is 400 feet deep. As was to be expected the timbers have decayed in many places, and it will require a good deal of repairing before it will be fit for work

The mine has been partially prospected through the K. K. Ore was found in several places. Six years ago when the Phenix was working before, the peculiarities of this district were little understood hy the miners. Experience has taught us many things since. The old Phenix workings do not extend far enough to the eastward. The old levels will soon be renovated and prospected anew, and I have no doubt ore in large quantities will be found.

In my next I will give an account of the principal mines on Prospect mountain.

W. H. P.

Eureka, Nevada, August 9th.

Exploitation of Mines.

Translated for the MINING AND SCIENTIFIC PRESS from LE CHARBON.

We translate the following from the journal named above. It is made up from exhibits, etc., appearing at the International Exhibition at Paris for 1878.

In the working even of mineral veins marked progress has been made, owing to a more extensive exploitation, characterized by a better choice of methods, and their perfection for the most part.

In the coal mines, particularly at the time of the great price of coal, they attacked neglected beds or those hitherto insufficiently worked. In the little beds they accomplished a complete removal with the least possible deterioration of the matter to be extracted, owing to the fact that the worked out parts of the mine were filled in, setting and caving, as well as explosions were avoided, and all the precautions could he taken for the security of the men and the purity of the product obtained.

This more thorough exploitation of the mineral riches has produced an amelioration of all the details of subterranean transport. Everywhere have been adopted cars better studied, often of iron to augment their capacity, with given exterior dimensions, and of ways established with stronger rails, often joined with fish-plates (*eclisses*) fixed upon larger cross ties.

In short, in all the coal mines have been established steam or compressed air engines for working interior shafts, inclines and horizontal roadways hy cables or chains, hy means of which the cars are drawn from these interior shafts to the coal bins often very distant. At the mines of Cessons, they have introduced small locomotives in the mines, and at Blanzy they are about to construct a locomotive run hy compressed air, which will not vitiate the air of the works.

The hoisting machines have become more strongly built of late, to fulfill the greater duty demanded of them, owing to the further development of the mines, which has greatly increased their depth.

The system of expansion was adopted for the powerful hoisting machines at Blanzy for the first time; since which the system has extended itself, and ingenious mechanisms have been invented to perfect it.

At the mines of Epinac they have substituted for the ordinary hoisting arrangement, with cable and drum, the system called atmospheric. In this system the guides are replaced by a tube of large diameter, reaching like it from top to hottom of the shaft, and in the interior of which moves a piston, carrying at its hottom the charge to he raised. A vacuum is made above the piston, and the atmospheric pressure from below

(Continued on page 118.)

MECHANICAL PROGRESS.

The Steam Wagon Contest in Wisconsin.

We have alluded formerly to the ceatest in Wisconsin fer the $10,000 prize offered by the Legislature for a successful steam road wagon. The trial was made a few weeks since, and the local papers are well filled with roports of the trials. We select important points. Two machines were entered for trial, the *Oshkosh*, owned by Schomer & Farrand, of Oshkosh, and the *Green Bay*, owned by the Cowles Bros., of East Green bay. The start was made from Fort Howard, at noon of the 16th inst. When the *Green Bay* had emerged from the city limits it broke down, and was sent back to the shop for repairs. The *Oshkosh* kept on its way, reaching Appleton, a distance of 32 miles, at 8 P. M. Leaving Appleton at 9:30 the following morning, Neenah was reached in time for dinner, and the people of this little "Flower of the Fox" were treated to an exhibition of speed on the principal streets of the city. From Neenah to Oshkosh is about 14 miles, and the machine made the trip in two hours, from 1 to 3 P. M. At Oshkosh the Green Bay machine was found. It made good time on a flat car over the Chicago & Northwestern railway, and beat the Second City invention by several hours. A trial of speed was in order. The *Green Bay* was speedy, but it couldn't run a mile without stopping, and the Oshkosh wagon shut it out in two straight heats, in 4.36 and 4.41. Finally, the *Oshkosh*, in chargo of the inventors, accompanied by Commissioner Olin, arrived in Madison, having made the trip from Fort Howard, 201 miles, in 33 hours and 27 seconds, official time. The time allowance given by law, five miles an hour, was 40 hours. The *Oshkosh*, therefore, beat the official time 6 hours and 33 minutes. This machine has throughout hauled a wagon weighing 3,500 pounds. The weight of the machine alone is 4,800 pounds, and with water and coal for eight miles, 6,600 pounds. It is a handsome affair, neatly and simply made, and appears calculated to do any amount of work. The engineers report no breakages on the trip, no runaways from scared teams, and not a bridge plank disturbed; while most of the roadway has been hard to travel, being heavy sand and gravel. The fastest time made by it was between Johnson's Creek and Fort Atkinson, 57 miles in 11 hours and 30 minutes. It is understood that the commissioners have numerous other tests to suggest before finally awarding the prize, even if they consider the Oshkosh machine to merit it.

PICKLING AND DEADENING.—It very often happens that jewelers want to give certain objects an appearance of gilding. The German *Watchmakers' Gazette* says that the following method will be found very useful; an appearance of brass will be given to the objects. These must be carefully cleaned of all fatty matters and dirt, or else the liquid will not act uniformly. Sulphuric or nitric acid is used, with or without tartar. The sulphuric acid is diluted with 10 to 20 parts of water. The sulphuric acid has the quality of dissolving the borax of the solder, which would otherwise have to be removed by mechanical means. As it has the property also of extracting the zinc from brass, and giving the objects a darker and redder color, it is not suitable where dipping only is required. As a general rule, therefore, nitric acid is to be preferred with about ten parts of water. The tartar has no influence on the color, and it is difficult to use it, as it must be applied with 30 parts of water in a boiling state. The dipped articles are then rinsed in water and dried in shavings unless pickling is required. For this the same acids are used, with the difference that sulphuric acid alone cannot be employed. Either nitric acid without any addition of sulphuric acid is used, which gives a bright surface verging on green, or nitric acid to which sulphuric acid has been added, which produces a yellow gold color. The acid bath has generally additions of table salt or snuff. The salt is decomposed by the acids, muriatic acid is precipitated and forms aquafortis with a part of the nitric acid. There is this advantage here, that most kinds of brass contain some tin, which is transformed into oxide of tin by the nitric acid, and as it is indissoluble in it it remains on the surface of the metal, while it dissolves in the acids of salt.

TWENTY THOUSAND SHOTS AN HOUR.—Dispatches from New York tell of a rifle battery lately invented in that city, which is so constructed as to deliver its fire either in a right line or in horizontal radiating lines. The barrels, ranging in number from six to twenty, are sufficiently apart to prevent heating from continuous firing, and are fired successively, instead of instantaneously, at the rate of 20,000 shots an hour.

DURABILITY OF LEAD ROOFS.—It is asserted, says the *American Architect*, that the lead roof of George Heriot's Hospital, at Edinburgh, Scotland, has lasted from 1650 to the present time, an occasional patch being the only repairing that climatic action made necessary.

A DEVICE FOR HOLDING CARS TO THE TRACK.—The *National Car Builder* describes what is called a "safety runner," which has been successfully tested on a railway in Minnesota. It consists of a bar of iron four and a quarter inches thick, suspended from the truck outside of and underneath the oil boxes, and secured across the ends of the truck by the brake-beams. It is braced between the wheels, and so constructed as to completely encircle and bind the truck. The runner hangs about four inches out from the wheels, on either side, and about half an inch above the trend of the wheel. It is claimed for this runner that it will hold the car to the track under any and all circumstances, and the trial certainly sustained the claim. The scene of the trial was in a sharp curve (six degrees). An outside rail, 30 feet in length, was removed, and the car, an empty flat, was sent over the gap at the rate of 15 miles an hour. The "runner" did its work beautifully; the truck dropped on to the ties, but was held close to the rail, and the car stopped in a distance of 30 feet. On the second trial the car was sent over the gap at the rate of 25 miles an hour, and ran about 150 feet, the "runner" holding it close to the rail, as before, and in each instance the car was replaced upon the track, uninjured, in less than 30 secouds.

FASTENING TIRES.—A German mechanic has invented a method of fastening tires which has, according to *Iron*, successfully stood the test of a series of experiments. A dovetailed groove is turned in the inner face of the tire, and a similar one in the outside of the skeleton, so that, when the tire is slipped on, the two come opposite to each other and form a channel of dowel-shaped section going all round the wheel. Into this channel is run some easily fusible metal (by preference pure zinc), which, on cooling, makes a firm connection between the tire and wheel. In carrying out the operation the tire is only slightly heated, and shrinkage of 1-1200 being found ample, and is then brought over the skeleton, which is laid in a horizontal position, and forced upon it. The zinc is then immediately run in through holes cast in the skeleton, if of cast metal, or drilled in other cases; thus the zinc is at once prevented from cooling while being run in, and is compressed, and thus rendered much stronger, by the subsequent contraction of the fire. That this mode of fastening, in addition to its simplicity and cheapness, offers full security, both against sideways shifting and in case of breakage of the tire, has been proved by experiments made in the central workshops at Frankfort.

LOCKING PLATE FOR NUTS.—A very simple locking plate for nuts has been invented by James Finney, of Braintree, England. A small pin is fixed a short distance beyond the nut. A circular plate, divided equally by 17 notches, fits easily over the nut in any of its six positions. The principle of the invention is the same as that of the vernier scale. As there are 17 notches in the plate it follows that three of them represent just one-seventeenth of one side of the hexagon nut; so that if the plate be moved round three notches, it will not fit unless the latter be moved round a distance equaling one-seventeenth of one side of the hexagon, or a distance which equals the one hundred and second part of a whole turn. The cost of the plate is small, as it can be made with sufficient accuracy of cast iron.

STEAM GENERATORS.—An English invention, for the purpose of saving fuel and regulating heat, introduces a marine steam generator, having a horizontal flue or flues, fired at each end, and provided with an uptake or uptakes at the center. He constructs the flues with a double hollow bridge at or near the center, so arranged that air can be admitted therethrough to mix with the products of combustion from one or other of the fires, by means of doors connected together, and operated by a lever or like appliance. The said air is heated in passing through the hollow double bridge, and serves to assist in the combustion of the gases generated at the end of the furnace last fed with fuel. The products of combustion pass away by the vertical central uptake.

GARMENT CUTTING MACHINERY.—The garment cutting machine which received the award at Philadelphia is being shown at the Paris Exposition. The following note is made on the construction of the machine. By adopting a long arm for carrying the upper pulley, a conveniently large table is obtained, and a certain amount of elasticity given to the knife, which is carried back, well out of the way, by the third pulley employed. Large and unwieldy pulleys are thus avoided. A simple and effective means of sharpening without removing the knife is provided in an emery-wheel fixed under the table, and driven from a pulley on the underneath shaft. We understand that from 3,000 to 5,000 garments can be cut weekly by one of these machines, thus rendering them invaluable to the large clothiers.

THE KEELY MOTOR.—William D. Marks Whitney, Professor of Dynamic Engineering, and George F. Barker, Professor of Physics in the University of Pennsylvania, publish a report in the Philadelphia *Ledger*. These gentlemen do not say that Keely is a fraud, but they evidently think so, and what they do say justifies the public in reaching the same conclusion.

SCIENTIFIC PROGRESS.

Fatal Fungus on the Salmon.

It appears that the salmon on this coast are found to be attacked by a fungus either identical or very like the one which has proved very fatal in England during the last year. At a meeting of the California Academy of Sciences recently, the subject was introduced by Mr. J. P. Moore, one of our ablest local mycologists. Specimens had been submitted to Mr. Moore by the Fish Commissioners. He said the disease, though recently noticed here, has long been known in Europe and fully described.

The disease is caused by a fungus, at least so classed at present, which first begins in the form of a delicate, web-like mass of semi-transparent, very fine threads, resembling a mold. It may begin either upon the head, gills, scales, or, as most commonly is the case in young fish, upon the umbilical cord. It seems especially to prefer the egg in its attack, and for reasons that will be shown. At its first appearance, an examination with the microscope shows this mass to be made up of simple threads. These in a few days, from eight to ten, increase in length and send out at times branches. These are club-shaped and are filled with protoplasm. Soon the protoplasm seems to break up and 200 zoospores are formed within the club-shaped tube. These you will observe under the microscope. At the base of these club-shaped filaments may often be seen shorter septate filaments, bearing on their summits a globular mass containing spores. These latter are what we call resting spores. Either zoospores, or resting spores may germinate; though the latter are undoubtedly intended to play the principal part, and serve to carry over the species from one season to another, as their name indicates—resting spores. The disease is known in treatises on the subject as *saprolegnia ferax*, though our species differ greatly from the one described under that name. It attacks not only salmon, but also trout, carp, gold fish, the eggs of fish, mollusks, batrachians, etc.

Whenever there are wounds, or whenever the circulation, from any cause, is weak, and the nutrition consequently slow, the attack is most likely to begin. For instance, the skin of fishes, placed in water not well aerated, in which the mucus is changed, becomes a fit point of attack. In such water, the bronchial respiration not being well accomplished, the gills may be the first point of attack. The secretions from wounds present very favorable conditions to the development of the disease. Eggs of fish or mollusks in such water, remaining quiet as they do, are most favorable soil for the disease.

Once developed, it can be readily transplanted from one animal to another in health, and there develop itself. This can be accounted for by the fact that it takes along with itself enough of its own substance to form a radius and serve as aliment, until the presence of the disease itself can cause an alteration in the normal mucus. It may readily be inferred from the nature of the fungus that warmth will tend to hasten it on to maturity. Warm, sluggish water, shallow pools, badly aerated reservoirs or tanks, containing, as they must, much nitrogenous substance, make a fitting breeding place for this disease. Death from this disease, no doubt, results from the prevention of proper respiration by covering the gills, as in the case of fish, rather than from any poisonous action of the plant. Experiments go to show that fish so attacked live but a short time, a few days at most. It might be inferred from what I have said that fish would be more subject to this disease at certain seasons of the year. This is, in fact, the case. Salmon at the end of the spawning season, especially, are subject to its attack, and great mortality prevails among them.

THEN AND NOW.—Prof. Du Bois Reymond is writing a notable series of articles for the *Popular Science Monthly*, concerning the uprising of the modern scientific idea. He takes occasion to contrast the present with the past as follows: "Man, whom we first met as a tool-making animal, is now become a rational animal who travels by steam, writes with lightning, and paints with the sunbeam. The re-conversion into work of the sunlight stored up in "black diamonds" multiplies his energy a million-fold. The Seven Wonders of antiquity, the engineering works of the Romans, bear no comparison with the enterprises every day undertaken by our own generation. The periphery of our planet threatens to become too narrow for man's genius. Hardly any secrets do its highs and its depths still conceal from him. Whithersoever man is powerless to go bodily, his mind penetrates with the aid of the magic key of calculation. In the blackest night, on the stormiest sea, his bark steers the shortest course; she dexterously shuns the track of the destroying typhoon. Geology does all that the divining rod was once supposed to do, giving us plentiful supply of water, salt, coal and petroleum."

PEPSINE FROM THE OSTRICH'S STOMACH.—According to the *Revue des Deux Mondes*, the ostrich hunters of South America, bearing in mind the almost incredible digestive powers of that bird, extract the pepsine from its stomach, and sell it for its weight in gold to dyspeptics.

MAGNETIC NICKEL.—A Russian physicist, M. Wild, sums up his researches on the magnetic properties of nickel as follows: Pure nickel can become permanently magnetic to a considerable degree, thus differing notably from pure (soft) iron. The maximum quantity of magnetism which pure nickel can retain, however, is only about one-half or one-third of that which hard steel can retain. The magnetism of nickel is less permanent than in steel after the magnetizing force has ceased to act; the gradual loss of magnetic force being greater with nickel than with steel. The temporary magnetism which pure nickel can retain is about double its permanent quantity, or about one-half of the temporary magnetism which hard steel and about one-fourth of that which soft iron can retain. These results verify, therefore, the general belief prevalent among physicists that in its magnetic properties nickel is notably inferior to both iron and steel.

COPPERY OYSTERS.—An observation recently made by M. Balland on copper in oysters is interesting. A number of so-called Portugal oysters, sent from Oran to Orleans in March, showed a remarkable green coloration. On being pressed against the palate they left a sensation of bitterness or tartness, and when placed in contact for some time with a well-cleaned plate of iron they deposited a thin red layer of metallic copper. M. Ballaud sought to determine the amount of copper by precipitation with an electric current; two oysters, without their shells, having been triturated and placed in a sulphuric acid solution; in 16 hours six milligrammes of copper were deposited, and several other experiments gave this amount of about three milligrammes for each oyster. Of the persons to whom these oysters were sent, some rejected them on account of their color; others took them and without any injurious consequences.

PHONOMOTER.—In order to exhibit the dynamic force of the voice, Prof. Edisou has constructed a phonomoter. The *Iron* says the machine has a diaphragm and mouth-piece similar to a phonograph. A spring which is secured to the bed-piece rests on a piece of rubber tubing placed against the diaphragm. This spring carries a pawl that acts on a ratchet or roughened wheel on the fly-wheel shaft. A sound made in the mouth-piece creates vibrations in the diaphragm which are sufficient to propel the fly-wheel with considerable velocity. It requires a surprising amount of pressure on the fly-wheel shaft to stop the machine while a continuous sound is made in the mouth-piece.

EXAMINATIONS FOR TRICHINA.—To detect trichina, suspected meat is often examined with a microscope. A Russian savant, M. Tikhomiroff, has suggested a new mode of isolating the muscular fiber. He divides the pork into small pieces and sets it to digest for about half an hour with an equal volume of chlorate of potash, to which is added four times as much nitric acid. The muscular tissue thus treated is put into a flask with distilled water, and agitated till it separates into its fibrillæ. These latter present, when the meat is infected with trichina, whitish fusiform swellings, observable with a lens, and in which the microscope reveals the presence of trichina.

WEEVIL ON LEAVES.—*Psyche*, the organ of the Cambridge Entomological Club, notes the recent introduction into the United States, of a weevil, which devours the foliage of many beautiful plants, and suggests to florists, who have been troubled by it, that it will be for their advantage to search at this time of the year, in the flower-pots, and in all waste soil about their hot-houses, for the larvæ and pupæ of these pests. The larvæ, which feed upon rootlets, are now pupating, and the destruction of every individual prevents the laying of a large number of eggs during the coming season.

MICROSCOPICAL JOURNAL.—We learn that a new scientific publication is to be undertaken in New York city, to be called *The American Quarterly Microscopical Journal*. It is to be a first-class publication, and will take rank with the famous English microscopical magazines. The editor will be Prof. Romyn Hitchcock, at 150 Nassau street, New York City. He is well fitted for the task and we wish him all success.

NATIVE FLOWERS AND FERNS.—The continuation of Prang's series of native flowers and ferns of the United States, illustrated with chromolithographs and text by Prof. Thomas Meehan, is worthy of the position accorded the work on the appearance of the first part. Five parts have thus far been issued, and the work is plainly shown to be unique and popular in design, and most praiseworthy in execution of both text and plates.

DIRECTOR OF PARIS UNIVERSITY.—The successor to M. Leverrier, as director of the Paris Observatory, has at last been appointed in the person of Capt. Mouchez. His functions are, however, purely administrative, the scientific direction being intrusted to M. Tisserand, an astronomer of great promise, formerly attached to the Toulouse Observatory.

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

CALIFORNIA.

AMADOR.

ZULEFF MINE.—*Ledger*, Aug. 17: Quite a stir is being made around this mine, which is located at Enterprise. From 15 to 20 men are employed, and an air of bustle and activity once more pervades this almost abandoned camp. Some nice looking rock is being got out, but the mill had not been started when the last accounts reached us.

VOLCANO ITEMS.—J. Griesback is below for the purpose of purchasing an engine for hoisting and pumping at his mine, the water supply at present being inadequate for such work. At Stewart's mill a partial clean-up of rock from Down's mine was made. The result justifies the high expectations. Thus far an average yield of more than $40 per ton is indicated, which is likely to be augmented when the gold is all taken from the batteries. At Downs' mine the ore improves in quality. Rock has been hoisted the last few days which the miners estimate at $100 to the bucketful. Though this estimate may be extravagant, there is no doubt that the quartz streak now being worked at this mine is very rich.

NEWTON COPPER MINE.—The work of taking out water has been pushed ahead for three weeks past, and is now nearly completed. Extensive repairs have been done to the car tracks under ground, and the mine is expected to resume ore extraction shortly, under circumstances as flattering as at any previous time.

CALAVERAS.

THORPE MINE.—*Citizen*, Aug. 17: This mine is looking well. The shaft is now down 85 feet, and they are still engaged in sinking. The lead is nine feet in width and pays well. The mill is kept constantly crushing.

GWIN MINE.—*Chronicle*, Aug. 17: Stopes are now opened on the 1550 level at the Gwin mine. The shaft and levels are being supplied with new seven-inch iron air pipe. The ledge shows very wide, but the ore is not high grade. The batteries are all in motion, and the yield of the mine is considerably above expenses.

EAST CALAVERAS.—At West Point a San Francisco company are rapidly developing the Granite mine. A San Francisco company has commenced operations on the Zacetero or Hall mine, at West Point. They have a new 10-stamp mill. At Mosquito the pumps in the Banner have been set at work. Everything is in readiness for active operations as soon as the shaft and stopes are freed from water. Levels are being run in the San Joaquin. At Sheep ranch the new machinery on the Wallace and Ferguson is in position, and it is expected to commence sinking the first of next week. Sinking is being vigorously prosecuted at the Chavanne mine. The Champion will soon have a mill of its own. At present ore from this mine is crushed at Carlton's mill.

INDIAN DISTRICT.

There appears to be two distinct mineral belts striking through the district in a north and south direction, the Tower mine being in the lower or eastern, and the Neal in the upper or western belt. The Neal mine has a 200 foot tunnel and 40 feet of shaft at points 300 feet apart. In the tunnel a crosscut shows a ledge thirty odd feet in width at a depth from the surface of 90 feet. This large vein is clean cut, seeming to be a perfect fissure, but varies in richness; the nine feet prospects well enough to mill at a good profit, and three and a half feet on the east wall, being quite flattering. The remainder or middle half, as it were, is of a rather low grade, but altogether the ore would reduce at a handsome profit if rightly handled. As yet it is of the free gold character, but it is not unlikely to turn more to silver, and possible in the end may partake of the character of the so-called "zinc-blend" or "black-jack," so conspicuous in the Tower mine, and which yields up in the hundreds of dollars per ton. The District has an abundance of fuel and timber for mining purposes, and a number of live springs capable of furnishing water sufficient and convenient for several mills.

LOS ANGELES.

SILVERADO AND ANAHEIM.—Dispatch to S. F. *Chronicle*, dated Anaheim, Aug. 16: Five tons of rich silver ore from Silverado, the new mining district in this county, reached here for shipment to San Francisco. Anaheim is the shipping point and base of supplies for Silverado, which is 25 miles distant. The district has already a population of 150, and there are a dozen developed mines. Trade has revived here wonderfully since the permanence of the mines is assured, and a market of considerable magnitude for our agricultural products will soon be opened.

GEOLOGICAL TESTIMONY.—Los Angeles *Express*, Aug. 10: "D. M. Adams says of the mines in Santiago canyon: It seems to me that there can be but little doubt as to the permanent worth of a silver-bearing lode, located in a hypozoic formation, having rich croppings and matrix of the most desirable character mineralogically, the ore from which smelts readily, the cheapest of all processes of reduction, and displaying infallible marks of perpetuity. I trust that our new mines at Santiago canyon do possess these elements, as stated by your correspondent, and there is every reason to accept the correctness of his account."

MONO.

VARIOUS MINES.—Bodie *Standard*, Aug. 14: Mr. J. H. Page has purchased a one-third interest in the Brooklyn mine. This claim is bounded on the north by the Bodie and on the south by the May Belle. A shaft was sunk one hundred feet, several months ago, and crosscuts run east and west and ledges were struck in both directions. Work was suspended on it, however.—The stir produced by the report that a strike had been made in the South Bulwer is hardly warranted by the facts, though a nice one-foot ledge has been opened, and from every indication it is getting wider as the work advances.—Work has been resumed on the Alice G. claim, owned by Dr. D. V. Goodson and Tom Madden. A shaft has already been sunk thirty feet.—The Addenda was purchased a few days since by W. F. Leon, Capt. M. C. McGleunon and Samuel L. Dixon. The shaft is down 135 feet and assays from the bottom vein over $40. Quite a large figure was paid, owing to the location and assays obtained. This mine is situated between the Bodie and Red Cloud.—Work still continues on the Paris, and samples of ore already taken out prospect very well. The drift has been advanced eight feet the past week; total, 70 feet. The shaft of the Last Chance was sunk eight feet deeper the past week, making a total depth of thirty-two feet.

NEVADA.

SCADDEN'S FLAT.—Grass Valley *Union*: This old mine, once dividend paying but afterwards drowned out, is to be revived by a new company. A sufficient amount of stock will be sold to raise a working capital of $10,000 to be used in erecting hoisting and pumping works. Work will be commenced as soon as possible, and it is expected to have the machinery in running order during the present summer.

LIVE OAK.—This mine has been sufficiently developed to show that it contains a true gold bearing ledge. Several cuts have been opened and four shafts sunk upon it, the deepest being 102 feet in depth. The ledge shows a uniform width of 20 inches which carries a good deal of free gold. Crushings have been made which average $23 per ton. The new incorporation, of which J. M. Keeler is president, and W. I. Tusten, treasurer, both of San Francisco, have contracted for a 10-stamp mill, on favorable terms. The mill is to be put up immediately, the machinery being sent from San Francisco, and it is expected that it will be ready for running within 40 days.

FALL CREEK.—Nevada City *Transcript*, Aug. 14: In the Diamond Creek mine, the south winze is on a good looking ledge that averages about four feet in width, while the north ledge shows a 3½ foot ledge that promises equally well. The rock in the main tunnel driving north is of extraordinary richness, and a new chute has lately been developed. The mill is kept in operation constantly, in order to crush the large amount of rock being taken out. F. A. S. Jones, owner of the Last Chance is driving a crosscut tunnel that will strike about 12 feet below the present depth of the 30-foot shaft. He has already taken out 15 or 16 tons of rock that looks well. A new bottom tunnel is being run in the Lindsey mine. Stringers have been met that may lead to a large ore body. A new mill is comtemplated. The old Cannon creek mill will probably be taken to the McCurdy. This mine has a regular chute, picked specimens from which have assayed as high as $200 per ton.

PLACER.

QUARTZ MINING ITEMS.—*Herald*, Aug. 17: Two Gould brothers, Jas. Ferguson and John Bryan, have cleared the old Booth mine of water and will soon commence systematic work. Shurtliff's Duncan hill tunnel is within about 15 feet of the main shaft. It will provide drainage and ore exit. T. M. Thoop, a persistent Duncan hill prospector, has at last found a streak that paid at first $20 and at last accounts $200 per ton. E. T. Loving works a ledge on Millertown Ravine, which has payed him very well from the start, and which at present is turning out some exceedingly rich rock. Indications are good. Bell's Bonanza, on Bald Hill, has left the pan and mortar and tried the St. Patrick mill. Forty tons yielded between $11,000 and $12,000.

FOREST HILL.—Systematic work is going on at several places on the Forest hill divide, the object of which is to get at the deep gravel deposits in the bottom of the old river bed, under the divide. The Excelsior company and Howell & Co., owners of the Jersey, Independent, Jenny Lind and other old claims, are among those that are pushing the development of this locality.

PLUMAS.

ITEMS.—*National*, Aug. 17: Encouraging reports come from the claim of Haun & Hickman, Clermont. They are again running the tunnel ahead, having completed their arrangements for a supply of good air, and are now progressing at the rate of from 20 to 30 feet a week. They have about 200 feet yet to run to reach the gravel. S. S. Taylor, on Silver creek, has a bank, about 14 feet deep, that prospects uniformly and well. R. Jacks, Enterprise claim, near Spanish ranch, has good prospects. Hungarian Hill has paid well this year. Better supply of water is wanted. Work is progressing satisfactorily on the new mill at Eureka. The Bunker hill claim, near Eureka, is said to be paying.

SAN BERNARDINO.

GOLD QUARTZ.—San Bernardino *Times*: It is believed that gold in paying quantities exists in a very large number of gulches in the San Bernardino Range, and would produce a very large amount of the precious metal if only water could be got to them, or the dry washer skillfully applied. Many men, by the application of judgment and proper mechanical skill, could make for themselves a business that would furnish them a good living in these gulches. But it is the quartz mines that are the most attractive at this time. Gold Mountain and Valencia Hill are each vast outputs of gold-bearing quartz that does not require to be mined but can be quarried for a lifetime to come. These quartz quarries will produce ore to give labor to thousands of men in the business of extracting precious metal therefrom, if only the business is conducted with proper mechanical skill and economy. These vast quartz mines are of a low grade, averaging in the neighborhood of $20 per ton.

SAN LUIS OBISPO.

OUR MINES.—*Tribune*, Aug. 17: Twelve or 14 years ago, several copper mines were opened and considerable labor and capital expended in mining apparatus, tunneling and prospecting; but owing to the undeveloped commerce, the irregularity of shipping, and the isolated and uncivilized state of the country, the enterprise was abandoned. Quicksilver mining has attained some importance in this county. Among the leading quicksilver mines are the Josephine, Oceanic, Ocean View, Pine Mountain. These are among the best quicksilver mines of the world, and their shipments of ore have, within the last five or six years, amounted to hundreds of thousands of dollars. These are situated mostly in the northern portion of the county, and are provided with first-class machinery and reducing apparatus. They have been effected by the low price of the metal, but still do some business. Placer gold diggings have been and are now being worked in the San Jose valley, some 30 miles east of San Luis Obispo, but not to any great extent, owing to a great scarcity of water. Enough has been done, however, to prove that splendid ledges of quartz exist in the hills above these placer washings. Lead ore is also found in the county. Chrome iron ore was discovered about two years ago, and a claim was worked by Mr. Wethered in the hills between San Luis Obispo and the coast. New claims have been discovered and the business is increasing. Harris & Co. own five mines near the headwaters of Chorro creek, some seven miles north of town. These mines are the Colorado, Soledad, La Rodilla, La Teresa and Los Amigos. Ten men are employed in the mines, and eight teams, hauling about two tons each, in the delivery of the ore. The Goldtree company own the La Trinidad, Salto and Devisadero. Feliz Bros. own a mine on Morro creek. The London Chrome company have delivered since July 1st, from their mines on a branch of Chorro creek, 34,400 pounds of ore, according to the *South Coast*.

SIERRA.

ITEMS.—*Mountain Messenger*, Aug. 17: The Oriental Quartz company, near Alleghany, are giving their quartz machinery a thorough overhauling. The Bald Mountain company are now employing about 86 men, have water to wash enough gravel to pay them. William Manson has the contract to sink the Pliocene shaft to bedrock at $50 per foot, he guaranteeing to sink 50 feet per month. The Savage company works near Milton, are down with the shaft about 130 feet. They have just got through a stratum of gravel and into pipe clay. The Schiveley furnace has again failed. There seems to be no hope of working Meadow lake ore. The Watt mine has commenced sinking its shaft, having drifted until it is thought they are over the channel. The indications are similar to the Derbec.

SISKIYOU.

SCOTT BAR.—Yreka *Union*, Aug. 10: This was the first place in Siskiyou county where gold was found, and is the oldest mining town in the county. Notwithstanding millions of dollars worth of gold have been taken from this vicinity there is plenty more left, though perhaps a little harder to get at. A great deal of mining is going on in the vicinity, the most of it requiring considerable expenditure of money before returns can be expected. On Quartz Hill opposite the town, Supervisor Garretson, E. Jacobs and John Marfield have an extensive claim and run a large hydraulic, and it is said profitably. Messrs. Jacobs, Reynolds, Tickner and Gilloon have a claim on the same hill which has just given them a good clean-up. Messrs. Maggoffy also have a claim on this hill. Also Messrs. Green & Holmes and Mr. Borland. The big flume of the San Jose Mill, Mining and Ditch company runs around the hill at the back of the town. They have just opened a claim below Scott Bar, but we did not learn how it was doing. Martin Andrews has also a good claim below the bar on which he has lately put a large hydraulic, or rather a "Little Giant," and the returns are said to be very satisfactory. Geo. Campbell has got his claim in the bed of the river below Scott Bar opened.

NEVADA.

WASHOE DISTRICT.

CON. VIRGINIA.—Gold Hill *News*, Aug. 21: Daily yield, 180 tons of ore, which is delivered at the mills as fast as extracted. The lower levels are still very hot and the progress of the prospecting drifts and advance of the ore stopes necessarily slow. The 2,050 station in the C. & C. shaft is being opened ready for future use. There yet remains about 150 feet of the shaft to repair, 100 feet of which will require considerable enlarging, but it is hoped that after the 1,400 station and drifts connecting are reopened, a sufficient circulation of air will be secured to permit of better progress. Repairing the connecting air gallery with the Gould & Curry on the 1,550 level is going steadily forward. Retimbering the main south drift on the 1,300 level is making the best of progress.

CALIFORNIA.—Daily yield, 200 tons of ore. The opening up of the sill floor going north from crosscut No. 4 on the 1,650 level is making good progress, the face still in good ore. The north ore stopes on the 1,750 level are also yielding good ore, and look well as they are advanced to the northward. The main north drift from the Consolidated shaft on the 1,650 level is being steadily advanced, the face in softer ground. It is believed that this drift will cut into the north ore body in a day or two more.

OPHIR.—The repairs to the main shaft above the 1465 level are making good headway. Retimbering a portion of the drifts on the 1300 level has been commenced, in order to keep open the air connections in the upper portion of the mine. Sinking the joint California winze below the 1900 level on the south line is going steadily forward, the bottom in hard blasting porphyry. It is now down 93 feet. Sinking No. 1 winze below the 2000 level is making good progress, having passed downward until through the ore into the west wall of the vein. The ore is now gradually passing out of the shaft to the eastward, the underside of the vein having assumed the regular easterly dip of the Comstock.

YELLOW JACKET.—On the 2400 level the south drift is now in 177 feet from the winze. The face still continues in birds'-eye porphyry with occasional streaks of quartz. No water. The new shaft is down 1,697 feet; bottom in dry, good working ground.

LEVIATHAN.—The lateral drifts both north and south on the 750 level are still running in the regular black dyke formation immediately underlying the ore vein. The north drift shows especially well this week.

JULIA CON.—The water is drained from the 2000 level and good progress is being made in cleaning out the main south drift and crosscut No. 1 on that level. Crosscut No. 2 has not yet been reached. The level is intensely hot, and but slow progress can be made with the work until it is cooled off.

CROWN POINT.—The north drift on the 2300 level is being pushed forward with the usual vigor to reach the north line of the mine. It is now in 275 feet from the winze, and has something near 200 feet yet to run to reach the Kentuck line.

CON. IMPERIAL.—Crosscut No. 3 south, near the center of the Imperial ground, is in a very encouraging body of quartz, giving good assays.

SUCCOR.—The new air compressor is completed ready for use. Sinking the shaft has been resumed and is making good progress, the bottom in good blasting rock.

SUTRO TUNNEL.—Face of header still in quartz and porphyry with streaks and bunches of low-grade ore. Total length of tunnel at the present time, 20,385 feet.

LADY BRYAN.—Good progress is being made in freeing the mine from water, the new machinery working finely.

SIERRA NEVADA.—Sinking the main south incline has made good progress during the week past, the bottom of the winze cutting occasional bunches of quartz, some of which continue to give good assays. To all appearances the shaft is passing over the top of a body of ore, the width, depth and extent of which it is an impossibility to yet determine. Sinking the winze was suspended last evening for the purpose of putting in new reels and other machinery at the head of the shaft, which will take at least two days' time. The discovery of the new ore body has infused new life into the mine, and the managers are going to work to develop their mine with a will and energy that betokens the greatest faith and the best results. The working force of the mine has been increased to over 175 men, and the present rate of expense will be $1,000, or more per day.

SILVER HILL.—Sinking the main incline is making good progress, the bottom in good blasting ground and the water giving but little trouble. The main north drift on the 900 level is making steady progress, the face in very favorable vein matter. The east crosscut from this drift is passing through a fine vein formation, carrying considerable quantities of good quartz and some ore, having the appearance of being only the outskirts of a fine mineral-bearing vein.

UNION CON.—Cutting out and opening the chamber for the joint Mexican winze on the south boundary line on the 1600 level is making good progress, and will be completed ready to commence sinking in a day or two more. This winze will occupy a very important position, will enable the prospecting and opening up of a large portion of entirely virgin ground, and will greatly aid the ventilation of both the Mexican and Union Con. mines.

HALE & NORCROSS.—The pumps working in connection with those of the Savage, lowered the water to within a few feet of the 2100 level, when a disarrangement of one or two of the small pumps in the Savage threw the greater portion of the work on the Hale & Norcross, and permitted the water to rise several feet in the shaft. Everything is again in good running

order, however, and the water is being gradually lowered.

BELCHER.—A serious break of the pump-rod occurred at the main north incline last night. It will probably take a week to repair the damages, but will have a no more serious effect than to delay the crosscutting of the 2,360 level for that length of time, as it would hardly be advisable to commence it with only the small donkey pumps to keep down the water in case a strong flow shall be struck.

BULLION.—The west crosscut on the 2,000 level is steadily advancing, the ground in the face being softer and carrying streaks of quartz and slips with a slight moisture, indicating a near approach of water. The east drift on the 1,840 level has not yet been started up, on account of there being no decrease in the flow of water. The east crosscut on the 1,700 level is steadily advancing, the face in porphyry carrying streaks of quartz. Sinking the main incline has been delayed for the past three days on account of having to put in a tank to catch up the water. This is now completed and the sinking resumed.

CON. DORADO.—During the past week the shaft has passed through a fine vein of quartz from five to seven feet in width, dipping to the eastward. The quartz is of very favorable character and gives low assays. Very good progress is being made in sinking, and the fine stringers of quartz being met with of late give the best possible encouragement of soon finding something better.

JUSTICE.—The double winze below the 1300 level is still in quartz and ore. The upraise from this level is also in good quartz showing spots of ore. The winze from the 1225 level to connect with the upraise is in fine quartz. The south drift on the 1150 level running toward the Silver Hill is showing some fine streaks of excellent ore.

TROJAN.—The ore extracted still continues of a good quality, the car samples showing an average of $38 per ton. The bullion receipts up to the present date of the month is nearly $9,000. The south drift from the fourth station is advancing at a very rapid rate of progress, the face in a splendid solid body of quartz, yielding assays ranging from $5 to $20 per ton.

SAVAGE.—Yesterday morning the water had been reduced to the top of the station at the 2100 level, when some trouble occurred with the small donkey pumps, permitting it to rise rapidly in the shaft. The necessary repairs have, however, been made, and the pumps are again getting the best of it.

UTAH.—The northeast drift on the 1150 level is being steadily advanced, the face in porphyry of a softer character. The upraise from the 1150 station of the incline to connect with the main perpendicular shaft is nearly completed. The 1150 station of the incline is finished, and putting in the new hoisting machinery has been commenced. Sinking the main incline below that point is making good progress. It is now down 85 feet.

CHOLLAR-COMBINATION SHAFT.—New foundations for a new set of boilers are being put on the surface. The excavations for the pumps in the main shaft below the 1600 level are rapidly approaching completion. The north drift on the 1600 level now being run to connect with the Sutro tunnel for a drain is advancing at the rate of five feet per day, the face in hard blasting rock.

NORTH CON. VIRGINIA.—The mine is entirely drained and sinking the main shaft is making the best of progress, considering the extreme hardness of the rock encountered.

CALEDONIA.—The north drift on the 1600 level is steadily advancing, the face in hard blasting ground. The east drift on the 1600 level is also being pushed vigorously ahead in hard blasting rock. The south drift on the 1400 level continues in quartz and favorable vein matter. It is the intention to close the mine on Saturday next for 24 hours, in order to make some necessary repairs to the machinery.

GOULD & CURRY.—The south drift on the 1900 level has been cleaned out and repaired to the joint Savage incline on the south line, which greatly assists the circulation of air in that portion of the mine.

BEST & BELCHER.—The joint east crosscut from the bottom of the winze on the 1900 level is being steadily advanced, the face in soft porphyry.

NEW YORK.—The north drift on the 1100 level is making rapid progress, the face in very favorable vein matter. The south drift is showing some quartz of a very encouraging description. Everything working finely.

ALTA.—A large portion of the vein on the 1250 and 1350 levels is already stripped, ready for crosscutting whenever it is desirable to do so.

BULLION DISTRICT.

YOUNG AMERICA.—The Young America mine, about five miles south of the Osceola, originally owned by Phil Depanger, who discovered it in '71, has been sold to a company of capitalists, who have 10 or 12 men engaged in extracting ore, with an Iowa man, by the name of J. N. Hill, as Superintendent. Some 800 or 900 tons of ore have been taken out and worked, some in Salt Lake, some in California and at other points on the coast, and it yields between $300 and $400 in silver to the ton.

CAMPBELL DISTRICT.

OSCEOLA.—Eureka *Sentinel*, Aug. 15: The Osceola mine, located in the Campbell district, about 22 miles south of Beowawa, and 15 miles northwest of Cortez district, promises to number among the richest mines of the State. It was discovered about three months ago by Mr. Depanger, and is now owned by a company, composed of himself, C. M. Twiss, and Jim Campbell, the original discoverer of the district. Several assays have been made of ore taken from this mine, giving an average assay of upwards of $600 to the ton. By testing the ore taken from different parts of the mine, it has been found that it all runs about the same. The rock contains very little metal other than silver. There are but very few men in the district at present, though prospectors are now making in that direction, attracted by this rich find. This company will set several men at work immediately, developing the mine and a few prospecting. A boarding house for the accommodation of the miners is being erected, and all necessary steps taken for operating the claim. Several car-loads of ore is now at the railroad, awaiting shipment to Salt Lake. The mine is situated on the summit of the highest mountain in the district, though easily accessible by teams.

RUBY MOUNTAIN DISTRICT.

RUBY district has lately been organized out of a portion of the Bald Mountain district, and a section of country stretching along the range to the northward in the direction of the overland road, a little east of Jacob's wells. It lies in White Pine county, and is perhaps 45 miles from Eureka in a northeasterly direction. Many valuable ledges are reported, and wood and water are abundant. There are several miners at work, with flattering prospects in the district. The most promising thing, however, is a mammoth copper vein owned by Mr. Olmsted and his associates. We have been shown some very excellent specimens of oxide of copper, estimated to carry at least 50% of pure metal. In view of the fact that the ore may be cheaply reduced on the ground, this is considered a paying proposition. The vein is believed to be an immense fissure, and can readily be traced for a distance of nearly two miles. It runs in a northerly and southerly course. The country rock is granite on one side and slate on the other. The new district is within 12 miles of the Cold creek settlement on the old Hamilton and Elko stage road.

NEVADA ITEMS.—It is rumored that a quartz ledge at least 15 feet wide, cropping out over a mile and averaging over $600 per ton, has been found in Peavine District. Rumored rich strike in the Jefferson mine. The Hillside will probably not start before September 1st. Some Revenue mine ruby ore assayed $25,719.14 per ton; $21,653.22 silver. The Phœnix new hoisting works is on the ground. Eagle mine, Lewis District, erecting hoisting works, and putting in pumps.

COLORADO.

SAN JUAN ITEMS—*Prospector*, Aug. 10: The San Juan and St. Louis Smelting Company started up on the Ang. 4th. The mines in the vicinity of Rose's Cabin continue to improve. A large amount of ore from this vicinity will be shipped to Lake City this season for treatment. The Sunnyside district is looking up once more. New men are expected to take hold of some leads there. The Red Rodgers lode, Pokeepsie Gulch, made its first shipment of ore for the season, recently. It was shipped to the Gladstone works of Dow & Waters, and assays gave over 600 ounces to the ton. The San Juan lode, in which Joe Cuenin and Roucbe are largely interested, gives assays as high as 593 ounces. A rich body of sylvanite, running nearly 300 ounces silver and considerable gold, was struck in the Mastodon a few days ago. F. F. Riggs' Bobtail mine in the summit district is improving. Twenty-six sacks of Montezuma ore, packed all the way from Yellow Mountain to Silverton, netted $54. The Pandora, owned by Lawthian and Medley, has exposed an ore body varying in thickness from 16 to 20 feet and assaying from $20 to $150 in gold and from $10 to $80 in silver. The placer claims on the San Miguel have been sold. In from 40 to 60 days, it is hoped, hydraulicking will commence.

GENERAL ITEMS.—Three men took out in three days, ore from the Ogallallah, which sold for $73 cash—188 ozs. of silver, a trace of gold per ton. The Melvina mine has resumed work after a suspension of a week on account of foul air. Air pipes have been put in. The Triune mine at Salina is still producing fair quantities of rich ore. The Atchison mine at Salina is again undergoing a transformation. A reverberatory furnace is being put in preparatory to trying chlorination. The Ohio company which has bought the western portion of the Montana mine at Salina, are having the shaft sunk twenty-five feet by contract, and expect to push the development of the mine rapidly. The Fannie lode, just west of Sunshine, is a promising prospect owned by R. C. Broadwell and Wm. Sellers. The mill returns run $200 to $250 per ton. Deitz & Higgins expect to be shipping coal from their bank near White Rock before cold weather sets in. C. C. Alvord reports to the Ouray *Sentinal* ore from the Virginius mine, in Mt. Sneffels district, that ran 530 ounces to the ton. The Summit mining district—the only gold mining district in the San Juan county—is sending out encouraging reports. The Little Annie mine is doing particularly well. The workmen in the tunnel through Raton mountain are reported to have struck a vein of excellent coal. Delphi, located in Sugar Loaf mining district, is in a prosperous condition. The mines that are being worked are doing well. The Little Daisy is attracting much attention, and the prospects are that it will prove to be one of the best mines in the county.

News in Brief.

THE strike of Paris cabmen is virtually at an end.

THE Indian famine continues very distressing.

A REVOLUTION has broken out in San Domingo.

AUGUST 16th Parliament was prorogued until November 2d.

A THOROUGH survey of the Columbia river bar is in progress.

THE wool crop of Douglas, Oregon, this year is put at 1,500,000 pounds.

HOP lice are troubling the vines in central New York to a fearful extent.

AMERICAN dried apples are now in demand in most of the countries of Europe.

IN three days 130,000 quarts of blackberries were shipped from Vineland, N. J.

AUGUST 13th, a fight occured in Ottawa between Young Britons and Union men.

THE run of salmon in Fraser river stopped when the eclipse took place.

IN Lane county, Oregon, the wheat is found to be of better quality than for several years.

AN English miser has left all his money, over $300,000, to charitable institutions.

THE British ship *Lupata* carries 35,580 cases of salmon from Oregon to Liverpool.

IT is rumored that the Western powers have agreed to a French protectorate over Tunis.

GEN. WILLIAMS is preparing to reclaim 7,000 acres more on Union Island this season.

TURKEY has no money with which to carry out her reforms. Now England step forward.

FIVE masked men boarded a Kansas Pacific passenger train Aug. 13th, and carried off $5,000.

THE lands north and west of Fresno will probably soon be watered by canals from the San Joaquin.

THE Solano winter sown grain is turning out much better than the summer-fallow or volunteer.

THE crops in the Dominion of Canada are excellent. The yield of grain is greater than ever before.

BAKER PASHA and three colonels are now the only English officers retained in the Turkish service.

ONE Palmyra, Wis., man has shipped 75 tons of cheese so far this season. Much of it went direct to England.

THE British fleet at Constantinople organized an international regatta. The first sailing prize was won by an American yacht.

THE Mexican minister at Washington says that it is the wish of Diaz to keep peace with the United States.

THE whole number of incorporations filed in San Francisco last year was 409, of which 265 were by mining companies.

THE Alcalde of Newtown, Mexico, has given information implicating high Mexican authorities in border troubles.

THE last shipment but one of nuggets from the Silver King mine, in Arizona, assayed in Frisco $17,000 per ton.

A BOY died recently in London from the effects of a blow on the head with a book inflicted by his teacher in school.

THE Madras Presidency in India has been suffering from a plague of locusts, which has greatly aggravated the distress from famine.

Rev. George Gilfillan, author of "A Gallery of Literary Portraits," "The Bards of the Bible" and "The Scottish Covenanters," is dead.

JOHN BOGGS, of Colusa county, says that a million dollars worth of grain has been destroyed in that county this season by rust.

COMMISSIONS for the reorganization of Bulgaria and Eastern Roumelia will meet in September.

THE net yield of the Eureka mines for the quarter ending June 30th was $788,988.74, upon which a tax of $15,799.77 was levied.

A NINE days' prayer has been ordered in all the Catholic churches of New Orleans for the abatement of the yellow fever scourge.

THE Servian Minister of Finance is negotiating with Paris bankers for a loan of 24,000,000 francs, to redeem debts contracted during the war.

WASHINGTON August returns to the Department of Agriculture show an average condition of the cotton crop in 10 cotton States of 95, a decline of 4.

ALL the banks of Chili have suspended specie payments. The Government has drained them to carry on an intended war with the Argentine Republic.

EINSTEIN BROS., San Francisco, wholesale boot and shoe manufacturers, closed their doors August 16th. Liabilities, $800,000. Over 200 employee were thrown out of work.

AT the Geneva World's Convention of Young Men's Christian Associations there are delegates from America, Belgium, England, France, Holland, Spain, and Protestant cantons of Switzerland.

THE four per cent. loan is a success. The total amount subscribed will, at the end of August, be about $65,000,000. An encouraging feature is that many small subscriptions have been made.

IT has transpired that the murder of Tullis on his ranch beside the Sacramento river August 1st, was accomplished by assassins hired to do the deed by Troy Dye, public administrator of Sacramento county. Dye's object was to make money from Tullis' estate, which would come into his hands as public administrator. Dye and one of the murderers named Anderson are in custody and have made full confessions. One of the murderers is still at large.

HON. BAILIE PEYTON died August 18th.

POSTMASTER-GENERAL KEYS is coming to California.

THE natives of New Caledonia are playing the part of our Indians.

A DANISH colony for Washington Territory is being planned.

TRADE in the Samoan Islands is reported dull. We need not go so far to get such news.

THE official estimate of the number of deaths from famine in India is 1,850,000.

FOUR years ago the Tasmanian export of tin was $35,000, while last year it was $1,500,000.

HUMBOLDT river, Nevada, is to receive 2,500 catfish, and the Truckee river, 500,000 salmon.

THE universal postal treaty, recently concluded at Paris, has been approved by the Washington Cabinet.

A COMMITTEE has been appointed in San Francisco to collect subscriptions for the yellow fever sufferers.

THE Oldham, England, weavers accept the five per cent. reduction of wages demanded by the employers.

SIXTY per cent of the yellow fever deaths is of unacclimated people and 75% of the remainder of children.

THE Porte, to prevent farther depreciation of the Turkish currency, has decided to raise import duties on salt, tobacco and spirits.

OWING to the failure of the Coen River gold field in Queensland, many diggers are now turning their attention to New Guinea.

THE Hungarian government has forbidden the export of arms and munitions into Servia and Montenegro.

A THEATRE has been opened in Pompeii, where the first performance will be given since the eruption of Vesuvius, in A. D. 79.

SEVENTY-FIVE acres of vineyard at Malaga have been attacked by the phylloxera, the ravages of which are increasing alarmingly.

THE Mexican Minister of the Interior has ordered the purchase of 50,000 eucalyptus trees to be planted in and about the City of Mexico.

FIFTEEN HUNDRED pounds of tobacco have been found secreted under a floor of the Issue House at Crow Creek Agency. Lo, the poor Indian!

DR. SCHLIEMANN is at Constantinople, and intends resuming his excavations in the Troad if he can obtain from the Porte 50 soldiers as a guard against robbers.

THE McCloud River Fish Commissioners will get 2,500,000 young salmon this year to replenish the stock in the Pitt, McCloud and Sacramento.

HON. ALEXANDER DELMAR has presented the University of California library with his private collection of 2,000 works on political economy and kindred topics.

A VOTE was taken in Cincinnati, August 14, on the question of issuing $2,000,000 bonds for completing the Cincinnati Southern Railroad. Majority in favor.

M. V. SPARKS of Dry creek, near Wheatland, Yuba county, recently threshed 14,300 bushels of wheat, the yield of 500 acres, an average of 28½ bushels per acre.

THE 40-stamp quartz mill of the Gold Mountain mining company in Bear valley, 35 miles from this place, was destroyed by fire August 14th. The mill cost $80,000.

AMONG the successful American exhibitors in the Paris Exhibition are the McCormick reapers and Pullman's palace car. Specimens of American coal and wheat received gold medals.

AN 18-year old boy of Nevada City has ruined himself by opium smoking. He has tried to abandon the habit, but says he cannot. He is a mental and physical wreck.

BISMARCK has instructed the German attache at Constantinople to inform the Porte that a continuance of its ambiguous policy would risk the existence of Turkey in Europe.

THE Mono County Bank will soon be in running order. Howard Hastings, formerly manager of the Merchants' Exchange Bank, of San Francisco, is cashier.

EDWIN RUSSELL, formerly of the Bank of British Columbia, has organized a syndicate of English capitalists for the purpose of taking machinery to Cariboo to reduce the ores of that mineral region.

A COMPANY of five men are busily engaged in taking out and shipping gold and copper ores from well-defined ledges situated on King's river, Inyo county, some 30 miles across the Summit from Independence.

TWO HUNDRED catfish have been sent this year to Yuba county, 500 to San Joaquin, 1,000 each to Butte, Sonoma, Ventura, Clear lake, and the Colorado river. No further distribution will be made.

A CABINET officer is authority for the statement that nothing has occurred lately to change the relations between Mexico and the United States, and that peaceful means will be employed to settle difficulties.

PATRICK MAGUIRE, wandering in the tunnel of the South Utah works on the Comstock, fell to the bottom of a winze. He bruised his head, broke his left thigh three times and his right twice. It was 70 hours before he was rescued.

LARGE quantities of corundum are being mined in Alabama. Sixty-five dollars per ton is paid for it on the ground. If the main vein is struck, the only mill in the United States will be removed from Massachusetts to Alabama.

AUCKLAND gold fields have not brilliant prospects, but settlement is greater, more machinery is being introduced, fencing proceeds, cattle and sheep multiply, and fields of grain take the place of uncultivated lands. This is better than gold.

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raises the charge. This system applied to a shaft of 650 meters in depth (2,132 feet) offers the advantage over the hoisting with cables of heing independent of the depth. But it is necessary that it should he tried some time hefore pronounciug upon its value.

The hoisting machinery taken altogether shows the advances that have been made, dictated by the concentration of the production to a few ehafts, from which have often heen extracted from a depth of more than 500 meters (1,640 feet) 600 to 800 tons in 10 hours.

The flat cables are often of steel; their strauds have heen increased to give a great suppleness with the strength necessary for the charges to he raised. The cages have several stages to receive several cars, and are often of steel to reduce the suspended weight. The appliances for safety, parachutes, corrugated wheels, signals, etc., have heen multiplied and simplified to make their working certain in spite of the rapid working in vogue in the shafts at present.

The guides have heen attended to with increasing care, and rigid ones of wood or of iron replacing those of round rope, particularly where the hoisting of workmen in the cage necessitates an efficacious parachute. The raising and lowering of workmen in the hoisting cage is in all cases the rule in mines deeper than 300 to 400 meters (984 to 1,312 feet), the special apparatus, oscillating timhers or columns *(tiges osciblantes)* not being necessary, the maximnm depth of shafts in France not heing at present greater than 650 meters (2,132 feet).

In the large permanent pumping machinery it has heen attempted to augment the power of the apparatus hy increasing the numher of strokes of the piston per minute. Tbis increase is obtained hy working the pumps with eompound engines, or, better still, hy rotating engines with a continuous motion and a fly wheel. On the other hand it has heen aimed to simplify thc apparatus of the pumps and to augment the free space in the shaft hy adopting a single pump rod of a working length of 200 meters (650 feet), or, better still, hy installing at the hottom a rotating pump, which forces the water directly to the surface by a column of pipe occupying only an insignificent space in the ehaft. In all the machiues of great power, the condensation and the expansions are pushed as far as possihle.

Considerahle progress has heen made in ventilating the works; the mechanical apparatus of ventilation, centrifugal ventilatore as well as those of Lemville are widely used, and of late have been made often of eonsiderahle dimensions to send an augmented volume of air through a careful system of conduits to every part of the mine.

Numerous improvements have been made in the lighting of mines. The mineral oils are generally employed for the fixed lamps, and the mode of enclosing safety lamps has heen improved, and, at the same time, the degree of safety given hy them has heen increased hy some modifications of detail.

The electric light has remained the great exception, even in the works where the screening and sorting is done, except in the open air, where it seems likely to render some service.

The apparatus for safety have heen increased, owing to the simnlifications added to the primitive arrangements exhihited in 1867. The signale have heen usually limited to the ancient hammer worked hy a metallic cam, in spite of the happy efforts made in eome minee to replace it hy electricity.

The apparatus for separating and concentrating the ore extracted have made great progress, ahove all from the point of view of cost occasioned by the apparatus, of the reduction of the mannal lahor necessary, and of the less amount of slack occasioned hy screeniug. In this connection might be mentioned the ecreening hy concussion of Commentry, and the endlese wehs or cloth sheets *(toiles sans fin)* of the mines of Lens.

In the washing of coal the power of tbe apparatus has heen increased without reducing its effectiveness. In the washing of mineral ores the general use of the screens continued to small sizes, and the filtering screens of the Hartz mountains have transformed the mechanical preparation in giving it a rapidity unknown hefore, and in reducing the loss hy washing it has also pushed still further the washing of fine matter.

The industry of the agglomeration of coal (*agglomeres de honille*) is a uotahle development of Frauce since 1867, and the use of dry pitch as a cement is almost entirely substituted for liquid pitch, it giving a more solid mass, and hurning with less odor and smoke.

Great perfectiou has heen reached in the apparatus for the agglomeration, especially for the grinding, for which entirely new designs have been invented.

In the carhonization of coal the augmentation of value of the fiue coal has led to the adoption of coke ovens hetter adapted to large production, and consequently to the ahandoning nearly alwaye of thoee admitting air directly, and substituting for the ovene (*fours a carneaux*), and eometimee even ovene completely cloeed, permitting the collection of the products of distillation, the ammoniacal liquor and the tar.

The relative purity of fat coals hae led to the carbonization of eemi-hituminoue coals, or to the mixing with the fat coale a considerahle amount of lean coal; this reeult cannot he attained except hy grinding them more finely and mixing them most intimately, and also hy decreasing greatly the size of the ovens, so as to largely increase the heated surface in order to promote more perfect carbonization. In short, the constant augmentation of the dimensions of shaft furnaces, which prevents the use of any hut the most solid coke, has increased very much the higbt of thc coke oven, leading to the use of those which are straight and high, prolonging often the duration of the carbonizing.

The Engineer.

The State Survey on the Rivers.

The Stockton *Independent* says: Wm. Hammond Hall, State Engineer, and Edward Yorke, one of his assistants, were in the city on Saturday, and left yesterday morning by their steam launch. They have heen on a tour of inspection of the various tide gauges, stationed at different points on the two rivers, and looking after the parties in the field. Both the parties out are making good progress, the topographical party, under Mr. Klugel, having ahout completed the survey from the mouth of the Stanislaus down Old and Middle rivers, and are now camped a ehort distance from Stockton, while the hydrographic party, under Mr. Boschke, are working down the Sacramento river, and are expected to reach Sacramento in ahout a month. After completing the meander of the San Joaquin river Mr. Klugel will go up the Sacramento, connecting his survey with Mr. Boschke's work, while the latter will come up the San Joaquin, counecting with the lines established hy Mr. Klugel. The hydrographic work is heing doue very carefully, and soundings are taken the whole length of the river. The plan is to select stretches of the river of ahout a mile at frequent intervals, where a cross section characteristic of the stream may he found. A hase line is then established on the bank, and a true meridian found from observations on the stars. From the hase line, at intervals of 200 feet, lines are run across the river at right angles to the stream, and soundings carefully taken on these lines every 20 feet. From these soundings a section of 600 or 700 feet is eelected where the stream is most nearly uniform, and at each of the sounding stations the electric current meters are lowered, and the velocity of the curreut measured at each five feet in depth. An average section will thus give a hasis for calculation of the actual discharge of thc river. At high water this operation will be repeated, and data ohtained which will enahle the engineere to calculate the amount of water which the river will carry at e ch point and at every stage of hight, and thue to find out its defects aud determine the hest means to remedy them.

Fast Time on Railways.—An Eastern railroad paper says that probably the fastest time ever made hy regular trains in this country is now made hetweeu New York aud Philadelphia. The new line made up hy the Ceutral of New Jersey, Delaware & Bound Brook and North Pennsylvania, ruus one train between tbe two cities in two hours and five minutes, includiug the ferry crossing of the Hudson river. The running time for the 88 miles from Philadelphia to Jersey City is one hour and 56 minutes, the train stopping at Trenton Junctiou and Bound Brook, and also for the grade crossing at Elizaheth. The corresponding train from New York makes the run in two hours and five minutes, with the same stops. The Pennsylvania runs its fast train from West Philadelphia to Jersey City, 89 miles, in one hour and 54 minutes, the return train making the trip from Jersey City to West Philadelphia iu one hour and 50 minutes. These trains stop at Treuton and for the grade crossing at Elizaheth, and are also ohliged to reduce speed over the Trenton hridge, and for nearly two miles passing through the city of Newark. Special trains have made as fast or faster runs, hut we do not think that an average speed of 48 miles an hour has ever hefore heen required hy regular time-tahles in this country.

Roman Roads in Palestine.—A recent traveler in Palestine was astonished by the uumher and preservation of roads huilt in the Roman era. They were laid out on all the main routes and were constructed so perfectly that in many sections they endure to-day as well as if finished not long ago. The country of Palestine was one of the moet difficult sort to carry a system of roadways over, and yet its ohstaclee were surmounted with the least possihle expenditure of lahor. Every route was curhed on eacb side hy lines of stones projecting from one to two feet ahove the surface of the soil; hetween these houndaries the avenue was paved; streams were crossed hy bridges, whose style remains preserved alone in those of Italy to the present hour—as, for exainple, those of Venice; valleys were traversed hy viaducts; and the causeway carried the line up or down mountain sides, either hy piers of masonry or in channels sufficiently wide, cut out of living rock. Often zigzage and etepe were resorted to in climbing steep ascents. Whenever the street passed over eolid rock, the wear of chariot wheele in the course of time made ruts, which remain today ae plain and deep as when the laet car passed over.

The Suez Canal.—The business of the Suez canal appears to have been euccessful during the past year. According to the report submitted to the shareholders' meeting, held in Paris, June 11th, the expenditures for the year euding December 31et, 1877, amounted to $5,847,742, distrihuted as follows: Interest, $2,331,093; admiuistrative expenses, $227,200; charges of the domain, $95,405; transit and navigation service, $323,979; repairs, $456,667; interest on coupons, $340,000; interest on sbare capital, $1,993,450, and some smaller items. The revenue amounted to $6,795,129, of which the receipts from navigation were $6,590,501. The surplus was $947,585, from which, deducting the statutory reserve, $47,369, there remains $900,216 as net profits.

Texas and Pacific Extension.—An understanding bas heen effected which will extend the Texas and Pacific railroad from Fort Worth to Weatherford, Texas. The construction company is to grade and tie the 31 miles, and the Texas and Pacific company will put down the iron. The cost of construction is estimated at $140,000, for which the road is to issue its ohligations, payahle in three years, or first mortgage honds to he issued next March. The construction company will at once advertise for hids, and the road is to he in operation for the fall trade.

An East Indian Bridge.—Detailed particulare have been received of the ceremony of opening the Empress bridge over the Sutlej, in India. It is described as a maguificent piece of engineering, consisting of 16 spans, each 250 feet long, and is the completion of one of the principal links of a vast chain of railway communicatiou now in course of progress. The cost of erection has been ahout 59 lacs of rupees.

Appointments of the New St. Petersburg Observatory.—The new magnetic observatory at Pavlovsk, to serve as an annexe to the Central Physical Observatory of St. Petershurg, has been opeued. The new observatory covere ahout eight hectares of surface, and the situation is in all respects favorable for the delicate work for which it is intended. The establishment comprisee three principal scientific huildings, the principal building of stone and surrounded by a terrace for meteorological observations; a double arched structure in stone covered with earth for observations in maguetic variation; and a woodeu pavilion, without a particle of iron, for absolute magnetic measurements and for dcterminations of time. The Pavlovsk Observatory is furnished with the most improved and most recent scientific instruments, and like the Central Physical Observatory of St. Petersburg, is a model establishment of its kind. As we have said, the pavilion for absolute magnetic measurements is without a particle of iron; all the metallic parts, locks and padlocks, keys, doors and chimneye of stoves, etc., are of copper or hrass, and each of these objects has heen tested by a particularly sensihle magnetometer. The same test has heen applied to the limestones of thc fouudation, the hricks of the stoves aud the chimneys, the grauite supports of the instruments, etc. In sbort, every precaution has been taken, hoth duriug the huilding and after its completiou, to prevent a trace of iron getting near it. Provisionally the work of the establishment at Pavlovsk will he specially directed to the normal observation of the meteorological elements and of terrestrial magnetism for which we possess accurate methods of observation. As soon as trustworthy methods have heen found for the constant measurements of other elements, such as atmospheric electricity, terrestrial currents, radiation of heat, the optics, and chemistry of the sun and sky, these elements will also form the objects of normal observations.

French Forest Planting.—Tbe *Revue des Eaux et Forets* gives a resume of etatistics derived from official eources, showing that in 1875 various communes in France replanted as forest rather more than 814 hectares of land. Towards this work the State contrihnted 29,054 francs in money, and seeds of plants to the value of 27,328 francs. In the same year 347 hectares were replanted hy private owners, with the assistance of a government contrihution of 13,705 francs. The works of the same nature undertaken hy the State itself in various mountainous districts of the country were on a far larger scale. At the end of the year 128,269 hectares had been taken in haud, of which 29,490 were completely stocked. The trees required for this purpose are supplied hy specially estahlished nurseries, covering altogether an area of 82 hectares, which yielded in the 12 month no less than 19,117,000 plants. It may hc in the recollection of our readers that the department of woods and forests, which formerly was attached to the Ministry of Finance, was incorporated last Decemher in the Ministry of Agriculture and Commerce.

Cement for Wood and Iron.—A foreign journal speaks of a cemeut made of oxidc of lead aud concentrated glycerine, whicb unites wood to iron with remarkahle efficiency. The compoeition is insoluhle in acide, ie unaffected by the action of heat, sete rapidly, and acquires an extraordinary hardness.

This Preverse Generation.

The *Argonaut* thinks our children have hut little of the spirit aud energy of their ancestors. The editor, eujoying a vacation in the northern part of the State, preaches the following lay sermou: Along the upper Pit and ite many trihutaries there is a magnificeut grazing country, huudreds of milcs in extent, sparsely populated, government land unoccupied, and open to pre-emption, homestead, and settlement. The land is rich, and under cultivation will produce vegetahles, grain, and all the hardier fruits. The climate is not as eevere as that of New England, New York, or the Western States. The snow is not deep in winter, and does not linger as late iu the spring as it does in the Eastern country named. Outside of these meadows and the beautiful valleys that margin the streams, the country is densely wooded with pine, cedar and spruce. All through the northern counties, embracing Shasta, Trinity, Siskiyou, Humholdt Modoc and Lasseu, there are valleys, eome larger and some smaller, many of them entirely unoccupied, where homes may he ohtained without cost or the expenditure of any other capital than that of lahor. There are level lands hordering the streams, the timber growing upon them indicating a rich soil. The waters ahound in fish; the hills abound in game. During the season all along tbe upper Sacramento and heyond Shasta the streams that empty into the ocean are filled with salmon.

The hills are eometimes abrupt and sometimes stretch away in gentle slopes, hearing evidence of their etrength and depth of soil in the splendid forests that climh to their very peaks. All these hill and mountain sides are watered with streame, rivulets and springs, so that irrigation is cheap and practical. The rainfall, as indicated hy the exnherant and almost tropical vegetation, is ahundant. If these mountains were Alps or Appenines they would be cultivated to their summits, and the region he thronged with a hardy and industrious population. It is in such mountain fastnesses that religion and liberty have made their grandest struggles. And yet this splendid reach of mountaiu and meadow, this broad hreadth of hill and valley, these margins of splendid rivers, this great wealtb of land and water, of wood and soil, lie almost unoccupied. Here and there ecattered through the wide domain, is the hut of the hunter or herdsman, and along the highways and centers of travel the more comfortable cottage of the farmer and home of the innkeeper. There are homes and farms herc in our northern counties for a million of families. There is affluence, plenty and ahundance, grain, fruit and vegetahles, comfort, ease and independence, awaiting the industrious toiler. Our fathers, half a century ago, would yoke their cattle, cover their wagons with cotton canvas, load them with wife, children, hams, hacon, maple sugar, take axes, guns and dogs, plunge out into the wilderness, and hy their labor carve out for themselves homes, lay hroad and deep the foundation of States, huild up civilization around them, and from barbarism create society. Our sons and our foreign immigrants in these degenerate days have no nerve for this pioneer work, no muscle to swing the ax, no courage to confront tbe forest, no daring to brave the dangers, and no patience to endure the hardships of a life of adventurous toil. Our hoys arc milksops—educated, nerveless, cowardly, hangers-on upon their mothers' apron-strings, petted, fondled, foolish, ruiued darlings—who expect to live upon their fathcr's earnings. They would he lawyers, doctors, politicians, adventurers, gamblers, thieves, anything hut honest workingmen. Our girls are a worthless set—becoming each year more worthless—and it is not their fault. We are educating them to become wives of rich men, playthings and ornaments of luxurious homes; and if they fail, and we fail, then God help them. Society is strewn with the wrecks, and the tempest has just hegun. In another generation or two the American-horn, will he a pitible helpless thiug. The sons of our sons, and the daughters of our daughters, will hecome ohjects of sympathy. If our nation has ever a peasantry, it will he from the American etock. The intellectual and over-educated can not conquer in the struggle against numbere and brute force. Our immigrant population no longer goes out to the hills and mountains, hut throngs the cities; prefers to live in squalid pauperism, in sickly tenement houses, to he hungry, ill clad, ignorant aud dirty, than to carve out a country home hy toil.

Hatching Silkworms Extraordinary.—An extraordinary statement is made hy *Galignani*—viz., that M. Duclaux, Professor of Sciences at Lyons, has discovered a method of hatching silkworm eggs at will. If, when the eggs are not more than two or three days old, they are ruhbed with a brush, subjected to the action of electricity, dipped for half a minute iu coucentrated sulphuric acid, or chlorohydric, nitric, acetic, or tartaric acid, they will hatch out, and, as the mulherry is in full leaf, two crops of worme are thus obtained in one eeason. Immersiou for a few secouds in water heated to 122° Fahr. is eaid to be equally efficacioue. The worms from the artificial hatching are eaid to be hardier tban those reared in the ordinary manner.

Successful Articles of Manufacture.

It is not always the most ingenious man who perfects the most useful inventions. In fact, a great many things are invented without invention, if we may use the expression. A workman finds that a slight change in construction will facilitate his operations, and makes the change which may make all the difference, whether the machine succeeds or not. Again, we often see two or more articles of manufacture in which there is a very slight difference; yet one will be in widespread use and the other only slightly known. And the cause of this has been, not so much due to the superiority of the article, as to the circumstances of its introduction to the public and the shrewdness of its introducer.

We often find an article or a machine suddenly attains great notoriety and success and becomes known in every direction. And this so quickly as to surprise every one but those who are attempting its introduction. We read of it, buy it, try it, and finally begin to wonder we cannot do without it.

And frequently this is accomplished with very little merit in the article itself. Advertising does it and nothing else. *Given*, a thing of only ordinary merit, well advertised, and success will be the result: and *given*, again, a superior article and it will not succeed unless properly introduced.

It takes the public a long time to find out what is good or what they want. They need to be told, and need to be told pretty often, too. It's the newspapers that really introduce these things by telling their readers about them every day, over and over again, until the facts are finally impressed on the readers' mind.

It takes judgment also to select the best mediums for this advertising. The local agent must patronize his local papers, and those in the large cities must take every occasion that presents itself, to present, also, the thing they desire to sell to the public. They must do it in more ways than one, and keep doing it. The money spent for printers' ink will return tenfold in time, and not very much time, either.

Note on Brass Working.—Most brass articles require filing in finishing, which is done by hand labor with ordinary float, bastard and smooth files. The brassfounder has to perform all kinds of plain, spherical and ornamental turnings, and this necessitates the use of many lathes and tools. In the lathe, too, the turner makes the screws on the goods, where required, by a kind of short-toothed steel comb, with a strong back. This comb is caused to travel backwards and forwards on the article operated upon till the screw is cut. The ordinary process of screwing by taps and dies is little used by the brassfounder. By the process of spinning, glass, china and wood knobs are attached to their brass fittings. The brass mounting is first formed like a flat saucer, into which the glass or other article is easily inserted. The articles being fixed in a lathe and set in motion, the workman applies to the thin edge of the saucer socket a certain amount of pressure by means of a burnisher; and this pressure has the effect of turning over the edges of the socket upon the glass or china. Optical lenses are often mounted in the same way. Brass lock, shutter, and other knobs are generally cast, each in two hollow pieces, and are spun together, so as to form one perfect article.

During the continuance of the Mechanics' Fair will be the very best time for residents of the country to visit the city, for then they will be able to see clearly what other workers in life have been achieving, while they have been engrossed in their daily avocations. They will recognize how much more there is in the world than they have given to it, and will be liberalized, enlarged and stimulated to an effort to keep pace with the careful progression of this age of marvels, and to add something from their store, be it little or much, to that progression.

To the most casual observer who wanders through the vast pavilion, and scans the fruits of genius, the mechanical skill, the arts and scences here illustrated, the spectacle must be of interest. So the more thoughtful lessons of value, not soon to be forgotten, will be learned; and we shall one and all of us be benefited in a greater or less degree by careful study of the display set before us to pass judgment on.

Taps.—A tap for a nut an inch deep required to be just movable upon the bolt by hand must be made a trifle larger than if it were intended to make a nut two inches deep a similar fit. This reason is that the variation in the pitch of the thread, which always occurs in hardening, is greater in a length of two inches than it is in one inch of the length of the tap.

Ink for Alcoholic Specimens.—Prof. Semper during his late visit to the United States, gave us the following recipe for a writing fluid for labels for alcoholic specimens. Use India ink dissolved in strong acetic acid; write and let it dry. It will stand for years.

The French vines are reported to be showing badly from that insect pest, the phyloxera, and other causes, in Lyons, Haut-Rhine, and other departments.

Useful Information.

New Artificial Stone. The *Journal of Chemistry* translates from a foreign authority to the effect that a German patent has been granted to Dr. Zeruikon, of Oderberg, for production of artificial stones by boiling of mixtures of mortar. The chief constituents of the stone, sand and slaked lime, are known to show great resistance to atmospheric influences. By boiling, a combination of silica and lime takes place, and the hardness of the mortar increases by the absorption of carbonic acid from the air. The specimens show throughout the hardness of good, natural sandstone; they are now about a year old, and must have gained in hardness, for shortly after casting they could still be cut with the knife. Cracks and fissures are nowhere observed, and are hardly to be expected in future, as the combination of lime and sand, under the action of hot water, is effected only at such low temperatures (between 120° and 150° C.) that a reduction of the lime hydrate to free caustic lime cannot have taken place. As regards cost of production, the price of the raw materials, 80 % to 90 % sand and 10% to 20 % slaked lime, will scarcely be higher than that of clay for bricks. The time of beating is nearly the same in both cases, but the heating for bricks requires nearly a white glow, whereas for the mortar stone it has only to be brought to 150° C.; thus there is considerable saving in fuel. The mode of forming the prism-shaped stones is similar to that of machine-made bricks, where they are pressed through a mouth-piece. All expenses of manufacture included, 100 kilograms (220 pounds) of the stones, of prismatic shape, cost about two marks (50 cents).

Unimployed Labor.—Col. Carroll D. Wright, chief of the Massachusetts State Bureau of Statistics, has recently begun an investigation which promises to be of very positive value in its bearings on the labor question in that State. He has undertaken a systematic enumeration of the unimployed laboring men of the State. By the term "unemployed" is to be understood not those thrown out of work for a few days by the temporary suspension of operations on which they are usually engaged, but those who may be said to be for a considerable duration of time without work. Canvassing by his own agents, Col. Wright has received returns from 100 places, including two of our large manufacturing centers. Should the remaining returns hold with those already received, it is probable that the completed canvass will show about 15,000 men out of employment. Of these, about one-third, say between 5,000 and 6,000, are skilled workmen, and the balance unskilled. The latter may be divided into three classes. Of the unskilled, 25 per cent. are the class who never work when they can avoid it, 50 per cent. labor more or less, and the balance are really desirous of employment. There has been but little call for out-door relief, either in this city or in the country towns, and the assessors of the latter report a very small amount of actual distress. Reports generally received indicate the diminution of the number of idle workers by the starting up of manufacturing this fall.

Russian Petroleum Resources.—Those who are laboring to develop our petroleum riches in the southern counties, will be interested to read of the rapid work which Russia is doing in the same direction. A Pennsylvanian, who went to southern Russia to put up some machinery, writes that the derricks are as thick in the developed oil territory as they were at Petroleum Center in its palmy days. He says one well flows twice a week for four hours at a time, at the rate of 10,000 barrels per day. In his own phrase, "the stream of oil running from her is as large as Hay's run; a solid stream of oil, free from gas and froth, forced into the air to a hight of 75 feet." He says the oil is allowed to flow upon the ground and collected in trenches dug to contain it. The wells are drilled and pumped in the most primitive and wasteful manner. The oil is transported in sacks made of bog skins and in rude barrels five feet long, upon carts with wheels ten feet in diameter. The indications are that this Russian oil field is as rich as Pennsylvania. At present it is cut off from a market, except by the roundabout navigation of the Volga and the Russian canals which reach St. Petersburg. But 400 miles of railroad, across the land that separates the Caspian and the Black seas, will put it within reach of every European customer to whom we now sell refined product. A pipe line could be laid down, which would carry the oil to the Black sea at such a moderate cost of transportation as to distance American transportation.

Concrete Bridges.—It would seem that a thoroughly well-constructed arch of concrete may be made absolutely stronger than a similar one of brick. This has, in fact, been proved in the case of a structure spanning an open cutting in one of the London railways. It is a flat arch of 75 feet span, and seven feet six inches rise in the center, where the concrete is three and one-half feet in thickness, increasing toward the haunches, which abut upon the concrete skewbacks. The material of which the bridge is made is formed of gravel and Portland cement, blended in the proportions of six to one, carefully laid in mass upon close boarding set upon the centering and inclosed at the sides.

Construction of Lightning Rods.—Dr. R. J. Mann lately summed up in a series of aphorisms the fundamental conditions to be observed in construction of lightning rods. We select a few of the most important from the *Popular Science Monthly*. The main stem of a copper lightning conductor should never be less than four-tenths of an inch diameter. This dimension is not sufficient for a building more than 80 feet high. Galvanized iron may be used instead of copper, but then the diameter must be greater in the ratio of 6.7 to 2.5, the conducting capacity of iron being to that of copper as 14 to 77. A galvanized iron-rope conductor should never be less than eight-tenths of an inch diameter; a galvanized iron strip should be four inches wide and one-eighth of an inch thick. A lightning rod must be continuous and unbroken from end to end. A rod need not be attached to a building by insulated astenings; metal clamps may be safely employed, provided the rod be of good conducting capacity and otherwise efficient. Above the rod must terminate in metal points, well projected into the air. These points should be multiple and perfectly sharp. The bottom of the conductor must be carried down into the earth and be connected with it by a surface contact of large extent. All large masses of metal in a building should be metallically connected with the lightning rod, except when they are liable to be occupied by people during a thunder storm; an iron balcony, for instance. In such cases it is better not to have the iron connected with the conductor, for there is some risk of persons standing on the balcony furnishing a path for the lightning to the rod.

Varnish for Basket Ware.—The following varnish for basket work is said to dry rapidly, to possess sufficient elasticity, and to be applicable with or without admixture of color: Heat 375 grains of good linseed oil on a sand bath until it becomes stringy, and a drop placed on a cold, inclined surface does not run; then add gradually 7500 grains of copal oil varnish, or any other copal varnish. As considerable effervescence takes place, a large vessel is necessary. The desired consistency is given to it, when cold, by addition of oil of turpentine.

Silveroid.—The *Iron Age* learns that Brown Bros. are about introducing to the trade a new metal called "silveroid," this name having already been registered at Washington. It has a fine texture, is susceptible of a high finish and can be supplied at much less cost than anything heretofore used as a substitute for real silver. Another point claimed in its favor is freedom from objections arising from corrosion where certain descriptions of metals have been used heretofore as table ware.

Good Health.

Prescription for Fits.

For a Fit of Passion.—Walk out in the open air. You may speak your mind to the winds without hurting anyone, or proclaiming yourself to be a simpleton. "Be not hasty in thy spirit to be angry, for anger resteth in the bosom of fools."

For a Fit of Idleness.—Count the tickings of a clock. Do this for one hour, and you will be glad to pull off your coat the next and work like a man. "Slothfulness casteth into a deep sleep, and an idle soul shall suffer hunger."

For a Fit of Extravagance and Folly.—Go to the workhouse, or speak with the ragged and wretched inmates of a jail, and you will be convinced

"Who makes his bread of briar and thorn
Must be content to lie forlorn."

"Wherefore do ye spend money for that which is not bread? and your labor for that which satisfieth not?"

For a Fit of Ambition.—Go to the churchyard and read the gravestones. They will tell you the end of man at his best estate. "For what is your life? It is even a vapor that appeareth for a little time and then vanisheth away." "Pride goeth before destruction and a haughty spirit before a fall."

For a Fit of Repining.—Look about for the halt and blind, and visit the bed-ridden, the afflicted, and the deranged; and they will make you ashamed of complaining of your light afflictions. "Wherefore doth a living man complain?"

For a Fit of Envy.—Go and see how many who keep their carriages are afflicted with rheumatism, gout, and dropsy; how many walk abroad on crutches or stay at home wrapped up in a flannel; and how many are subject to epilepsy and apoplexy. "A sound heart is the life of the flesh. Envy is the rottenness of the bones."

Poisoning by Ink.—The Rheims *Courante* says that a scholar in the Oberlahnstein high school incautiously smeared his upper lip with ink. On this lip there was a small sore, and, after some time, it began to swell. The swelling rapidly spread to the neighboring parts of the face, and attacked the inner surface of the mouth. Delirium set in after two days, followed on the fourth by death.

Notes on Tooth Powders.

The London *Chemist and Druggist* says: "Pharmacy has its fashions as well as other things, and the present prevailing mode is salicylic acid. Dr. Buch, of St. Petersburg, deprecates its adoption as a dentifrice. A short time ago there was a warning raised against the use of charcoal. It had similar dental recommendations, namely, that it was antiseptic, and that as far as cleansing was concerned, it was most effective. But the microscope pointed out that every particle of carbon, in however divided a state, was a small crystal, which, acting by attrition, was hurtful to the enamel. While charcoal, therefore, was said to be a fine saw, salicylic acid is now stated to be a solvent, and accordingly to be abjured. Dr. Ruch mentions that he was in the habit of using a solution of three parts in one thousand of salicylic acid, a lotion of such strength being fatal to bacteria. In a few weeks he felt a curious sensation in his mouth; the teeth appeared to become softer, and on the surface something gritty was detected, there being evidently a granular formation. The doctor believes this to be a salicylate of lime; if so, the use of the acid as a dentifrice should be discountenanced.

"We may here venture to allude to a preparation which, for occasional and careful use, is a valuable remedy for yellow, blackened and unsightly teeth. It consists of equal parts of finely-powdered wood charcoal, prepared chalk and cream of tartar. A few applications are sufficient to effect a decided change, followed by a wash of myrrh, eau-de-Cologne and glycerine. It is suggested as a tried remedy, to be used when wanted, not as a toilet requisite."

The Ear Fungus.—The *Pacific Medical and Surgical Reporter* condenses from an Eastern source the following points concerning the ear fungus, *Aspergillus nigricans*. There are several forms of microscopic fungi found in the human ear, but the *Aspergillus nigricans* is by far the most common. It collects in masses, adhering to the meatus and tympanum, and is commonly taken for wax and washed out. Greater irritation, however, is produced by the growth of the fungus than by the accumulation of cerumen. Its true character can be detected only by the microscope, under which it presents various forms, according to the stages of growth. The presence of wax does not promote its production, but it flourishes on all kinds of abnormal accumulation. Glycerine does not dissolve it as it does the wax of the ear. Its presence is apt to cause pain, and sometimes to induce an eczematous condition. Dr. Burnett removes it by repeated washings with dilute alcohol. He says nothing of other applications, such as salicylic acid and its compounds, which one would think better calculated to destroy the vitality of the parasite, with less irritation to the membrane of the ear.

A New Source of Lead Poisoning.—A rather serious epidemic of lead poisoning was recently discovered in the Taunton sanitary district, England, caused by the holes in millstones having been filled up with lead. The practice appears not to be confined to Great Britain. In the last number of the *Nordkist Arkiv* is a paragraph taken from a Norwegian periodical, in which it is stated that Dr. O. Johnson, of Sharpsborg, had met with an extensive endemic of gastric disorder, often accompanied with diarrhœa, for which he could find no cause in the local conditions, nor was there any evidence of contagion. The lead line on the gums was detected, and it was ascertained that the flour which the patients used had been procured from a mill, the owner of which had filled up the holes in the millstones with a mixture of white lead and glycerine. There were no cases of paralysis or brain disease, and the patients all recovered, with one exception. A similar occurrence is reported to have taken place in France from the use of lead to repair millstones.

Another "Cure" for Poison Oak.—Dr. S. A. Brown, U. S. N., states in the *Medical Record* that he has found a specific for the troublesome eruption produced by the poison oak or poison ivy (*Rhus toxicodendron*) so common in our woods. This specific he find in bromine, which he has used with unvarying success in at least 40 cases. He uses the drug dissolved in olive oil, cosmoline or glycerine, in the strength of from 10 to 20 drops of bromine to the ounce of oil, and rubs the mixture gently on the effected part three or four times a day. The bromile is so volatile that the solution should be renewed within 24 hours from its preparation. The eruption never extends after the first thorough application, and it promptly disappears within 24 hours, if the application is presisted in, and the patient is entirely cured.

Arsenic in Rubber Stoppers and Tubes.—The London *Medical Examiner* states that Herr Filhol has found that vulcanized India-rubber stoppers and tubes, used in the apparatus for testing arsenic by Schneider's test, will vitiate every experiment. Schneider's test depends on the conversion of arsenic into volatile arsenious chloride by distilling the suspected substance with sulphuric acid and sodium chloride. But when hydrachloric acid gas comes in contact with vulcanized rubber, it almost invariably extracts from it an appreciable quantity of arsenic.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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SAN FRANCISCO:
Saturday Morning, Aug. 24, 1878.

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The Week.

The sales in San Francisco Stock and Exchange Board for the week ending August 13th, aggregated $5,500,000. During the last week they have been reduced to $3,880,000. The falling off has been brought about by the persistence of indefinite, and the entire want of unmistakable reports from the mines. Our people are growing too practical to live for more than a week on air. The Julia has made arrangements for connection with the Sutro tunnel. This is the first of an inevitable series of movements important to the Comstock.

The news from Mono county is good. At least six new companies, intending to work in that region, have lately filed articles of incorporation. One of these is that formed from the old Bodie company. An entirely new company was organized; the stock of the old organization was not watered as seems to have been hinted.

Arizona is now demanding attention. Since the new mill started up in June, the Silver King has been shipping concentrated ore crushings of constantly increasing richness; $2,000 per ton, then $3,000, then $4,000, and nuggets yielding nearly $18,000 pure silver per ton, have been the reports. Exceedingly rich discoveries of gold about 44° 30′ north latitude, and 110° 30′ west longitude are rumored. The happy location is near the boundary between Wyoming and Montana, on the north fork of the Stinking Water, about 250 miles from Fort Custer. These are the directions. If anyone wants to "stampede," let him do it. As far as we are concerned, California is still rich enough, notwithstanding the meager mining exhibit at the Mechanics' Fair. Charity and true success begin at home.

Chrome Iron.

Chrome iron is found in large quantities in many places in California. There are deposits of it near Crescent City, Del Norte county, near Folsom in Sacramento county, and in Sonoma county. Within the last fortnight we have received specimens of fair ore from Nevada county in the vicinity of Grass Valley. The press of San Luis Obispo county is endeavoring at present to bring before the public the fact that that neighborhood, too, boasts chrome iron among its resources.

As to the quantity of the ore there can be no doubt. There, is, however, a question as to its quality. The general statement of shippers in San Francisco is that the ore is very poor, so poor that it can be sent to the East only when the very lowest freights obtain. The ore is used for making the chromates of potash, and its value depends upon its richness in chromic oxide. Chemically the typical chromite or chrome iron ore is a compound of one equivalent of ferrous oxide and one of chromic oxide. This would give the amount of chromic oxide in a perfectly pure specimen at over 67%. Such a specimen of course never occurs in nature. The ore invariably contains impurities of alumina, magnesia, silica, etc.

Naumann quotes Bechi and Von Hauer. The former gives the following percentages of ingredients found in a specimen from Volterra, in Tuscany: Chromic oxide, 44.23; alumina, 20.83; ferrous oxide, 35.62. Von Hauer gives the following percentages obtained from a specimen from Eibenthal: Chromic oxide, 49 to 52; alumina, 10 to 12; ferrous oxide, 18 to 21; magnesia, 11 to 15; silica, 4 to 6. Ure quotes Klaproth and Vanquelin. The former gives the following percentages: Chromic oxide, 43; ferrous oxide, 34.7; alumina, 20.3; silica, 2. Vanquelin gives as above, respectively, 55.5, 33, 6, and 2. A specimen from San Domingo gives 36% of chromic oxide; from Norway, 54%; from Baltimore, 39.5 %; crystallized, from Baltimore, 60%.

In these we see the amount of chromic oxide varrying from 36% to 60%. For California ore we have only the data of one analysis, that of a sample from Sonoma county. It gave 43% oxide of chromium. It is not at all unlikely that this was a picked sample, and gave, consequently, a high result. If those who own mines of this ore wish to obtain anything like correct analyses on which to base practical estimates, they must send *average* specimens to the assayers. In considering the practicability of working the ore on this coast, the first thing to be determined is the quality of the ore; and the sooner a good number of careful analyses are made, the better.

Whatever the quality of the ore may be, it must have occurred to every one interested, that if it pays to ship it to Baltimore and even to England, it would certainly pay to work it here. As far as the materials necessary for working the ore are concerned, we are not aware that our coast presents any peculiar difficulties. It is said that Baltimore has a secret process, which is the only one that can "get money out" of the ore. But this remains to be proved. At any rate, investigations made four years ago with regard to the cost of production on this coast of bicromate of potassium, as compared to the demand for it, gave the following results: Dr. A. Blatchly, of San Francisco, made the following estimate, based, we believe, upon 43% ore from Sonoma. Considering the cost of mining and transporting to the factory, and also of the necessary chemicals, labor and incidentals, he made out that 7,500 pounds per day of the bichromate might be obtained from five tons of the concentrated ore and delivered from the factory for $743. The annual home consumption for the coast mills, for miscellaneous dyes, for the chromic paints and for other purposes, was estimated at 192,000 pounds, which at the then New York price, 18 cents, would bring $34,560. Estimating the average expense of delivering 7,500 pounds at any market at $20, probably very much too large, we would find, on the basis of the above cost of production, that 192,000 pounds might be delivered on our coast for $19,532, showing, at the above price, an immense profit. The factory necessary to manufacture 7,500 pounds of the bichromate per day would require an outlay of about $9,000. So a mill of this capacity, supplying this coast alone, would lie idle 11 months out of the 12, and yet more than pay for itself in the first year.

But there is now the Eastern demand to be considered. During the first six months of 1874, there were shipped from San Francisco, 1,013 tons of chrome iron. One firm in San Francisco say they ship yearly between 1,500 and 2,000 tons. The greatest demand is at Baltimore. Calling it 1,500 tons and considering that five tons will produce 7,500 tons of the bichromate, also that this is all demanded for consumption east of us, we find that there would be a market away from our coast for at least 2,250,000 pounds of the bichromate, which would cost us to manufacture, $222,900, and to send to New York, about $30,000 more; that is a total cost of $252,900, and which would bring, at the above rates, $405,000. This would keep the mill busy throughout the year.

These estimates do not pretend to be accurate, but they are near enough so as to show what a means of profit our coast has at its hand, but does not seize. If the mine owners send yearly 2,000 tons of the crude ore from this coast, they obtain for it from the shippers about $14 a ton, giving to them about $28,000, from which they must deduct the cost of extracting the ore from the mine. What is wanted is more enterprise and a willingness to risk a few thousand dollars on the prospect of receiving many thousands in return. A little experimenting must be done at first, and the mine owners will find that they and their friends are the best ones to do it, and that the best place is right at the sites of the ore deposits.

The San Luis Obispo deposits are particularly favored in being near the new Black Star coal mines, in Los Angeles county. It has been stated that coal will at some time in the near future be delivered in Los Angeles at $4.50 per ton. This may have some influence in developing the chrome resources of San Luis Obispo. There is no reason at all why the chrome should be sent from that county in any other shape than as bichromate, ready for market.

Silver-Plated Amalgamating Plates.

We saw this week at the San Francisco Plating Works, 653 and 655 Mission street, a single sheet of metal, of 25 square feet surface, which had been heavily silver plated. This is probably the largest piece of metal ever plated, and will be exhibited at the Mechanics' Fair by Mr. Denniston, proprietor of the works. It is ultimately to be used as an amalgamating plate in placer mining work. Single sheets of metal of this size can only be made at few places, since the necessary facilities for this class of work are not common. At these works is a tank which will hold 1,000 gallons, in which these large plates are treated.

We also saw 26 metal sheets, each with 12½ square feet of surface, which are to be used for placer-mining plates at Bonanza Bar, off Kelton. Some other plates are being made to send to quartz mills in Utah and California.

It is found that after the copper plates are silver plated, they answer much better for amalgamating plates for mill work, not oxidizing and being more easy to keep clean; so that Mr. Denniston has built up quite a trade in amalgamating plates of this kind. He has extensive facilities for doing this work, and has supplied over 200 quartz mills since he first began to manufacture the silver-plated amalgamating plates. His present facilities admit of his doing this work at reduced rates, so that he is constantly filling orders for mills and placer mines, and getting fresh orders from new people, showing that the plates, prepared in the manner stated, are appreciated by miners.

In addition to these plates, gold, silver and nickel plating in all its branches is carried on. Just at present a large order of plumbing work is being finished. The faucets, etc., comprised in these articles are the finest that ever came to this coast, and were ordered through McNally & Hawkins, for an elegant residence in this city. All the material is to be heavily plated with gold and silver. Mr. Denniston just sent away by last steamer a large order of hotel goods to Japan, which were sent to him for replating. He has also done considerable copper plating of late for the new City Hall. The works are kept quite busy on all kinds and classes of jobs, plating new articles or replating old ones. Considerable work is done for hotels, restaurants and other large establishments.

The great exhibition by the Mechanic's Institute is now under full progress at the Pavilion in this city. The various departments of art and industry have contributed their quotas, and the display of varied articles wins high praise from visitors. Almost every one will find something in the acres of exhibit, which will win his interest or her admiration. The fair is well planned for those of vigorous appetite, who joy to make an optical meal of ingenious and ponderous machinery, natural productions and curiosities, or the gems of merchandise and manufacturing. There is also abundant fahulum for the daintier appetites which are tickled by full draughts of instrumental music, the art of the picture gallery or the improved nature of the garden. In short, the Fair seems well furnished at all points. Even the department of polite literature is not forgotten, as the bright *Fair Daily*, published by Dewey & Co., and edited by the hrilliant and versatile literary Carpenter from Ukiah, will testify.

Artesian Well Boring.—Will parties having experience furnish us some facts concerning the cost of boring artesian wells in different parts of the State. As no manufacturer of artesian well boring apparatus in this State advertises that business, we hereby offer to publish free, for the benefit of our readers, the address of all such manufacturers, if they will state the cost of instruments of the sizes used. The more that is known about the artesian well business, the better for our readers at large, we believe.

We understand that Irwin Davis has purchased the Vulture mine, near Wickenburg, Arizona, for $202,500, and that his agent is now in possession.

One clean-up at the Frazer claim by the ocean beach gives the men five dollars per day.

WHAT AND HOW?

In this column are printed all sensible inquiries relating to subjects connected with mining or relating to any matters of general scientific interest; also the answers to them as dictated by individual experience, or as furnished by correspondents.

Grass Valley Ore.

Editors Press:—I take the liberty to send a few specimens of iron ore from Grass Valley district, Nevada county. I send them by Wells, Fargo & Co. They are numbered 1, 2, 3, and 4. No. 1 is a specimen of chrome iron ore; No. 2 is also chrome iron ore; No. 3 is a specimen of iron ore from a ledge about 15 feet thick, with plenty of limestone close by it. No. 4 is from another vein of ore not more than 18 inches thick. If you think the specimens worthy of exhibition at the Mechanics' Fair, you will please see that they are exhibited.

If there is any market value for chrome iron ore in San Francisco or any other place that you may know of, you will be doing me a favor by letting me know both the market and price per ton.—M. C. Taylor, Grass Valley, Cal.

Your specimens have been shown to J. S. Phillips, the metallurgist. He pronounces the chrome ore as fair. The other is probably a mixture of magnetite and chrome ore. The magnetite will find no market now. Good chrome ore is worth about $14 per ton in San Francisco. It is shipped from here to Baltimore and England.

Your specimens will be exhibited in the *Journal of Commerce* collection at the fair. After the fair we shall keep them until we hear from you.

Progress of the State.

We shall be able, during the exhibition, to judge and estimate, from the panoramic views of the useful arts, what the progress of the State has been during the past year. We can see the sources of our honest and reasonable pride in her progress more clearly than in any other way. Almost every branch of industry is carried on in this city, and many of their houses are being established throughout the State, here, there and everywhere. Our community, to be progressive, must be independent and have resources within itself, so that it must produce and manufacture. This we have not been doing very long, as compared with older countries, but still we have made very rapid strides, considering our location and surroundings.

There is no way of knowing what progress we make unless we occasionally gather under one roof all the various products on which we are at work from day to day, and place them side by side for public inspection. This way our citizens judge of one another's work and see where their own products may be improved or benefited. Each, in his own sphere, will contribute his mite of progressive thought and action for the common good. The public, for whom all these things are created, will compare the different fabrics, products and mechanisms, and determine which suits them best. Then those who fall under the mark must spur themselves on to superior excellence and renewed energy, changing, improving, or bettering in one way or another, the peculiar work.

Thus it is that these exhibitions result in a common benefit to all, and directly in a benefit to the State, in which we are all interested. Men who work in the same groove from day to day, without seeing what others are doing, are too slow for this progressive age, and become stragglers in the march of progress. They need stimulation, and nothing will stimulate them so much as to see others excel them in their own location. We all know that people will patronize superior workmen, and buy the best made, and when a dozen or more compete with articles of a similar nature, each must make the best show he can to attract the attention of the consumer, on whom he depends for profit. A man can see the deficiencies of his own work when it is placed beside that of a superior workman, and this is the very best incentive he can possibly have for improvement. He will not sit tamely down and let a rival excel him without renewed effort to improve his own products; nor will he fail to observe the excellencies of better work than his own.

Mining Agency.—Messrs. W. H. Howland and W. A. Lauson have established au agency in this city for the purchase and sale of mines, machinery and supplies. Mr. Howland is an old miner, well known on the coast, and was formerly connected with the Miners' Foundry. Persons having mines to sell or desiring to buy, can address the firm as per card in our advertising columns.

The Elephant ore stamp, recently described in the Press, is to be practically tested at Tuttletown, Tuolumne county, by Judge Dorsey, owner of a mine there.

Austin, Nevada, was devastated by a cloudburst August 15th. Loss will approximate $100,000.

What Natural Slickens Will Do.

It has been hinted very strongly if not directly stated in the testimony at the great mining debris trial, that the miners are doing only what Mother Nature herself would do in a somewhat longer time if left to herself. In pursuit of that idea, it has been interesting to look over what Le Conte and Dana say about the erosive power and the deposits of rivers.

To a system of combined erosion and deposit is due in great measure the winding courses of rivers. This cannot be more concisely and clearly put than as it is found in Le Conte's new work on geology. From this book our figure is taken. This production of the winding course is, he says, "most conspicuous and most easily studied in rivers which run through extensive alluvial deposits. If the channel of such a river be made perfectly straight by artificial means, very soon some portion of the bank a little softer than the rest will be excavated; this will reflect the current obliquely across to the other side, which will become similarly excavated. Thus the current is reflected from side to side, increasing the excavations. In the meantime, while erosion is progressing on the outer side of the curves, because the current is swiftest there, deposit is taking place on the inner side, because there the current is slowest; thus, while the outer curve extends by erosion, the inner curve extends, *pari passu*, by deposit (Fig. 1), and the winding continues to increase, until, under favorable circumstances, contiguous curves on the same side run into each other, as at *a b*, and the curve *c* on the other side is thrown out and sifted up. Thus are formed the crescentic lakes or lagoons, *u*, so common in the swamps of great rivers. They are abundant in the swamps of all the Gulf rivers, especially the Mississippi. They are old beds of the river, thrown out and silted up," as above.

Of flood-plain deposits, more interesting in the present case, he says: "All great rivers annually flood portions of level land near their mouths, and cover them with sedimentary deposits. The whole area thus flooded is called the flood-plain. These flood-plains are very extensive, and the deposits very large, in the case of rivers rising in lofty mountains and flowing in the lower portion of their course through extensive tracts of flat country. In the lofty mountains the current runs with great velocity, and gathers abundant sediment; on reaching the flat country the velocity is checked, the river overflows, and the sediment is deposited. The flood-plain of the Mississippi river is 30,000 square miles. The flood-plain of the Nile is the whole land of Egypt. The flood-plain of a river may be divided into two parts, viz: the river swamp and the delta. The river swamp is that part which was originally land surface; the delta that part which has been reclaimed from the sea or lake by the river.

"We have already seen that with every recurrence of the rainy season or the melting of snows the flooding and the deposition of sediment are repeated. Thus the river-swamp deposit increases in thickness, and the level of the whole flood-plain rises continuously. Fig. 2 is an ideal section, showing the manner in which the flood-plain is successively built up; *a a a* is the supposed original configuration of the surface, *b b* the successive levels of deposits, *e* the level of the river at lower water, and *i i* the level of flood water.

The extent of such river-swamp deposits is sometimes very great. The river swamp of the Nile constitutes the whole fertile land of Egypt above the delta. The river swamp of the Mississippi river, or its flood-plain, exclusive of the delta, etc., tends from 50 miles above the mouth of the Ohio to the head of the delta, a distance of about 700 miles; its width is 10 to 15 miles, and it includes an area of 16,000 square miles. It is bounded on either side by high bluffs belonging to a previous geological period. The depth of this deposit at the head of the delta is assumed by Zyell to be 264 feet. But Prof. Hilgard has shown that but a small portion of this is actually river deposit."

In Dana we find it stated, on the authority of the Delta Survey, that the amount of silt carried down by the Mississippi to the Gulf of Mexico is about 1-1500 of the weight, and 1-2900 of the volume of the water, which would equal in one year 812,500,000,000 pounds, or a mass one square mile in area and 241 feet deep. At different times the following data have been obtained: Sediment carried by the Rhone at Lyons, 1-17000; at Arles, 1-2000; in the delta, 1-2500; in the Ganges river, 1-510. According to Allardt, in the mining debris trial, the amount of sediment in the Bear river varies from 1-67 to 1-17 of the weight of the water. If, as Ashburner said, these estimates are five times too great, they should be altered to 1-335 and 1-85. The condition of rivers are, however, so different that any comparison of such figures forms in itself an argument.

To return to Dr. Le Conte. "It is seen by the cross section (Fig. 2) that the level of the river-swamp slopes gently from the river outward, so that the river is bounded on each side by a higher ridge, *d d*. The material of this ridge is coarser than that of the swamp further back. Such natural levees are found along all rivers subject to regular overflows. They are formed as follows: In the times of flood the whole flood-plain is covered with water moving slowly seaward. Through the midst of this wide expanse of water runs the rapid current of the river. Now, on either side, just where the rapid current of the river comes in contact with the comparatively still water of the flood-plain, and is checked by it, a line of abundant sediment is determined, which forms the natural levee. Except in very high freshets these natural ridges are not entirely covered, so that the river in ordinary floods is often divided into three streams, viz: the river proper and the river-swamp water on either side. They cannot, however, confine the river within its bank and prevent overflows, since the river bed is also constantly rising by the deposit. Thus the river bed, the natural levee, and the river swamp, all rise together, maintaining a certain constant relation to one another.

"This constant relation is interfered with by the construction of artificial levees. These are constructed for the purpose of confining the river within its banks, and thus reclaiming the fertile lands of the river swamp. As the bed of the river continues to rise by deposit, the levees must be constantly elevated in proportion; but the river swamp, being deprived of its share of deposit, does not rise. Thus, under the combined effect of human and river agencies conteuding for mastery, an ever-increasing embankment is formed, until finally the river runs in an aqueduct elevated far above the surrounding plain. This is very remarkably the case with the river Po, which is said to run in a channel that has been thus elevated above the tops of the houses in the town of Ferrara. It is probable that the effect of levees in raising the river bed has been greatly exaggerated. Fig. 3 is an ideal cross section of a river and flood-plain left at first to the action of natural causes for a time, but afterwards interfered with by the construction of artificial levees. The dotted strata show the work of nature, and the undotted the work of man. It is easy to see that the destructive effects of overflow from accidental crevasses become greater and greater with the elevation. The Po has thus several times broken through its levees and deserted its bed, destroying several villages. The best examples of rivers successfully leveed are those of Italy and Holland. The Mississippi has never been successfully leveed; but if it should be, it would commence to build up a similar aqueduct, until the whole bed of the river would finally rise above the level of the river swamp."

Assessed Valuation and Production of the Principal Quicksilver Mines in California, for Three Years Past.

Name of County.	Name of Mine.	Valuation of Mines and Lands.	Valuation of Improvements.	Valuation of Personal Property.	Totals.	Quicksilver Produced, Flasks.	Assessed value per Flask Produced.
1876–77—Napa	Redington	$ 41,240	$ 95,000	$ 14,950	$ 151,190	9,183	$16.46
1877–78— "	"	36,240	80,000	8,875	125,115	9,447	13.24
1878–79— "	"	36,240	80,000	12,057	128,807	6,864*	18.78
		$113,720	$255,000	$ 36,482	$ 405,202	25,494	$15.89
1876–77—Lake	Sulphur Banks	$ 56,278	$ 3,292	$ 25,000	$ 84,570	8,732	$ 9.68
1877–78— "	"	50,750	62,800	9,235	122,785	11,649	10.54
1878–79— "	"	50,487	38,000	15,176	103,663	10,468*	9.89
		$157,515	$104,092	$ 49,411	$ 311,018	30,849	$10.08
1876–77—Lake	Great Western	$ 27,000	$ 20,000	$ 2,615	$ 49,615	4,495	$11.04
1877–78— "	"	27,000	20,000	2,615	49,615	5,877	8.44
1878–79— "	"	20,800	20,000	395	41,195	3,894*	10.58
		$ 74,800	$ 60,000	$ 5,625	$ 140,425	14,266	$ 9.84
1876–77—Sonoma	Oakland	$ 5,000	$ 5,000	$ 1,050	11,050	2,150	$ 5.14
1877–78— "	"	5,000	5,000	2,740	12,740	1,395	9.13
1878–79— "	"	5,000	.....	4,550	9,550	1,142*	8.36
		$ 15,000	$ 10,000	$ 8,340	$ 33,340	4,687	$ 7.11
1876–77—Fresno	New Idria	$ 50,960	$ 25,000	$ 14,119	$ 90,079	7,272	$12.39
1877–78— "	"	30,960	20,000	9,587	60,545	6,316	9.58
1878–79— "	"	20,000	15,000	6,035	41,035	4,258*	9.64
		$101,920	$ 60,000	$ 29,739	$ 101,659	17,846	$10.74
1876–77—Santa Clara	Guadalupe	$ 10,010	$ 20,390	$ 10,050	$ 51,750	7,381	$ 7.01
1877–78— "	"	20,350	63,500	10,900	100,750	6,241	16.14
1878–79— "	"	20,350	63,500	10,000	100,750	5,330*	18.90
		$ 72,610	$147,300	$ 32,750	$ 253,250	18,052	$13.36
1876–77—Total value of above mines		$200,388	$160,182	$ 68,684	438,254	39,213	$11.17
1877–78— " " "		176,300	251,300	43,950	471,550	40,925	11.52
1878–79— " " "		158,877	216,500	49,713	425,090	31,050*	13.30
		$535,505	$636,982	$ 162,347	$1 334,804	112,094	$11.90
1876–77—Santa Clara	New Almaden	$150,000	$150,000	$ 91,115	$ 301,115	20 631	$18.90
1877–78— "	"	150,000	100,000	51,820	301,820	24,079	12.53
1878–79— "	"	150,000	100,000	54,710	304,710	11,778*	25.87
		$450,000	$350,000	$ 197,645	$ 907,645	56,488	$17.66

*Known production for first six months 1878, doubled to make comparative yearly statement.

Fig. 2. Natural Levee.

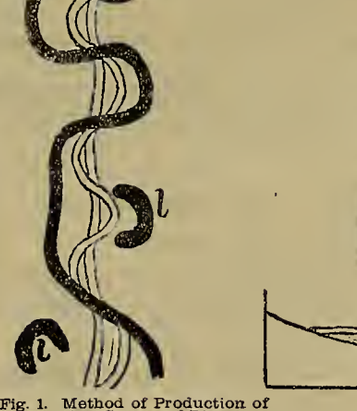

Fig. 1. Method of Production of Winding Course of Rivers.

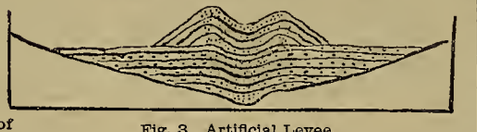

Fig. 3. Artificial Levee.

Mineral Surveyors Appointed.— The following have been appointed U. S. deputy mineral surveyors by U. S. Surveyor-General Wagner, as provided by section 2,344 of the revised statutes; R. M. Wilson, San Francisco; A. A. Smith, Susanville; L. L. Hawkins, Oakland; J. E. Jackson, Los Angeles; F. S. Ingalls, Salinas; A. T. Herrmann, San Jose; A. B. Brauvais, Columbia; Thomas Creighton, Visalia; John Doherty, Oaklaud; P. Y. Baker, Visalia; H.S. Bradley, Nevada City; E. C. Wren, Dutch Flat; John A. Brown, Sutter Creek; William Magee, Shasta; E. T. Wright, Los Angeles; A. W. Keddie, Quincy; William Jahine, Placerville; W. S. Lowden, Weaverville; J. M. Anderson, Placerville; R. B. Thomas, Mariposa; C. W. Hendel, La Porte; Samuel Bethel, Grass Valley; C. L. Anderson, Bodie; John Goldsworthy, Los Angeles; A. L. Cox, Santa Rosa; J. E. Woods, San Francisco; J. B. Hiskey, Bodie; James McGann, Chico; L. F. Cooper, Crescent City; T. R. Fillebrown, Bakersfield; D. C. Hall, Quincy; T. W. Reece, Oroville; Chas. Kaufman, San Francisco; J. M. Doyle, Colusa; C. J. Fox, San Diego; H. J. Stevenson, Los Angeles.

Convenient for Miners.—J. S. Phillips has now in press the third edition of his "Explorers', Miners' and Metallurgists' Companion." It will be in two volumes, each complete in itself, and of pocket size. Volume I. will treat of testing and assaying rocks, veins and metallic minerals. Volume II. will treat of mining and metallurgy, of mines and the reduction of minerals. His system of blowpipe analysis will be contained in the first volume. The edition will be issued in about three months.

The total valuation of property in San Francisco for 1878–9 is $214,476,470, against $254,867,050 last year.

Our Cabinet.

Under this heading we shall continue to mention and describe, according to merit, such specimens of ores, minerals, fossils, curiosities, etc., as may be sent to us by mail or express prepaid. Each article will be numbered, marked with the name of the donor and the locality, and safely kept. A full account of the place, occurrence, etc., adds much to the value of such contributions. In another column we will gladly answer any reasonable questions regarding specimens so contributed.

No. 551. Specimen of chrome iron ore from the vicinity of Grass Valley, Nevada county, Cal. Presented by M. C. Taylor.

No. 552. Specimen of magnetite, probably mixed with chromite, from a ledge near Grass Valley, Nevada county, Cal. Presented by M. C. Taylor.

An Explanation in Order.

We print in an adjacent column a table which has been furnished us, showing the assessed valuation and production of the principal quicksilver mines in California for three years past. The first two years' estimates are made upon actual returns; the third year calculated upon current year for the returns of the six months just passed. This table gives for the following productions of the various mines the most peculiar variation in the assessments per flask:

	Flasks Produced.	Assessed per flask.
Redington	25,494	$15.89
Sulphur Bank	30,839	10.08
Great Western	14,266	9 84
Oakland	4,687	7.11
New Idria	17,846	10.74
Guadalupe	18,052	13.30
Total,	112,094	Grand Average, 11.90

The return of New Almaden for the same period is put down as 56.488 flasks; average assessment per flask, $17.66. Now, while this latter mine has produced for this period just about half the total of the other mines, its assessed valuation is put down at $997,647, as against $1,334,844, the total assessed valuation of the other mines. If now we take the only just basis for tax valuation of mines, the actual production we find, according to these figures, a discrimination against New Almaden of over $300,000 in assessed valuation, or of $5.76 per flask produced above the average of the other assessed valuations.

If these figures are, as we have every reason to believe, correct, it is a matter calling for investigation. It is certainly unfair to all parties to have such a wide variation in assessments of properties of the same nature. The actual production of a mine, as we have just remarked, is the only just basis upon which a tax assessment can be made. No man living can form a perfectly just determination of the future value of a mining property. The best of experts always differ on such estimates, and how much less able must he the average county assessor to judge of such subjects. Therefore, we claim that in such cases the production should be made the basis for such calculations. However, it may be that an explanation will be forthcoming. We shall be glad to hear it.

A Plea for Our Agents.

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Our agents are of great value to us and to our readers, not alone in extending our subscription list and thus furnishing us the materials for strengthening and improving our paper. They help us greatly in keeping our journal abreast of the industrial progress which is being made in the different regions of the coast. We could not afford to send them out merely as correspondents, and yet they do splendid work in this line and send us budgets of fresh facts, new and successful practices, etc, which the editor on his lonely perch might never know without them.

We invite all our readers to be frank with our agents. Tell them what you like and what you do not like, what you know and what you need to know. You may tell them the paper might be better if the editor had more brains. You may criticise freely; in fact, we invite you to do so. If you think think the paper deserves it, criticise it so severely that the agent's report will make the editor go home and spank the baby to conceal his mortification—but do not put off the agent without the money if you can help it.

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Fig.1

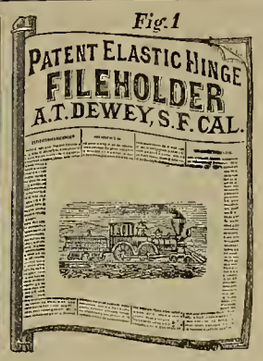

Fig.2

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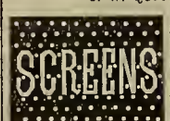

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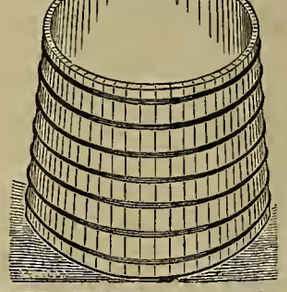

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Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending Aug. 1.	Week Ending Aug. 8.	Week Ending Aug. 15.	Week Ending Aug. 22.
Alpha	11 9½	16½ 10	14½ 10⅞	16 13½
Alta	9¼ 7½	11 8½	12 8⅝	15 9½
Andes	35c 25c	80c 35c	80c 40c	90c 60c
Alps	....	....	....	....
Argenta	50c 45c	50c 40c	70c 45c	70c 40c
Baltimore Con	....	....	....	....
Belcher	4.60 4.05	10 4.45	9¾ 4¼	11¼ 9
Belmont	1 65c	2.75 90c	1.80 75c	3 1.30
Best & Belcher	14⅞ 13⅜	17½ 14½	20 14½	20¼ 17¼
Bullion	5½ 4.60	8½ 5½	9½ 5	13 9¼
Bechtel	1.90 1½	5 1.80	3¼ 1.60	3.10 2.05
Bodie	17¼ 10	25 17	46 17	48 23½
Benton	3.40 1.90	3.90 3.40	6¾ 3.10	5½ 3
Caledonia	2.15 1.55	3.35 2.15	3½ 2.10	4 3
California	10 7½	12¾ 9½	12¾ 9⅜	11½ 10⅜
Challenge	1 75c	1¼ 1	2.15 1½	2.10 1¼
Chollar-Potosi	30 29	35½ 29½	38¾ 29	39 33
Confidence	5½ 5½	7 5	6¾ 4¾	7 5½
Con Imperial	70c 60c	5 70c	1½ 85c	1¼ 85c
Con Virginia	9 7	10⅝ 8½	10½ 8¼	10¾ 9¼
Crown Point	8¼ 6⅝	9½ 7½	11¾ 8	10½ 8¾
Dayton	....	50c 25c	50c 30c	50c 40c
DeFrees	15c	20c 10c	25c 15c	30c 15c
Day	50c 40c	1 40c	1 45c	50c 40c
Eureka Con	49½ 43	48 44	48¾ 42½	45 36½
Exchequer	4.10 3.20	5½ 3.90	6 4	6⅞ 5
Endowment	95c 65c	2 1	1½ 90c	2 1
Gen Thomas	15c	....	....	....
Grand Prize	3.55	3½ 3.60	3½ 3½	3½ 3½
Gila	60c 35c	55c	55c 50c	55c 40c
Golden Chariot	30c 20c	25c	50 25	60c 25c
Gould & Curry	7¾ 6⅜	9 7¾	11¼ 7	11½ 9½
Hale & Norcross	7¼ 7	9¼ 7	11 7½	9¾ 8½
Hussey	50c 45c	90c 55c	90c 45c	60c 60c
Julia	8⅜ 7	12⅜ 8	13⅜ 8⅜	17 13¾
Justice	5½ 4.40	8 5½	7¼ 5½	9½ 6⅝
Jackson	5	4½ 3½	5 3½	5¼ 4½
Gen Thomas	15c	....	....	....
K K Con	....	....	....	....
Kentuck	5½ 3.40	6 4½	6¾ 4⅜	6 4½
Kossuth	....	5c	30c 10c	25c 20c
Lady Wash	3	8½ 8	12 8½	14½ 11½
Leopard	1 75c	1.35 1	1½ 95c	2.70 1.20
Leviathan	45c 40c	95c 40c	75c 60c	95c 60c
Leeds	40c	1 25c	1 90c	1 80c
Modoc	35c 25c	30c 20c	35c 25c	80c 25c
Manhattan	6 5½	5½ 5½	8½ 5½	9¾ 6¾
Meadow Valley	....	1.40 1	1.65 1	1.70 1
Ophir	45 36	46 38½	48 41	46½ 41
Overman	12½ 9⅞	18 11½	18 11⅛	18 13½
Panther	....	20c	20c	30c 15c
Raymond & Ely	3	8.95 3	4½ 2.85	5 3
Rock Island	....	....	....	....
Savage	10½ 9½	13 10½	14 11⅜	14⅝ 12
Seg Belcher	....	26½ 22	30 35	35 31
Sierra Nevada	12½ 7⅜	33½ 13	31⅜ 11⅝	41½ 25
Silver Hill	1¼ 60c	2 1	1.65 1.90	4 1.45
Succor	1.05 9c	2.70 1.05	2½ 1.10	2¼ 1.15
Solid Silver	21 25c	4 2.40	4.40 4	5 3
Star	1	2½ 1	1.95 1	1½ 60c
Trojan	50c 45c	65c 50c	55c 45c	3.55 50c
Union Con	9⅜ 6¼	30 10c	28½ 9	30 24½
Utah	11⅜ 8⅞	16 10½	16½ 11⅜	18 15
Wells-Fargo	10c 5c	30c 8c	20c 15c	35c 15c
Woodville	60c 35c	75c 60c	85c 45c	85c 50c
Yellow Jacket	10⅜ 9¼	16 10½	16 10½	16 13

Sales at S. F. Stock Exchange.

Friday A.M., August 16. Saturday A.M., Aug. 17.

2350 Alta	10@4½	290 Alpha	14@15
495 Alpha	14@14½	1230 Alta	12@11½
170 Andes	65c@60c	230 Andes	60c@55c
395 Best & Belcher	18	300 Argenta	65c@60c
2500 Bullion	10¾@10⅝	2600 Bullion	10⅞@11
2170 Belcher	9@9½	225 Best & Belcher	17@18
55 Con Virginia	9¼@9⅜	8420 Belcher	11@11½
600 B Ravine	37½@37¼	465 Bodie	37@37¼
520 California	10¾@10⅞	1565 Bechtel	2.10@2
305 Chollar	37@38	3240 Belmont	2@1.95
810 Crown Point	9@9¼	100 Belle Isle	25c
520 Confidence	5½@5	1220 Con Virginia	9½
159 Challenge	1.30@1½	630 California	11@11¼
300 Con Imperial	75c	180 Confidence	6½@7
1125 Caledonia	3@3¼	160 Chollar	38
2355 Exchequer	5½@5¾	1400 Crown Point	9¾@9⅝
360 Gould & Curry	9½@9¾	6735 Con Imperial	1.15@1.05
550 Hale & Nor	8¾@8½	950 Challenge	1.10@1¼
1440 Justice	6¾@6¾	550 C P Ravine	35@30c
1835 Julia	14¼@14¾	1450 Caledonia	3@3¼
505 Kentuck	5@5½	450 Con Washoe	1@1¼
320 Kossuth	25c	100 DeFrees	20c
1100 Lady Bryan	2	275 Day	75c
170 Lady Wash	11½	2460 Exchequer	6@6¼
1405 Mexican	22½@22	1335 Endowment	1.05@1.10
50 Midas	90	Eureka Con	42@40
3505 New York	1¾@1.90	725 Grand Prize	5½@5¾
455 Overman	13¾@14	870 Gould & Curry	10¼@11¼
230 Ophir	44@43¾	100 Gila	50c
400 Occidental	1¼@1.70	300 Hussey	60c
3135 Sierra Nevada	41@41¼	420 H & Norcross	8@8¼
975 Savage	13@12¾	850 Hillside	4@4¼
450 Succor	1.15@1.20	2165 Independent	1.90@2
2400 Silver Hill	1.45@1.40	3620 Justice	7½@6¾
1710 Union Con	25@26¾	340 Jackson	5
175 Utah	15¼@15⅝	730 Julia	15½@16
3950 Wells-Fargo	15@14¾	325 Kossuth	25c
150 Woodville	55@50c	190 Lady Bryan	2
340 Yellow Jacket	14	585 Leopard	1½@1.55
		240 Lady Wash	12½@12
AFTERNOON SESSION.		935 Mexican	23@23¼
175 Argenta	65@60c	690 Meadow Valley	25c
200 Aurora T	5	950 Midas	2
410 Benton	5½@5	870 McClinton	2@2¼
1535 Bechtel	2.05@2.20	915 Manhattan	8@8¼
630 Bodie	37½@37¾	1705 Modoc	70@75c
2375 Belmont	1.90@1.85	1425 New York	2@1.90
55 Bulwer	2	540 Navajo	65@75c
1100 Belle Isle	25c	535 Northern Belle	6½@7
720 Boyle	2¼@2.05	715 Ophir	44@44½
1725 Belvidere	5@4½	565 Overman	15@14¾
1000 Concordia	80c@1	570 Occident	1
400 C Arizona	2½	250 Panther	25c
300 DeFrees	20@19.75	1335 Raymond & E	4.60@4.65
150 Day	60c@80c	625 Savage	12¾@13
2795 Endowment	1@1.05	550 Succor	1.40@1.55
305 Eureka Con	41¾@41½	50 Seg Belcher	32
500 Grand Prize	5¾@5½	1000 Silver Prize	15@20c
1245 Gila	55@40c	1205 Sierra Nevada	35@34
1555 Goodshaw	30@1.30	1050 Silver Hill	1.70@1.75
365 Hillside	4@3¾	3065 Tioga Con	4½@4¼
1100 Hussey	70@65c	2570 Union Con	27@28
200 Hamburg	2¼	440 Utah	15½@15
965 Independent	1.90@2.10	2845 Ward	4@5.70
1000 Jackson	5@5½	1000 Wells-Fargo	15@20c
500 Leeds	80c	850 Yellow Jacket	15@15½
1550 Leviathan	60@65c	**Monday A. M., Aug. 19.**	
1550 Lee	65@70c	1890 Alta	10½@15
555 Manhattan	9¼@9	1030 Alpha	16@15
200 Meadow Valley	30c	2330 Bullion	12@13
450 May Belle	2	1275 Best & Belcher	20@19½
350 Morning Star	3@3¼	2970 Belcher	11@11¾
110 Martin White	4	1225 California	11¾@11
835 McClintou	1.90@2	1045 Con Virginia	9½@9¾
3100 Modoc	25c	170 Chollar	39@38½
135 Northern Belle	10@10½	1600 Crown Point	11@10⅝
1475 Navajo	70c	3290 Con Imperial	1.20@1
370 North Con Vir	3@3¼	130 Confidence	6¾
200 Oriental	1½@1¾	2505 Exchequer	6¾@6¾
200 Panther	20@15c	1600 Gould & Curry	11¼@10¾
100 Prospect	10c	625 Hale & Nor	9¼@9
75 Raymond & Ely	4@3.25	2355 Justice	7½@8¼
100 Rough & Ready	2½@2¼	1335 Julia	17@16
640 Summit	2¼@2	620 Kentuck	6@5¾
1115 Scorpion	4¼@4	2000 Lady Bryan	2
150 Syndicate	2	2050 Mexican	23@24½
500 Star	1½	970 Ophir	46¾@45
275 Solid Silver	3	515 Overman	15@16¾
220 Tiptop	1½	1095 Savage	13¾@14
3 775 Tioga Con	4¼@4	1350 Sierra Nevada	40@41¼
300 Trojan	55@50c	15 Seg Belcher	31
630 Vermont Con	4¼@4.15	1065 Succor	2@2¼
1145 Ward	3.70@3.60	775 Utah	16¾@18
250 W Cloud	1.10@1.10	1040 Union Con	29@30
435 Yellow Jacket	15¾@16	920 McClinton	2.1 8
AFTERNOON SESSION.		450 Manhattan	8¾@8¼
1115 Andes	80@70c	100 Midas	3@2¾
250 Argenta	65c@70c	550 Morning Star	3
630 Bodie	37¾@38¾	300 May Belle	....
155 Bulwer	14	100 Meadow Valley	40c
3240 Bechtel	2¼@2¼	1965 Modoc	70@75c
1050 Belvidere	4	150 New Cosco	40c
3935 Belmont	2.55@2	80 Northern Belle	10¼@10
3360 Benton	5¼@5¾	110 North Con Vir	3½
940 Boyle	2	1545 New York	2.15@2
2945 Caledonia	4@3¾	200 Navajo	95c
640 Challenge	1¼@2	450 Oriental	2@1¾
350 Con Washoe	1¼	300 Occidental	1¼
225 Concordia	90c@1	400 Prospect	40@50c
390 Day	80@85c	800 Panther	25@30c
245 Eureka Con	40¼@39	205 Raymond & Ely	5
4625 Endowment	1.20@1.30	400 Rough & Ready	2¼
275 Grand Prize	5¾	265 Solid Silver	5
350 Gila	50c	1545 Star	1¾
700 Golden Chariot	40@50c	575 Syndicate	5@4¾
1320 Goodshaw	85@1	785 Scorpion	5@4¾
850 Hussey	70c	740 Summit	4@3¾
200 Hamburg	2	1690 St Louis	50c
930 Hillside	4¼	445 Tiptop	1¼@1.20
4500 Highbridge	1@1¼	1470 Tioga Con	3.60@4
730 Independent	2@2.10	100 Trojan	3.55
200 Jackson	5	110 Vermont Con	4.80
550 Kossuth	25c	2500 W Cloud	1@1.10
100 Leeds	1	105 Woodville	75@85c
20 Leopard	....	1460 Ward	3.85@4
1945 Lady Wash	11¼@11	6200 Wells-Fargo	25@85c
1000 Leviathan	80c@85c	**Wed'sday A.M., Aug. 21.**	
3200 Lee	75c@90c	1240 Alta	14@13¾
350 Morning Star	3@3	960 Alpha	16@15½
1635 Modoc	70@75c	280 Andes	90c
300 May Belle	....	2165 Belcher	19@19¼
1235 Midas	2@2¼	1090 Bullion	11@11¼
750 Manhattan	9@8¾	200 Con Washoe	1.35
90 Martin White	4	840 California	11¾@11½
1830 McClinton	2@2.10	950 Con Virginia	9¾@9¾
360 Northern Belle	10¼@10	1000 Crown Point	10¾@10½
230 North Con Vir	4@3¾	105 Chollar	37@37¾
2775 New York	2@2.35	845 Caledonia	3½@3.90
200 Navajo	75@85c	5165 Con Imperial	1.15@1.10
530 Oriental	2@1.90	370 Confidence	6½
370 Occidental	1¼	950 Challenge	2.10@1.90
100 Panther	30c	200 Dayton	40c
1150 Raymond & Ely	4@5	1000 Daney	5c
1430 Rough & Ready	2@2¼	1900 Exchequer	6¾@6¾
415 Scorpion	5@6	900 Gould & Curry	10¾@11
425 Solid Silver	5	670 Hale & Nor	9¼@9¾
3250 Silver Hill	3@4	1835 Justice	7¼@7½
110 Summit	3	2315 Julia	14½@13¾
840 Syndicate	2	160 Kentuck	5¾
1750 St Louis	50c	740 Kossuth	25@20c
100 Silver Prize	20c	200 Lady Bryan	2
1715 Tiptop	1¼@1.30	295 Lady Wash	14@12½
900 Trojan	55c@70c	775 Mexican	23@22¾
1950 Tioga Con	4@3.90	1460 Midas	2¼@2¼
1020 Vermont Con	4@4.40	490 New York	2@2.10
1900 W Cloud	1@1.15	480 Ophir	46@45¾
325 Woodville	75c@70c	160 Occidental	1.20@1
4450 Wells-Fargo	20c	635 Overman	16@17¼
1820 Ward	4@3.95	1785 Sierra Nevada	40¼@38
Tuesday A. M., Aug. 20.		775 Savage	13¼@13¾
2115 Alpha	16@15	2165 Silver Hill	2¾@3
1650 Alta	14@13¾	430 Succor	1.95@2
495 Best & Belcher	19¼@20	70 Seg Belcher	33@35
2190 Belcher	11@11¼	630 Union Con	26¾@26
3710 Bullion	12@11¾	430 Utah	17@18
840 California	11¾@11¾	585 Woodville	75@85c
1635 Con Virginia	9¾@9¾	4020 Wells-Fargo	50c@60c
7915 Con Imperial	1.05@1.15	290 Yellow Jacket	15@14¾
260 Confidence	6½@6	AFTERNOON SESSION.	
1370 Crown Point	10¼@9¾	440 Argenta	65@70c
1510 Caledonia	3¼@3.60	700 Alpha	3@3¼
135 Chollar	38¼@37	510 Bodie	43@46¾
1895 Exchequer	6¾@6½	1965 Bechtel	2¼@2¾
1140 Gould & Curry	10¾@11	1210 Belmont	2¼
1290 Hale & Nor	9¼@9¾	600 Belle Isle	25c
3130 Justice	9@9¼	2890 Benton	5@4¾
1270 Julia	15¼@15	1285 Bulwer	2@1.90
775 Kentuck	6@5¾	1000 Black Hawk	3@2¾
790 Lady Bryan	2@1.95	1500 Belvidere	3@2.90
990 Mexican	23½@23¼	1000 Belle Isle	25c
350 Ophir	45¼@46	170 Bulwer	12¾@14
1350 Overman	17@16¾	200 Coso Con	50c
2135 Sierra Nevada	33@37	650 Concordia	75@80c
320 Savage	14@13¾	850 Chollar	38@37¾
280 Succor	2@1.80	1330 Day	90c@80c
30 Seg Belcher	33	1350 Endowment	1.35@1¾
2795 Silver Hill	2.65@3	495 Eureka Con	37@36¾
3245 Union Con	27@25¾	1950 Goodsha	1¼@1.10
525 Utah	17¼@17	2100 Grand Prize	5¾@5¾
875 Yellow Jacket	15¼@16	600 Gila	45c@50c
AFTERNOON SESSION.		500 Golden Terra	4
1020 Andes	85@90c	100 Golden Chariot	60c
50 Aurora T	3¼	9350 Highbridge	1¼@2
225 Argenta	65@70c	1600 Hussey	60@70c
910 Belmont	2¼@2.05	665 Hillside	4¼@4¼
900 Bechtel	2.35@2¼	640 Independent	2.2.30
475 Bulwer	14@13¾	900 Ida	1
550 Black Hawk	3¼	1300 Jackson	5@5¼
3205 Bodie	42¼@47	2175 Lee	90c@1
905 Benton	5¼@5	1515 Leopard	2.70@2
440 Boyle	2	310 Leeds	1
530 Belvidere	3	1520 Leviathan	65@70c
1150 Con Washoe	1¼	600 Morning Star	3¼
960 Challenge	1.60@1½	650 Manhattan	7¾@8
900 Concordia	80@1	50 M White	4
9850 DeFrees	30@25c	1885 Modoc	70@80c
300 Day	80@85c	1.90@2	1
550 Day	40c	1150 Meadow Valley	30c
200 Eureka Con	37	200 New Cosco	40c
6570 Endowment	1.60@1¼	160 N Con Virginia	3@3¼
480 El Dorado S	25c	4075 Navajo	90@75c
1455 Gila	50c	70 Northern Belle	10@10½
1735 Goodshaw	1.10	300 Stanislaus	30@1.30
550 Golden Chariot	45c	300 Panther	25c@30c
465 Grand Prize	5¼	60 Raymond & Ely	4¼@5
550 Golden Terra	45c	100 Red Cloud	1
5300 Highbridge	1.40@1¼	100 Syndicate	4¼
1100 Hussey	65c@70c	1265 Summit	3@3¼
2100 Hillside	4	300 Tiptop	1.10@1.15c
1160 Hillside	4¼	350 Solid Silver	5
1055 Independent	1.90@2	600 Star	80c@1
220 Jackson	5¼@5	450 St Louis	45c
310 Kossuth	25c	555 Scorpion	4¼@4¼
1660 Leopard	1.75@1.80	2160 Trojan	60c@55c
2920 Lady Wash	14¼@14¾	530 Tiptop	1.45@1.40
200 Leeds	95c@1	880 Vermont Con	5@4.85
2100 Lee	90c@85c	2415 Ward	3¼@3.40
1192 Leviathan	75c@70c		

SALES OF LAST WEEK AND THIS COMPARED

Thursd'y A.M., Aug. 15. Thursday A.M., Aug. 22.

945 Alta	10¼@11	1155 Alpha	13¼@13½
340 Alpha	12¼	1490 Alta	13¾
1200 Andes	60c	385 B & B	18@17¾
540 Best & Belcher	17¾@18	1735 Bullion	9¼@9¾
1840 Bullion	9@9¼	1760 Belcher	9¾@9¾
175 Bullion	5@6	1490 Chollar	33¾@34
1155 Belcher	8¾@9	1490 Con Virginia	9¼@9¾
1900 Boyle	2	1195 California	11¾@11¾
3250 Con Imperial	95c@1	1960 Caledonia	3¼@3¾
760 California	10¼@11	805 Crown Point	8¾@9
815 Con Virginia	9¼@9¼	4090 Con Imperial	85c@1
290 Confidence	5¾@6	1490 Challenge	2
210 Chollar	34¾@35	180 Confidence	6¾@6¾
1720 Crown Point	9¼@9¼	1000 Daney	3¾
1275 Caledonia	2.80@2.90	200 Dayton	40c
300 Con Washoe	70c	2230 Exchequer	5@5¾
2200 Challenge	1.30	1770 Gould & Curry	9¼@9¾
2155 Exchequer	5¼@5¾	1000 Hale & Nor	9¼@9¾
1045 Gould & Curry	9¼@9¾	2215 Justice	7¾@8¼
605 Hale & Nor	8¼@9	2020 Julia	13¾@13¾
1135 Julia	13¾@13¾	615 Kentuck	4¼@5
1440 Justice	6¼@6¾	1155 Mexican	20¼@21¾
370 Kentuck	4.2@4.30	975 New York	1¾@1¾
250 Kossuth	25c	375 Overman	16¾@16¾
180 L Bryan	2@2.05	590 Ophir	42¼@41
1150 Leviathan	70c@65c	410 Succor	1.80@1.90
240 Lady Wash	11¾@12	865 Savage	12¾@12¾
1050 Lee	65c	2610 Sierra Nevada	36¾@37¼
270 Midas	2	1040 Silver Hill	3
10 0 Mexican	22¾@22¾	1450 Silver Hill	3¼@3¼
150 Morning Star	2¼	1340 Union Con	25¾@26
715 New York	1¼@1.70	720 Utah	17¾@18
130 North Con Vir	3¼@3¾	540 Yellow Jacket	15¾@13
130 Ophir	44¼@44	AFTERNOON SESSION.	
370 Overman	16¾@16¾	400 Aurora T	4@4.20
30 Occidental	1.65	250 Argenta	65@70c
70 Rough & Ready	2	1035 Andes	60@55c
600 Succor	1.10	50 Bulwer	13
2005 Sierra Nevada	36@37¼	925 Belmont	2¼@2¾
1220 Savage	12¼@12¾	565 Belvidere	3¼@3
270 Scorpion	3¼@3¼	100 Belle Isle	25c
1725 Silver Hill	1.30@1¼	2300 Black Hawk	2@2¼
325 Solid Silver	4.40	360 Bodie	39@40
1100 Trojan	65@60c	1260 Bechtel	2¼@2¼
210 Utah	14¼@15	925 Benton	5¼@5¼

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS—STOCKS ON THE LISTS OF THE BOARDS.

Company.	Location.	No.	Amt.	Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business
Alps S M Co	Nevada	13	1 00	May 21	Aug 14	Sept 10	O D Squire	331 Montgomery st
Alta S M Co	Washoe	14	1 00	July 18	Aug 22	Sept 10	W H Watson	302 Montgomery st
Belcher S M Co	Washoe	15	1 00	July 17	Aug 20	Sept 10	Jno Crockett	419 California st
Bullion M Co	Washoe	7	1 50	Aug 12	Sept 16	Oct 7	J Gruss	418 California st
Bechtel G M Co	California	2	50	Aug 14	Sept 19	Oct 10	W H Lent	309 Montgomery st
Belmont M Co	Washoe	18	40	July 29	Sept 2	Sept 24	J W Pew	310 Pine st
Boyle M Co	Nevada	1	15	Aug 1	Sept 4	Sept 23	Wm H Watson	302 Montgomery st
DeFrees M & M Co	Nevada	7	10	Aug 3	Sept 6	Sept 23	Thos E Atkinson	310 Pine st
El Dorado South Cou M Co	Nevada	13	25	July 27	Aug 30	Sept 23	C A Sankey	331 Montgomery
El Dorado W & D G M Co	California	18	2 00	Aug 15	Sept 16	Oct 4	Thos Price	524 Sacramento st
Grand Prize M Co	Nevada	1	1 00	July 9	Aug 15	Sept 5	R H Brown	327 Pine st
Gila Con M Co	Arizona	2	03	Aug 8	Sept 23	Oct 15	P B Pettigrew	419 California st
Hale & Norcross S M Co	Washoe	30	1 00	Aug 13	Sept 18	Oct 9	J F Lightner	58 Nevada Block
Justice M Co	Washoe	26	1 50	Aug 13	Sept 18	Oct 9	R E Kelly	419 California st
Kentuck M Co	Washoe	13	1 00	Aug 7	Sept 9	Sept 30	J W Pew	310 Pine st
McCracken Con M Co	Arizona	1	50	July 10	Aug 24	Sept 28	H Aug Whiting	211 Sansome st
Modoc Con M Co	California	5	50	July 17	Aug 26	Sept 16	J W Pew	310 Pine st
Martin White M Co	Nevada	3	1 00	July 23	Sept 3	Oct 1	J J Scoville	309 Montgomery st
Mint G & S M Co	Washoe	22	20	July 8	Aug 12	Sept 2	D A Jennings	401 California st
New York M Co	Nevada	16	30	Aug 1	Sept 3	Sept 24	D L Thomas	419 California st
Northern King M & M Co	Arizona	3	10	Aug 17	Sept 21	Oct 9	G F Glover	318 Pine st
N Con Virginia M Co	Washoe	13	1 00	Aug 13	Sept 16	Oct 4	W M Helman	309 California st
Prospect G & S M Co	Washoe	6	25	July 18	Aug 20	Sept 10	Warner Craig	320 Sansome st
Raymond & Ely M Co	Nevada	8	1 00	Aug 6	Sept 12	Oct 8	J W Pew	310 Pine st
Silver Hill M Co	Nevada	2	50	July 18	Aug 22	Sept 12	W E Dean	419 California st
Spanish Standard M Co	California	2	25	July 23	Aug 27	Sept 17	C A Sankey	331 Montgomery st
Sierra Nevada M Co	Washoe	55	1 00	July 31	Sept 4	Sept 25	W W Stetson	309 Montgomery st
Succor M & M Co	Washoe	19	50	Aug 12	Sept 16	Oct 5	W H Watson	302 Mongomery st
Tiptop S M Co	Arizona	3	50	July 15	Aug 21	Sept 18	D F Verdenal	327 Pine st
Wells, Fargo & Co	Washoe	10	10	July 22	Aug 23	Sept 9	W M Helman	309 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Aurora T & M Co	Bodie	1	15	Aug 12	Sept 20	Oct 10	A Baird	304 California st
Almaden Quicksilver M Co	California	1	25	July 30	Aug 31	Sept 21	W J Forde	207 Sansome st
Benton M Co	Nevada	1	35	Aug 1	Sept 5	Sept 24	Wm H Watson	302 Montgomery st
Colorado River C & G M Co	Arizona	2	25	Aug 5	Sept 9	Sept 30	P A Whiting	211 Sansome st
California W Co	California	20	16	Aug 13	Sept 24	Oct 15	G P Thurston	315 California st
Excelsior S M Co	Nevada		25	July 16	Aug 20	Sept 6	Francis Devine	304 Post st
Eagle S M & M Co	Nevada	9	15	July 13	Aug 16	Sept 6	R H Brown	327 Pine st
Gover M & M Co	California	37	50	Aug 9	Sept 23	Oct 21	W O Wilson	402 Front st
Goldeu Rule M Co	California	7	75	July 15	Aug 17	Sept 9	J B Russell	432 Montgomery st
Henrietta G M Co	California	3	10	June 7	Aug 12	Sept 6	F Klosterman	309 California st
King M & S Co	Nevada	3	25	June 24	Sept 19	Oct 9	Chas K Clark	111½ Leidesdorf st
Morgan M Co	California	4	50	June 1	July 8	July 29	John J Raphael	533 Kearny st
Murchie G & S M Co	California	1	20	July 2	Aug 7	Sept 6	S D Rogers	Merchants' Exchange
McElroy G M Co	California	2	10	July 23	Aug 28	Sept 17	Lewis Lillie	519 Montgomery st
Mariposa Land & M Co	California	14	1 00	July 10	Aug 12	Sept 9	Leander Leavitt	309 Montgomery st
McClellan Con G & S M Co	Nevada	2	25	Aug 5	Sept 5	Sept 23	Otto Metchke	328 Montgomery st
Newton H & D M Co	California	3	10	July 21	Sept 2	Sept 20	G W Cummings	330 Sansome st
Nevada Gravel M Co	California	2	10	July 8	Aug 10	Aug 28	J Pentecost	511 California st
Oak Grove M Co	Arizona	1	05	Aug 6	Sept 10	Sept 30	R D Bogart	16 Leidesdorf st
Oroville G M Co	California	1	10	Juue 14	July 27	Aug 22	Ph D Auh	417 California st
Orion M Co	California	2	70	July 9	Aug 9	Aug 24	P Conklin	28 Sansome st
Real Del Monte M Co	Nevada	3	1 00	July 18	Aug 26	Sept 16	A Baird	304 California st
Samuels M Co	California	4	05	July 17	Aug 19	Sept 4	J W Clark	318 Pine st
Tiger M Co	Arizona	1	30	July 16	Aug 26	Sept 20	W H Lent	309 Montgomery st
Telegraph C & S M Co	California		03	July 17	Aug 19	Sept 9	I T Milliken	528 California st

MEETINGS TO BE HELD.

Name of Company.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Arnold G & S M Co		A Judson	120 Sutter st	Annual	Sept 7
Crown Point Ravine G & S M Co	Washoe	J M Buffington	309 California st	Annual	Sept 2
East Branch M Co		J W Clark	318 Pine st	Annual	Sept 3
Europa M Co	Washoe	J L Fields	240 Montgomery st	Annual	Aug 26
El Tesoro S M Co		W H Chickering	214 Sansome st		Aug 29
King M & S Co		Chas K Clark	111½

Mining Share Market.

The past week has shown another wave in the stock market, but it has been such a slight wave as to hardly deserve the name of ripple. The Comstock favorites of the last two weeks seem to hold their own well. Ophir shows a slight rise up to Tuesday, and a drop again Wednesday. Mexican scored highest on Monday; Wednesday showed a fall of $2. Union Con. gives about the same record. It seems to be conceded that the Sierra Nevada rich strike is really in Union ground. Encouraging reports have come from Julia, but that stock too shows the same wave, its crest appearing on Monday. Justice culminated on Tuesday, and on Wednesday shared the general decline. Very good report came from this mine. In sinking a winze from the 1300-foot level on the south line, they met ore which at first assayed $3, but had reached $20 on the 20th. Bullion has reported the "best indications ever found in the mine." But reference to the quotations shows no rise proportionate to the flattering report. Here is the secret of the wavering market. Every report is "indications," indications." What the dealers are waiting for now, is exact knowledge of the whereabouts of the rich strikes foreshadowed by these "indications."

The Bodie stocks have described about the same movements as the Comstock, except that the Bodie ascent of the wave was rather more rapid. A rise took place in Blackhawk. It was caused by a rumor of richness, which, according to the Bodie *Standard*, is perhaps well founded. Experts have visited the mine, which is made quite public, and have spoken well of it.

The market is no doubt active and is influencing general business, but nothing of great moment is occurring.

New Incorporations.

The following companies have filed certificates of incorporation:

QUEEN BEE M. Co.—Capital, $6,000,000. Directors—George Osgood, John Turner, E. B. Dickinson, B. B. Minor and W. H. Sears.

GIBSONVILLE G. M. Co., OF SIERRA COUNTY.—Capital stock, $110,000. Directors—John N. Kifer, J. E. Perry, Geo. McLeod, R. D. Sheppard and J. L. Gould.

THE QUESNELLE Q. M. Co., OF CARIBOO.

THE MONO AND CROSS CON. M. Co.—Directors—W. H. Dolman, George W. Rogan, H. H. Flagg, George W. Hopkins and C. W. Hoare. Capital stock $10,000.000.

APPLEGATE GRAND M. Co., DOUGLAS COUNTY, OREGON.—Capital stock, $500,000.

HIGHBRIDGE S. M. Co., NYE COUNTY, NEV.—Directors—Stephen Roberts, W. S. Gage, George Williams, John F. Cassel and David Goodman. Capital, $10,000,000.

THE MONO GOLD M. Co.—Capital stock of $5,000,000. The Directors are Thomas Bell, William M. Lent, John F. Boyd, C. A. Burgess, and Lewis Teese, Jr.

CALIFORNIA G. M. Co.—Directors—Clinton Gurnie, Fred. W. Hadley, J. H. H. Williams, James S. Kennedy and F. Stone. Capital, $10,000,000.

ESMERALDA M. Co.—Directors, C. Reilly, W. A. Williams, M. G. Nixon, E. C. Loche, John B. Murphy. Capital, $10,000,000.

CHIEFTAIN G. M. Co.—Directors, Geo. W. Kidd, L. Greenebaum, Robt. Sherwood, J. M. Verdenal, H. Charles. Capital $10,000,000.

SOUTH BODIE M. Co.—Directors—B. B. Minor, W. H. Brown, Henry Deas, E. C. Morton, Robert Barton. Capital, $10,000,000.

THE CROESUS G. & S. M. Co.—Directors—A. W. Robinson, C. W. Kellogg, P. J. White, G. Alexander and Andrew Jackson Landis. Capital stock, $5,000,000.

DEFIANCE G. M. Co.—Capital, $5,000,000. Directors—C. A. Burgess, A. Garrard, George B. Sessions, W. B. Davenport and William Willis.

CON. PACIFIC CO.—Capital, $6,000,000. Directors—J. G. McClinton, S. L. Theller, E. B. Dickinson, E. F. Preston and Nathan Atkinson.

The Fair Season.

The following is a partial list of the coming fairs. We shall be pleased to add to it if readers will send us the dates and locations of their respective exhibitions:

San Francisco Mechanics' Institute, San Francisco, August 13th to September 14th.

California State Agricultural Society, September 16th to 21st, inclusive.

Oregon State fair, at Salem, October 8th to 18th, inclusive.

Nevada State Agricultural, Mining and Mechanical fair, at Reno, October 7th to 12th, inclusive.

Montana Agricultural, Mineral and Mechanical fair, at Helena, September 23d to 29th, inclusive.

Sonoma and Marin district fair, at Petaluma, September 23d to 28th, inclusive.

San Joaquin valley district fair, at Stockton, September 24th to 28th, inclusive.

Northern district fair, at Marysville, September 23d to 28th, inclusive.

Golden Gate district fair, at Oakland, September 9th to 16th, inclusive.

Napa and Solano district fair, at Vallejo, September 3d.

Monterey county district fair, at Salinas City, October 8th to 12th inclusive.

Siskiyou county fair, at Yreka, October 2d to 5th, inclusive.

El Dorado county fair, at Placerville, September 13th to 15th, inclusive.

Santa Clara valley fair, at San Jose, September 30th to October 5th, inclusive.

Stanislaus County Stock Growers Fair, at Modesto, October 9th to 11th inclusive.

Southern California Horticultural Fair, at Los Angeles, October 14th to October 19th, inclusive.

Southern California Agricultural Society's Fair, at Los Angeles, October 14th to October 19th, inclusive.

Plumas, Lassen and Modoc District Fair, at Susanville Lassen county, October 21st to 25th inclusive.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch from Washington, D. C.

FOR THE WEEK ENDING AUGUST 6TH, 1878.

STEAM ENGINES—George E. Dow, S. F.
BALL TARGETS—Horace P. Fletcher, S. F.
PUMPS—Eugene Hawkes, San Diego, Cal.
WAGON JACKS—James B. Newland, Sacramento.
WIRE ROPE WAYS—Ambrose Blatchley, Kernville, Cal.
VEHICLE TORSION SPRINGS—Frank M. Chapin and Joshua Gersbacher, Cuffey's Cove, Cal.

TRADE-MARKS.

COFFEES AND SPICES—John Prusso, Oakland, Cal.

—The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

[Communicated.]

The Pacific Mineral Land Company.

A company will shortly be incorporated, under the above name, in this city with a large capital stock, for the purpose of acquiring and working mineral land on the Pacific coast of the United States and adjoining countries. The company will mine coal, iron, silver, gold and other minerals, sink petroleum wells, make coke and establish iron manufactories, build railroads where necessary, own and run steamers, and seek in every profitable manner to develop the resources of this coast.

A gentleman of life-long practical experience in the coal and petroleum regions of the East will devote his services to the company as President. A special feature will be made of coal, the safest and most lasting of all the minerals. Arrangements have already been made for the acquisition of valuable and accessible coal fields on the northern part of the coast, work on which will be commenced without delay. It is intended before New Year's to lay down coal of the best quality in San Francisco at lower price than has yet been done. The company will arrange for the immediate construction of large and powerful steamers suited for carrying coal, merchandise and passengers, thus ensuring the shipping of their coal at a small expense.

A sufficient working capital for all purposes will render further calls on the stockholders unnecessary, and no assessment will be levied on the stock. Every facility will at all times be offered for full examination of the company's affairs by individual shareholders. Gentlemen well and honorably known both here and in the East are interested in the undertaking, and their names are a guarantee that the affairs of the company will be conducted in a perfectly fair and honorable manner. A large amount of stock has already been applied for in this country and in Europe.

This will be the strongest company ever organized on this coast, and offers unequaled inducements for the safe and profitable investment of capital, the stability and sure rise in value of real estate being here combined with the profits of mining and manufacturing, whilst the variety of operations to be carried on reduces the risk to a minimum.

Further particulars will be announced in these columns in the course of a few weeks.

Woodward's Gardens were never more attractive than at present. Besides three lions already mentioned, six monster living alligators, several iguanas and a boa-constrictor have just been added. New stars are constantly engaged for the Pavilion exercises. Rates of admission as usual.

EXAMINE the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.94. Lewis C. Grover, President; L. Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

MODEL MAKER AND MACHINIST.—I. A. Heald, No 514 Commercial St., San Francisco, (fourth floor).

Signal Service Meteorological Report.

Week Ending August 20, 1878.

HIGHEST AND LOWEST BAROMETER.

Aug 14	Aug 15	Aug 16	Aug 17	Aug 18	Aug 19	Aug 20
29.84	29.84	29.91	29.90	29.85	29.82	29.76
24.73	29.78	29.84	29.82	29.82	29.74	29.73

MAXIMUM AND MINIMUM THERMOMETER.

64	62	62	62	62	61	61
55	55	53	52	54	53	53.5

MEAN DAILY HUMIDITY.

85	81	79	80	84	84	84

PREVAILING WIND.

SW	SW	SW	SW	SW	SW	SW

WIND—MILES TRAVELED.

287	250	268	347	233	201	268

STATE OF WEATHER.

Fair.	Cloudy	Fair.	Fair.	Fair.	Foggy	Foggy.

RAINFALL IN TWENTY-FOUR HOURS.

Total rain during the season, from July 1, 1878, .01 in.

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by SUTRO & Co.]

SAN FRANCISCO, August 21, 3 P. M.

LEGAL TENDERS in S. F., 11 A.M., 93@99.90. SILVER, 1½@2. GOLD in New York, 100⅛.

GOLD BARS, 830@910. SILVER BARS, 8@15 ₱ cent. discount.

EXCHANGE on New York, ¾%; on London bankers, 49@49¼. Commercial, 50; Paris, two francs ₱ dollar; Mexican dollars, 94@95.

LONDON Consols, 95⅝; Bonds, 103¾.

QUICKSILVER in S. F., by the flask, ₱ lb, 42½@44c.

METALS.

[WHOLESALE.]

WEDNESDAY M., August 21, 1878.

IRON.—	
American Pig, ton	23 00 @30 00
Scotch Pig, ton	28 00 @30 00
White Pig, ton	23 00 @— —
Oregon Pig, ton	— @— —
Refined Bar	2½@ 3
Horse Shoes, keg	5 00 @— —
Nail Rod	—@ 7
Norway, Oval	—@ 7
COPPER.—	
Sheathing, lb	34 @ 35
Sheathing, Yellow	21 @
Sheathing, Old Yellow	12 @
Composition Nails	24 @—
Composition Bolts	24 @—
STEEL.—	
English Cast, lb	13 @ 14
Anderson & Woods, ordinary sizes	15 @— —
Drill	15 @— —
Flat Bar	14 @ 19
Plow Steel	8½@ 12½
TIN PLATES.—	
10x14 I C Charcoal	7 50 @ 8 50
Banca Tin	23 @— 24
Australian	17 @ 17½
ZINC.—	
By the Cask	9 @— —
Zinc, Sheet 7x3 ft, 7 to 10, lb	9 @— 10
7x3 ft, 11 to 14	10 @— —
8x4 ft, 8 to 10	11 @— —
8x4 ft, 11 to 10	11 @— —
NAILS.—	
Assorted sizes	3 15 @3 25

LEATHER.

[WHOLESALE.]

WEDNESDAY M., August 21, 1878.

Sole Leather, heavy, lb	22 @ 26
Light	20 @ 24
Jodot, 8 Kil., doz	48 00 @50 00
11 to 13 Kil	65 00 @76 00
14 to 19 Kil	80 00 @90 00
Second Choice, 11 to 16 Kil	55 00 @70 00
Cornellian, 12 to 15 Kil	57 00 @67 00
Females, 12 to 13 Kil	63 00 @67 00
14 to 16 Kil	71 00 @76 00
Simon Ullmo, Females, 12 to 13 Kil	58 00 @62 50
14 to 15 Kil	66 00 @70 00
16 to 17 Kil	72 00 @74 00
Simon, 18 Kil	61 00 @33 00
20 Kil	65 00 @67 00
24 Kil	72 00 @74 00
Robert Calf, 7 and 9 Kil	35 00 @40 00
Kips, French, lb	1 60 @ 1 35
Cal. doz	40 00 @60 00
French Sheep, all colors	8 00 @15 00
Eastern Calf for Easks, lb	1 00 @ 1 25
Sheep Roans for Topping, all colors, doz	9 00 @13 00
For Linings	5 50 @10 5
Cal. Russet Sheep Linings	1 75 @ 4 50
Boot Legs, French Calf, pair	4 00 @— —
Good French Calf	4 00 @ 4 75
Best Jodot Calf	5 00 @ 5 25
Leather, Harness, lb	35 @ 38
Fair Bridle, doz	48 00 @72 00
Skirting, lb	33 @ 37
Welt, doz	30 00 @50 00
Buff, lb	18 @ 20
Wax Side	17 @ 18

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Excelsior Silver Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Potosi District, Lincoln County, Nevada.

NOTICE.—There are delinquent upon the following described stock, on account of assessment levied on the 16th day of July, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names	No. Certificate.	No. Shares.	Amount.
Floris Antunovich	234	100	$25 00
Sarah Feeney	229	25	6 25
Jerome Horn	274	200	50 00
Horn, Julia F	265	50	12 50
A W Lind	264	50	12 50
J Michelson	263	100	25 00
Adolph Wirtner	268	80	20 00
S D Steevins	218	100	25 00
A Romero, trustee	222	200	50 00
A Romero, trustee	223	200	50 00
N Dahovich	271	100	25 00
N Dahovich	272	100	25 00
N Dahovich	273	600	150 00

And in accordance with law, and an order of the Board of Directors, made on the 16th day of July, A. D., 1878, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of the company, 304 Post street, on the sixth day of September, A. D., 1878, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

FRANCIS P. DEVINE, Sec'y.

Office, No. 304 Post Street, San Francisco, Cal.

Gover Mining & Milling Company.—Location of principal place of business, San Francisco, California. Location of works, Amador County, near Drytown, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the ninth day of August, 1878, an assessment (No. 37,) of fifty cents per share was levied upon the capital stock of the corporation, payable immediately in gold coin or legal currency of the United States, to the Secretary, at the office of the Company, Room 8, No. 402 Front Street, San Francisco, Cal.

Any stock upon which said assessment shall remain unpaid, on Monday, September 23rd, 1878, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, October 21st, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

W. O. WILSON, Sec'y.

Office, Room 8, No. 402 Front Street, San Francisco, Cal

Pocahontas Gold Mining Company.—Location of Principal Place of Business, San Francisco, California. Location of Works, El Dorado County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 14th day of August, 1878, an assessment (No. 14) of One Dollar and a Half ($1,50) per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, Room No. 9, 411½ California street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 23rd day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Wednesday, the 23rd day of October, 1878, to pay the delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors

M. C. SOUTHARD, Sec'y.

Office, Room No. 9, 411½ California street, San Francisco, California.

Seaton Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Drytown Mining District, Amador County, California.

NOTICE.—There is delinquent upon the following described stock, on account of Assessment (No. 11) levied on the 26th day of June, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Thompson, W., Jr	72	15	$1125 00
Thompson, W, Jr	79	10	750 00

And in accordance with law and an order of the Board of Directors, made on the twenty-sixth day of June, 1878, so many shares of each parcel of such stock as may be necessary will be sold at public auction, at the office of the Company, Room No. 58 Nevada Block, northwest corner Pine and Montgomery streets, San Francisco, California, on Wednesday, the twenty-first day of August, 1878, at the hour of one o'clock P. M. of said day, to pay said delinquent assessments thereon, together with costs of advertising and expenses of the sale.

JOEL F. LIGHTNER, Sec'y.

Office, Room No 58 Nevada Block, Northwest corner Pine and Montgomery streets, San Francisco, California.

Office South Comstock Gold and Silver Mining Company. Notice.—The annual meeting of the stockholders of the South Comstock Gold and Silver Mining Company, for the election of Trustees and the transaction of such other business as may be presented, will be held on Monday, the 19th day of August, 1878, at two o'clock P. M. of that day, at the office of the Company. Transfer books will be closed on Saturday, August 10th, 1878, at the hour of 12 M. of that day.

J. M. BUFFINGTON, Secretary.

Office—Rooms 3 and 4, second floor, No. 309 California street, over Aetna Insurance office.

Telegraph Copper and Silver Mining Company. Location of principal place of business, City and County of San Francisco, State of California. Location of works, Gopher Mining District, Calaveras County, California.

NOTICE.—There is delinquent upon the following described stock, on account of assessment (No. 1,) levied on the seventeenth day of July, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No Certificate.	No. Shares.	Am't.
Howland, J M	Not issued	1350⅝	$ 40 52
Jones, C C	Not issued	5640	169 20
McCrea, Wm	Not issued	4999	149 97
Bollinger, J C	Not issued	17,166	514 98

And in accordance with law and an order of the Board of Directors, made on the seventeenth day of July, 1878, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the Company, Room 2, 528 California street, San Francisco, California, on Monday, the ninth (9th) day of September, 1878, at the hour of 12 o'clock, M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

I. T. MILLIKEN, Secretary.

Office, Room 2, No 528 California street, San Francisco, California.

Vigorit Powder Company.—Location of works, California City, Marin County, State of California. Location of principal place of business, City and County of San Francisco, California.

Notice is hereby given that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 1) of fifty cents (50c.) per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, Room No 1, 109 California street, in the City and County of San Francisco, California.

Any stock upon which this assessment shall remain unpaid on Thursday, the twelfth day of September, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the second day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expense of sale.

JAS. W. BAKER, Sec'y.

Office, 109 California street, Room No. 1, City and County of San Francisco, California.

WM. H. HOWLAND. WM. A. LAWSON.

HOWLAND & LAWSON,

MINING AGENTS,

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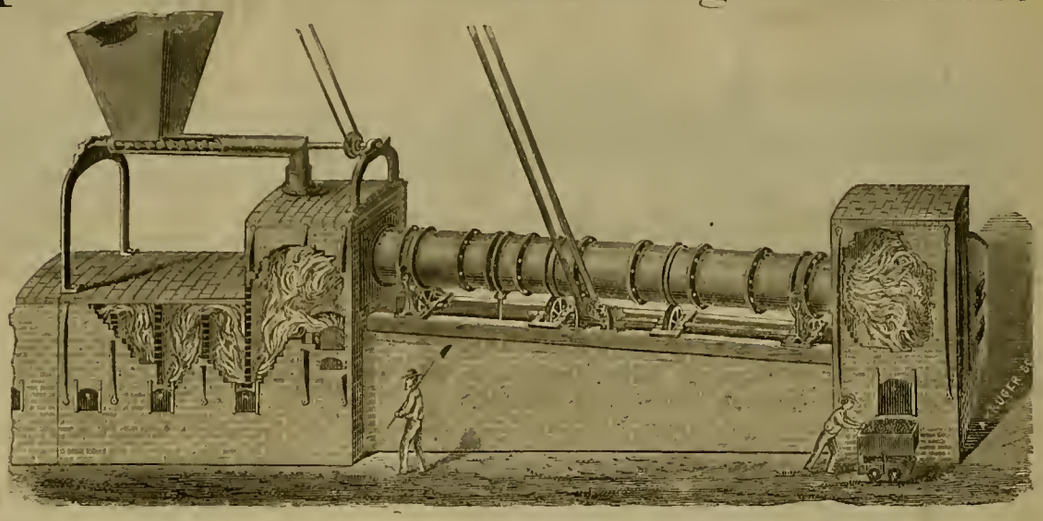

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In this Furnace, as covered by the Howell and White patents, are combined the three acknowledged requisites for the thorough and economical roasting and chloridization of ores.

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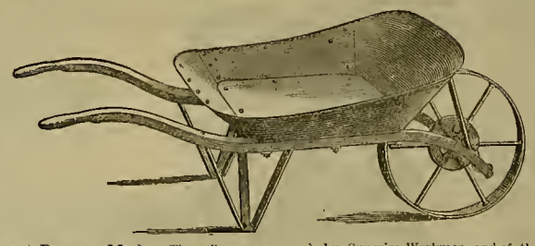

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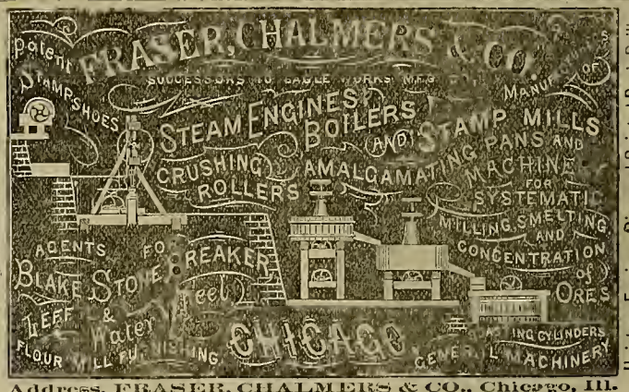
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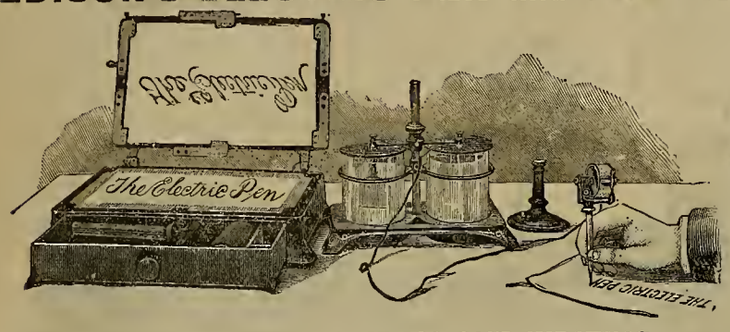

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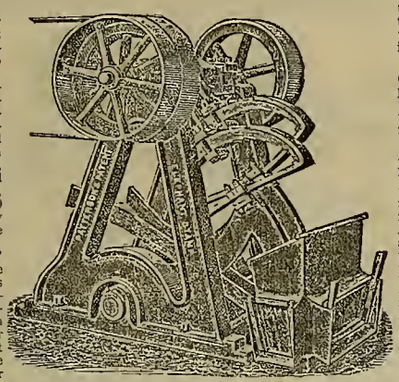
WEAR.—The "Elephant" having only two pairs, Shoe and Dies, the wear in this instance is equal to one-sixth of a 12-Stamp Battery. There being no Cam Tappets, Cam Shafts or Guides, the consequent wear on these parts is done away with; the leather thorough-brace, uniting the lever with the spring, would only require replacing at most, once a year.

POWER.—The "Elephant" only requires a seven horse power Engine to drive it, where a 12-Stamp Battery would require from 18 to 20 horse-power.

PORTABILITY.—The entire Battery, including Mortar, will weigh about six tons, thereby causing an immense saving in the way of freight to such places as Arizona, Mexico, Cariboo and Bodie. As no part of the machine weighs more than 1,800 lbs., the handling of the Machine is comparatively easy, and in places where it would be necessary to pack the Machine on mules, it could be easily made in pieces not to weigh over three hundred pounds.



The above engraving shows the Machine in exactly the position it would be placed in a mine; the reader will therefore see that all wood work is done away with, and that once the Machine is on the ground it will take but a few days to set it up and have it in full working order.

The "Elephant" can be seen working every day from 2 to 4 P. M. at No. 342 Main St, near Harrison, San Francisco. For particulars, apply to

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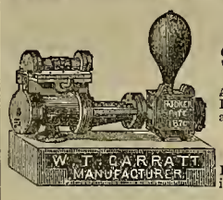

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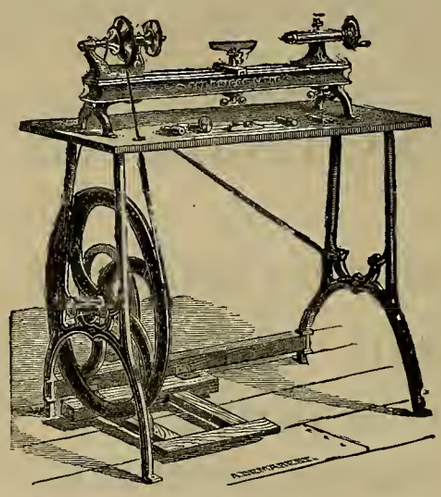

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Publishers.

SAN FRANCISCO, SATURDAY, AUGUST 31, 1878.

VOLUME XXXVII Number 9.

Measuring Rainfall and Percolation.

A few months ago a reader of the PRESS wrote to us, proposing the use of a box of earth standing on a platform scale to determine the amount of rain which sank into the earth instead of the common rain gauge, which measures the whole amount precipitated. This he thought would give a better idea of the effective value of a rainfall, because it would measure only that which went into the earth and not that which flowed away over the surface. We pointed out the manifest errors which would unavoidably attend the use of such a rain meter, and mentioned the lysimeter, which has been in use both in this country and in England, for determining the amount and quality of the water which percolates through a certain depth of soil. We believe there are three of these lysimeters now in use in this country, the latest being constructed on a farm, which a public-spirited citizen of New York State, Mr. Lawson Valentine, has placed at the disposal of the editors of the *American Agriculturist*, in order that they may test experimentally all proposed crops and cultures which they deem worthy of experiment, and for conducting other investigations. One of the first steps taken to equip this experimental farm was the construction of a lysimeter. As this apparatus is of such great possible value in this State, where so much depends upon the effective rainfall or the depth of penetration into the soil, we requested Mr. Libby, the editor of the *Agriculturist*, to send us an engraving of the lysimeter which they had constructed and details of its construction, so that any of our readers who desire to supplement the testimony of their rain gauges with a measure of the water percolating through the surface soil, might construct the apparatus for themselves.

The small engraving on this page shows the lysimeter complete. The idea in it is to put an arrangement for catching the water around a certain body of the soil without disturbing its natural condition. Thus it is obvious that water will percolate through it just as it does through the other soil in the field; and heavy rains which, in part, flow off over the surface without entering the soil, may also flow over the lysimeter and not enter into the measure of effective rain. By this it is obvious that a truer idea of the value of a rainfall can be had than by the common gauge which records all that falls.

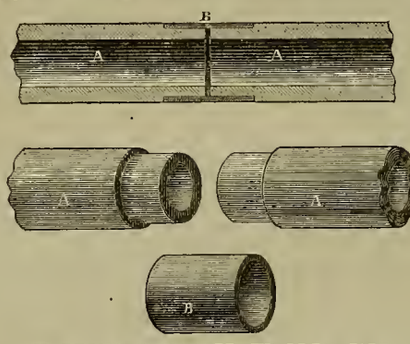
The *Agriculturist* describes its lysimeter as follows: A bottomless box, strongly made of two-inch plank, and about 45¾ inches square inside, and averaging 36 inches deep, was forced into the soil until its top was even with the surface. Then a frame of five-inch timber was let down outside the box, so that its upper side was two inches below the bottom of the box. An excavation was then made so as to expose one end of the box as shown in the engraving. A plank bottom, six inches each way larger than the box and covered with galvanized iron, was then forced beneath the box upon the timber frame by means of jack-screws, and picking out the earth before it with a sharpened stick. Thus the wood work was in place and it remained to make a water-tight joint between the sides and bottom of the box. Before the box was pushed down into the soil it was lined with galvanized iron, and the lining was allowed to extend up around the lower edges so that the metal came outside the box below. This metal was pushed down upon the iron cover of the bottom and the two were soldered together all around. The bottom inclines one and a half inches from back to front, and an opening is left at the lower side from which the water which percolates through the enclosed soil runs into a measure placed below. Room is left in front of the apparatus by stoning up the cavity dug in the earth, and this gives space to attend to the working of the lysimeter as appears in the engraving.

From this it appears that the construction of an approved apparatus for measuring amount of percolation is not expensive nor difficult. We should like to know that there would be many built in this State by interested observers, on different soils, so that the amount of percolation could be reported in connection with the figures of the rain gauge.

Horton's Wooden Pipe Joint.

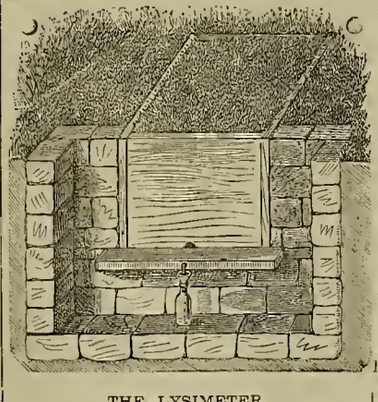
We illustrate on this page an improvement in wooden pipe joints recently patented through the MINING AND SCIENTIFIC PRESS Patent Agency by Wm. N. Horton, of this city. This class of pipe is usually formed by boring out logs, so as to provide an opening of a certain size, and one end of each log is counter bored to receive the opposite end of each section, which is made small enough to enter the counter bore, and thus the lengths are joined and the pipe formed.

Two serious defects accompany this method of joining the pipes; the first is, that the section must be made much larger, in order to give the required strength to the joints, than could be needed to resist the pressure of water from the interior of the pipe; and the second is that the outside or shell of the counter bore is frequently destroyed by dry rot, or from other similar causes, on account of its not being kept wet; and the joint of the pipe is thus ruined.



HORTON'S IMPROVED WOODEN PIPE.

It is well known that when wood is kept saturated with water it is nearly indestructible; and Mr. Horton's invention contemplates so forming the joint that the water flowing into the pipe is allowed free access to the ends of the section, so that it may permeate the entire section through its pores and drive the sap out; also, in forming the joint by the aid of an exterior surrounding band, which does away with the counter bore, and thus enables the inventor to construct the pipe of sufficient strength to resist the pressure that may be brought to bear upon it, with only about one-half the wood needed in the ordinary method of construction.



THE LYSIMETER.

The engravings show the method devised by Mr. Horton. *A A* are two sections or lengths of pipe, which are bored out to form a water passage. In order to join these lengths of pipe solidly together, and at the same time have a space between their ends which will admit water which the pressure will force into the pores longitudinally, the ends of each section are turned down or reduced as shown, and fit upon these ends an iron or other suitable band, *B*. The shoulders upon the ends formed by the reduced portions of the pipes allow them to be driven into the band so as to nearly meet; but a small space is left between the meeting ends into which the water-way pass from the interior of the pipe. This water will pass longitudinally through the pores of the wood, thus expelling the sap and water-soak the wood, which will preserve it from decay. The band, *B*, is coated with asphaltum or other preservative substance.

This construction makes a very durable and strong pipe. By the pipe being made of smaller diameter for the same sized water passage, a great deal is saved in cost of transportation, and the pipes may also be made in small sections. In ordinary pipe about four inches in length must be allowed for the joint of the section, but in this the full measurement is utilized, and there is no danger of dry rot at the joints for the reasons mentioned.

New Machinery for the Alexander Mine.

We saw this week at the Golden State and Miners' Iron Works, on First street, part of a large lot of machinery which is being shipped to the Alexander mine, at Grantsville, Nye county, Nevada. There are upwards of 150 tons of the machinery altogether. It comprises a complete 20-stamp mill, pans, settlers, etc., and two furnaces, the whole being one of the most complete dry crushing silver mills lately built. The whole order is first-class in every respect, all possible improvements having been added.

The engine has a 20-inch cylinder with 48-inch stroke. The bed-plate of the engine weighs 13,000 pounds, and the cylinder weighs 6,000 pounds. The fly wheel weighs six tons and is 16 feet in diameter. The engine is fitted with Myers' cut-off, has a shaft 10 inches in diameter and is of 200 horse-power. The stamps weigh 50 pounds.

With the mill are 12 five-foot combination pans and six nine-foot settlers. There are also two of White's roasting furnaces.

The mine for which this machinery is intended has lately had 30 stamps running on its ore, but the work has been done at custom mills and the rock had to be hauled a considerable distance. It has therefore been considered necessary to order the machinery described for the mine, which is represented to be in a flourishing condition.

CHROME IRON.—Mr. A. W. Jackson, mineralogist of the State University, gives us the following list of localities in California where chromite is found. The list is made up from the labels on the specimens in the Berkeley collection, and does not pretend any better authority: Crescent City and Rockland district, Del Norte county; Mendocino county; Cloverdale, Sonoma; Grass Valley, Nevada; Butte; Placer; Volcano, Amador; near Griswold's and at Copperopolis, Calaveras; Jamestown and Chinese Camp, Tuolumne; Aurora, Fresno; San Geromino ranch and vicinity of Mt. Tamalpais, Marin; three miles north of Knox mine, Lake; Rock canyon, near Georgetown, and Hope valley, El Dorado; 60 miles north of Santa Barbara, near the head of the Salinas river.

The Mines and the Courts.

The Supreme Court has reversed the judgment and order, and remanded the cause for a new trial in the case of P. G. Gelcich vs. Moriarty et al., and Holland et al., vs. Mount Auburn Gold Quartz mining company. The latter case is interesting. The claim which lies about two miles west of Nevada City, on Ragon Flat, was located in 1866 by O. S. Holbrook. It consists of 1,500 linear feet of a quartz lode. Subsequently it was deeded to one Solomon Johnson, who in turn deeded it in 1872 to the Mount Auburn Gold Quartz mining company, an incorporated company. This company erected hoisting works and expended several thousand dollars in working the claim up till the year 1875, when it is alleged the necessary amount of work was not expended. On the 25th of August, 1876, J. L. Holland and Edwin Tilley relocated or "jumped" it. On the 29th of the same month, Johnson, who was Superintendent of the company, commenced work on the claim, and on the 15th of September, on complaint of Holland and Tilley, an injunction was served upon him to cease work. Holland and Tilley commenced suit for the ejectment of the Mount Auburn company. Judgment was given to plaintiff and motion for new trial overruled. This, however, as above, the Supreme Court has reversed. The ground for reversion was this: On relocating the plaintiff did not mark his boundaries according to law. He posted two notices, one at the north end and the other at the south end of the claim. The law requires that the location be distinctly marked on the ground so that its boundaries can be readily traced. Hence the reversion.

W. P. Harrington, in the 19th District Court, asks that the trustees of the Warra Whata S. M. Co. be restrained from selling stock, removed from office and a receiver appointed pending a new election. The trustees, he charges, seek to dispose of the working capital for other than the original purpose.

In the same court the Rough & Ready M. Co. ask to have adjudicated the conflicting claims between themselves and the following: Justice G. & S. M. Co., Woodville Con. S. M. Co., and Woodville G. & S. M. Co. It is charged by the complainants that within two years past the Woodville G. & S. M. Co., confederating and conspiring with the other defendants to cheat and defraud plaintiff, has unlawfully entered upon plaintiff's property, and has abstracted therefrom a large amount of ore, of the value of $1,000,000; that the Justice M. Co. has abstracted $3,000,000 worth of ore; that some time in April, 1876, the defendants ran a drift or tunnel into the shaft sunk by the plaintiff on its lode or vein of ore, and built fires in said drift or tunnel, near to or in the shaft of plaintiff's mine, and smoked out workmen employed by plaintiff in its mine.

The Blue Tent M. Co. are having trouble about an old abandoned water right which they have appropriated.

The great mining suit between the Reese G. & S. M. Co. and Rye Patch Con. M. Co., came up for trial in Winnemucca. The suit involves the title to and right of possession of the Alpha mine and $225,000 damages. A jury was empaneled to try the case, and hosts of witnesses for both parties from different parts of the State were in attendance. But the case was postponed until the October term, on the defendant's asserting that the plaintiff never was, and is not now an incorporation under the laws of California or otherwise. Meanwhile defendant is enjoined from extracting ores on the plaintiff giving indemnity bonds.

Suits have been brought for ejectment in the United States Circuit Court by S. L. M. Barlow and Wm. Butler Duncan, of New York, both prominent capitalists, against the Belcher, the Tioga, and the Black Hawk Mining Companies. It is stated that these mines comprise a portion of the property of the Empire G. and S. M. Co., of New York, which was incorporated under the laws of New York in 1864; that in 1865 this company built the Empire mill at Bodie, now called the Syndicate, which cost them about $100,000, and worked their mines continuously until 1867 or 1868; that they held complete possession until 1875, when the property was sold for taxes. The company is reported to have expended from $300,000 to $500,000 in developing these mines.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—EDS.

From Arizona.

EDITORS PRESS:—Two years ago repeated shipments of silver nuggets were made from the Richmond hasin in this district to San Francisco. The claim from wbich these consignments came was described as a sort of placer, and it was] hinted that there was nothing in the vicinity indicating the origin of the deposit. I visited the Basin recently and was much interested in the place and its strange and nearly worked out eurface mines. Running across the upper or uortherly end of the depression, from which most of the nuggets were taken, there is a strong quartz vein kuown as the McMorris mine. On the upper side of the lode a spring of cool, clear water rises to the surface, and after looking at its surroundings I came to the conclusion that this spring is all that remains of a fountain that hollowed out the basin and deposited the eilver found there. In far back ages a powerful hot mineral epring probably rose on the western slope of what is now known as the Apache mountains. As the water from this fountain flowed towards the southwest it would gradually dissolve the eolid rock, and from its connection with the quartz vein, either then formed or in course of formation partly through its agency, this water would perhaps have some silver in solution. Into the basin it had created this silver would be carried, to be there deposited on flat surfaces with the cooling of the water as thin ecales, or in cavities in countless other forms. As disintegration went on, the nuggets and flakes of silver would be mixed with the soil and debris, but at the bottom on the smooth, rocky floor the deposit would he heavier than anywhere else. In the mining operations of the owners this was found to be the case, and wherever there were eeams in the rocks that could be entered by water, thin scalee of silver were detected—too thin, in most cases, to pay for the labor incurred in following them.

The appearance of the McMorris lode, near the spring, seems to prove that the two bear some relation to each other. The main lode there is very large, and sends out obliquely, on its lower or basin side, several strong spurs, heavily charged with rich ore. The same vein farther to the east and the west is small and does not appear to have either spurs or much high-grade metal. I am inclined therefore to believe tbat the McMorris mine and the basin deposit owe a good deal to the mineralized water, but then my theory after all may have nothing in it. It does no harm, however, to theorize a little in such matters, particularly where there is room for a dozen such theories to stand abreast.

Patagonia District.

A reliable California friend, who has been in the Territory for some months, writes me from Tucson in regard to the above district, which lies some 70 miles east and south of this place: "I arrived here yesterday from Patagonia district. The country is looking fine. There is green grass all over the hills. Weather pleasant. We have had showers almost every day for the past two weeks. The climate is something like that of San Jose valley. The mines are being vigorously opened and look well. The ledges are large and continue down as far as exposed. The Holland mine shows a ledge of sohd ore, 20 feet wide, which averages $100 per ton. The Washington lode has one 40-foot shaft and three others of a less depth. By these openinge it is proved that there is a continuous body of ore in the mine, 250 feet in length by 30 feet in width, and at least 20 feet in depth, which averages $114 per ton. The St. Louis mine has a shaft 50 feet deep, all in ore which averages $96. On the surface this vein is 20 feet wide. These lodes are hetween granite and limestone, the latter sometimes forming a cap over the croppings. Adjoiniug the above claims, to the south, are several old mines, worked many years ago, hut left on account of the Indians. They are patented and will soon he in operation again. The ore on the dumps is good. The Empire is one of the old mines, and near it is the San Antonio, which produced rich hullion hy means of a Mexican furnace. About five miles north from that point, on the same mineral helt, is the old Mowry mine and emelting works. A gentleman who worked it on a lease for a year and employed 150 men, made it pay handsomely, the hullion he obtained heing worth $300 per ton. He says there is plenty of ore in the mine yet and it smelts very easily. Some pockets of ore assayed as high as $1,000 per ton.

"The Lone Star is another good mine. It is thought that this lode is 100 feet wide. On the extension which is known as the Ella claim, an open cut shows 73 feet of ore which averages $40 per ton. Every one who visits the district goes away with good impressions. I feel sure we have here another Ruby Hill, such as that at Eureka, Nevada."

Short Summary—Globe District.

I give you a condensed summary of the mining news here. The Stonewall Jackson strike in the main lode improves. Three grades of ore are obtainable, $5,000, $750 and $100. A fine discovery has heen made in the Mexican mine 30 feet down; a vein four feet wide with ore assaying from $300 to $400. About 40 pounds of silver nuggets, assaying $10 to $12 per pound, have been fished up half a mile from the Mexican, and several promising veins located. Work has heen started on the Silver Belle by Oakland gentlemen. The Buckeye lode has been cut across 112 feet deep, and is over 15 feet wide. From assays it is said that the whole width will average from $50 to $75 per ton. On the hanging wall there is a very rich strike of blast sulphurets. The Miami mine looks well, hut work has been stopped on it. The Etna and Silver Era mines have 10 tons more of rich ore on the way to the Miami mill. Work has beeu suspended on the Isabella company's mines, but a road is being opened between them and Globe.

Weather pleasant and showery. Hills all green and everything in the district generally looking well. J. D. E.

Globe District, Pinal Co., Arizona, Aug. 7th.

Facts and Questions about the Phylloxera.

EDITORS PRESS:—The enclosed communication from Mr. Henry G. Hanks was lately received by the Governor, and hy him referred to me for action thereon. The session of the University having begun, I am unable to do what would doubtless he the most certaiu mode of getting the desired information, namely, to go out among the vine growers and see for myself. I have repeatedly tried, both by private letters and public calls, to obtain current information on this important subject; hut the vine growers have, as a rule, failed to respond, whether from indifference or from an unwillingness to look the matter in the face, or finally from a fear that the knowledge of the existence of the phylloxera in their neighborhood might injure the sale of their lands and wines.

It seems to me that the time for the abaudonment of this short-sighted policy has come, when it is currently reported that the business failure of a large and once prosperous association is mainly due to the ravages of the phylloxera. If the facts are not now fairly stated, and the do-nothing policy replaced by an intelligent consideration of the possible preventives and remedies, the evil will be magnified beyond its real proportions by the tongue of rumor, and whatever damage can result therefrom to the vine growers will be correspondingly increased.

I hope the questions of the Duchess of Fitz-James will reccive attention and answer from the many intelligent gentlemen able to furnish the desired information, which is fully as much needed for California as for France. Whatever replies may be given, either through the columns of your paper, or directly to this department hy letter, will he duly recorded and finally transmitted to the Duchess and to the French minister of agriculture, with credit to the several authore.

It is scarcely necessary to repeat here, at this time, my often-given assurance that all questions relating to this or any other agricultural subject, transmitted to me with the needful information in detail, will receive, as heretofore, prompt attention and investigation without charge, provided only that the question is not of purely individual interest. One question deserving immediate attention is the reported fact of the existence, within the districts invaded hy the phylloxera, of particular tracts of soil in which the ineect does not seem to he ahle to do any material injury, even to the Mission grape. If this is so, then the investigation of the peculiarities of such soil is of the most direct pecuniary interest to every vine-grower. —E. W. HILGARD, College of Agriculture, Berkeley, Cal.

Letter from Commissioner Hanks.

To His Excellency, the Governor of the State of California—Sir:—Since I have heen in Paris, I have taken considerable pains to obtain information relating to the ravages of the phylloxera, and to what has heen done in France to check them. I find at the exposition a numher of the so-called insecticides, which I have investigated as far as my limited time would allow. In making inquiry, I have formed the acquaintance of parties who arc deeply interested in this subject. I inclose a letter from the Duchess of Fitz-James, who is an extensive wine grower, and who will furnish information which may he of great interest to our State. I have since had an interview with the Minister of Agriculture, and Eugene Tisserand, Inspector-General of Agriculture, hoth of whom are very much interested in this eubject, who will furnish all the publications of the French government, and who desire such information as our State can furnish. I have thought if a committee of wine growers of California would take this matter in hand, much advantage to the State might he the result. The same gentlemeu might return answers to the questions which the Duchess of Fitz-James has asked, and which are inclosed in her letter.

I learn from the Minister of Agriculture that none of the insecticides have proved effective, and that the system of "over watering" the vines is the hest remedy yet tried. This plan, as I understand it, consists in irrigating the soil to that extent that the roots of the vinee and the soil around them remains saturated for 24 hours. I have no doubt the publications promised will give all information. I wish the magnificent publications of Mr. Edward Bosqui, of San Francisco, might be sent to the French government through the Minister of Agriculture. I am certain they would be appreciated. —HENRY G. HANKS, Exposition, Paris, France

Letter of the Duchess of Fitz-James.

The following extracts from the letter of the Duchess of Fitz-James, referred to above, will be found of interest in this connection: "As regards the chemical antidotes, I have examined and tried a great many processes, and have had no satisfaction out of any except the product of M. Tichet, chemist, 54 Rue de Lagny, Vinceunes. I think Mr. Hanks might get from him some very useful iuformation, albeit M. Tichet's practice in tbe destruction of the insect is a great deal better than his explanations. He has for seven years maintained 14 hectares against the phylloxera. I would use his process if I still had my vines. But having lost them I prefer to plant the resisting varieties."

What the product of M. Tichet is does not appear from the letter of the Duchess. The following are the questions upon which the lady asks light from California:

1. Does the phylloxera attack every sort and species of vine in California?
2. What varieties are most commonly grown?
3. What varietiee stand best against the phylloxera?
4. What is to be believed about the power of resistance of the following species, which thrive well in France as yet in the most infested districts: Yacquez, Herbemont, Rulander, Taylor, Cunningham; or the following on which opinions vary: Clinton, Concord, Morton's Virginia, Eumellan?

I possess about 700,000 vines of the abovementioned species, aged three, two, and one year. I know in my neighborhood a few Yacquez and Herbemonts, aged 16 years and prosperous.—DUCHESS OF FITZ-JAMES, St. Benezet, par St. Gilles, Gard, France.

The matter contained in these documents is o interest, although there is nothing very novel in them. It would be of value to all to collect facts concerning the real prevalence of phylloxera in this State. The search for hardy vines is wise, and the experience of the Duchess may be of advantage to us hereafter. California cannot tell her much about the vinee she names. They have not been tried to any extent here, because growers have not felt the need of insect-proof vines except in a restricted region of the State. We believe from our investigations and inquiry that the insect is at present confined to comparatively narrow territory, and it is pretty generally understood where that is located. It would be far hetter to have the eubject generally understood than to cover it up, hut one reason why the insect does not show up more generally is that it does not generally exist as yet. Our offer to make free microecopical examination of suspected vines and report results in confidence to the owners, as described in our issue of July 20th, ie still open.

Analysis of Sydney Coal.

EDITORS PRESS:—I enclose two assays of Sydney coals, which please publish for information of your readers. From another authority I learn that Greta Sydney coal is the hest that comes to this market from Australia for gas purposes, but a very inferior coal for steam. The Wallsend Sydney is counted the hest for steam; next comes Duchenfeld. Perhaps some of your correspondents will he good enough to give their experiences with eteam coals, and state the value of gas coke as a fuel compared with good coal or oak wood.

Wallsend.

A hright coal, luminated structure, well worked, breaks into irregular cuhoidal fragments, does not soil the fingers readily, contains a little fibrous mineral charcoal; epecific gravity, 1.333.

Analysis.

Moisture	2.75	
Volatile hydrocarbons	34.17	
Fixed carbon	57.22	Coke.
Ash	4.64	61.86%
Sulphur	1.22	
	100.00	

Coke much the same as Greta, but with large cauliflower-like excrescences. Ash of pinkish shade, heing white mixed with reddish particles.

Greta.

Very eimilar to Wallsend, hut with less mother-of-coal, does not soil the fingers, streaky appearance, fracture conchoidal across the layers; specific gravity, 1.289.

Analysis.

Moisture	2.25	
Volatile hydrocarbons	39.21	
Fixed carbon	54.41	Coke.
Ash	2.72	57.13%
Sulphur	1.41	
	100.00	

Coke good, firm, hright silvery lustre. Ash loose, buff colored.

The Atlantic and Pacific Forests.—No. 1.

[By PROF. ASA GRAY.]

On April 18th, 1878, after his visit to this coast, the well known botanist, Prof. Asa Gray, delivered a lecture before the Harvard University Natural History Society, on "Forest Geography and Archœology," which consisted in the main, of the meteorological conditions which prevail on the Atlantic and Pacific slopes of this country, and a comparison of the forests indigenous upon them. The subject is of such general interest and the writer of such high repute, that we shall present the lecture in full in a series of articlee as our space permits. For the ability to do this, we are indebted to the *American Journal of Science and Arts:*

It is the forests of the Northern temperate zone which we are to traverse. After taking some notes of them in their present condition and relations, we may inquire iuto their pedigree, and from a consideration of what and where the componeut trees have been in days of old, derive eome probable explanation of peculiarities which otherwise seem inexplicable and strange.

In speaking of our forests in their present condition, I mean not exactly as they are today, hut as they were before civilized man had materially interfered with them. In tbe district we inhabit, such interference is so recent that we have little difficulty in conceiving the condition which here prevailed, a few generations ago, when the "forest primeval," described in the first lines of a familiar poem, covered essentially the whole country, from the Gulf of St. Lawrence and Canada to Florida and Texas, from the Atlantic to beyond the Mississippi. This, our Atlantic forest, is oue of the largest and almost the richest of the temperate forests of the world. That is, it comprisee a greater diversity of species than any other, except one.

In crossing the country from the Atlantic westward, we leave the forest behind us when we pass the western bordere of those organized States which lie along the right bank of the Mississippi. We exchange it for prairies and open plains, wooded only along the watercourses; plains which grow more and more bare and less green as we proceed westward, with only some ecattering cottonwoods (*i. e., poplars*) on the immediate banke of the traversing rivers, which are themselves far between.

In the Rocky mountains we come again to forests, but only in narrow lines or patches; and if you travel by the Pacific railroad, you hardly come to any. The eastern and the interior desert plains meet along the comparatively low level of the divide which here is so opportune for the railway; but both north and south of this line the mountains tbemselves are fairly wooded. Beyond, through all the wide interior basin, and also north and south of it, the numerous mountain chains seem to be as bare as the alkaline plains they traverse, mostly north and south, and the plains bear nothing taller than sagebrush. But those who reach and climh these mountains find that their ravines and higher recesses nourish no small amount of timher, though the trees themselves are moetly small and always low.

When the western rim of this great hasin is reached there ie no abrupt change of scene. This rim is formed of the Sierra Nevada. Even its eastern elopes are forest-clad in great measure, while the western bear in some respects the nohlest and most remarkahle forest in the world; remarkable even for the number of species of evergreen trees occupying a comparatively narrow area, but especially for their wonderful development in size and altitude. Whatever may be claimed for individual eucalyptus trees in certain sheltered ravines of the southern part of Australia, it is probahle that there is no forest to be compared for grandeur with that which strctches, essentially unbroken, though often narrowed and nowhere very wide, from the eouthern part of the Sierra Nevada in lat. 36° to Puget eound beyond lat. 49°, and not a little farther.

Descending into the long valley of California, the forest changes, dwindles and mainly disappears. In the Pacific Coast Ranges it resumes ite eway, with altered features, some of them not less magnificent and of greater heauty. The redwoods of the coast, for instance, are little less gigantic than the big trees of the Sierra Nevada, and far handsomer and a thousand times more numerous, and eeveral species which are merely or mainly shrubs in the drier Sierra, become lordly trees in the moister air of the northerly coast ranges. Through most of California these two Pacific forests are separate. In the northern part of the State they join and form one rich woodland belt, skirting the Pacific, backed hy the Cascade mountains and extending through British Columbia into our Alaska territory.

So we have two forest regions in North America, au Atlantic and a Pacific. They may take these names, for they are dependent upon the oceans which they respectively border. Also we havc an intermediate isolated region or isolated lines of forest, flanked on hoth sides hy bare and arid plaius; plains which on the eastern side may partly he called prairiee, on the westeru, deserts.

This mid-regiou mountain forest is intersected hy a transverse helt of arid and alkaline plateau, or eastward of grassy plain, 100 miles wide from north to south, through which passes the

(Continued on page 135.)

MECHANICAL PROGRESS.

Effects of Forging on the Structure of Iron.

We have formerly alluded to the papers read at a meeting of mechanical engineers at the Paris exposition, by M. Fresca. It seems that this expert has been requested to pursue his subject "the flow of solids" more fully, and his essays are printed in foreign journals. We take therefrom a paragraph concerning the effect of forging: The object of the author's early discussions on the forging of iron was to show the tendency to parallelism of all the fibers which originate in drawing-out under the hammer, and which are separated from the neighboring fibers by a cementing substance derived from the incorporated cinder, which fills up all the void spaces between the fibers. This matter is frequently of a vitreous nature, very rich in oxide of iron, and when it is not burned off or pulverized at the surface of the piece when in the hands of the smith, it follows all the varieties of form to which the piece is shaped in its several parts. It has been shown, nevertheless, that the deformation may be only superficial when the action of the hammer was mild, whilst the influence of a more powerful blow, such as is practiced in industrial operations, may be felt to the core. An oblong piece of iron may then be compared to a bank of parallel threads, which will interlock with each other when it is attempted to draw them out lengthwise, but which will separate in a much less regular manner when they are drawn in the crosswise direction, at the risk of throwing into confusion the regularity of the original arrangement; forming knots and voids which must evidently weaken the power of resistance which would be possessed by the piece under other conditions. This effect is well exemplified by the specimen of a railing bar, in the formation of which a rectangular bar is transformed, in respect of its transverse section, into a number of rectangles and circles regularly distributed, the fibers in the circular parts losing the parallelism which is visible in the rectangular parts. This condition would certainly be critical, were it not that the central part of the enlargement was afterwards to be bored out. The interposition of the friable silicates between the fibers which are more properly metallic, ought to be seriously taken into consideration in this case as in many others. At present a few of the more characteristic facts may be noticed. From the fact that iron wire of good quality is capable of supporting, before giving way, loads much greater than ordinary iron, a manufacturer of best scrap iron tried to work it from piles exclusively composed of wire. A longitudinal section of the bars manufactured in this manner having been oxidized, reveals the filiform structure of the bar much more clearly than any of the specimens of merchant iron. There is exhibited a specimen taken from an old railing at the Conservatoire which broke spontaneously in its place. Having a greater proportion of the silicates in its composition, which had been imperfectly removed in the process of forging, this specimen exactly reproduces an analagous type. On the contrary, when the best Swedish iron is submitted to the same operation it gives but the faintest indications of longitudinal striæ, which sometimes can only be produced by taking special pains with that object.

DRY DOCK WORK.—The *Iron Age* describes some work in dry docking, which it claims is ahead of the usual run. It says that the Inman steamer *City of Chester*, when about 350 miles from New York, had the misfortune to break her propeller so badly as to utterly disable her. It was found upon examination that the boss was broken in two parts. The question of repair was a very serious one, for the *City of Chester* is, if we remember rightly, the third largest vessel afloat. It happened that the Erie Basin was not available, as the repairs and enlargement have not yet been completed. It was therefore necessary to attempt the use of the largest of the East river sectional docks. The vessel, although something more than 100 feet longer than the dock, was successfully put in position, raised, and the substitution of a new propeller accomplished without any delays or difficulties. This is the largest vessel that has ever been raised on a floating dock in this country, and we have heard it said that the feat has never been equaled abroad. Probably the Bermuda floating dock is large enough for the purpose, but we believe it has not yet been tested by a ship of anything like the size of the *City of Chester*. That the dock was taking a very heavy load was made apparent by the unusual depth at which it floated. The repairs were quickly made, and the vessel was ready for sea on Sunday morning at 10 o'clock, having been on the dock from Wednesday morning till Saturday afternoon.

A MASSIVE DRAIN PIPE MACHINE.—Prof. E. V. Gardner lately delivered a lecture in London on "Clay and the Potter." We find therein a description of what is called the plunger drain-pipe making machine. It occupies two floors of a large building, and consists of a steam cylinder 3 feet 6 inches by 4 feet; within the cylinder is a piston. The piston-rod is attached at its lower end to a plunger. This plunger stands over and fits a dough chest. The bottom of the dough chest has a mold attached, which forms the socket of the pipe. At one time the cylindrical portion of the pipe and the socket were made in two distinct operations, and were afterwards luted and joined together. The dough chest is first filled with dough, then the engineer actuates a steam lever when with a mighty blow down comes the plunger, and forces the clay into every crack and cranny of the socket mold. The next motion of the machine removes the socket mold and raises a table to support the pipe in its passage out of the machine. A second blow from the plunger delivers the pipe socket complete, a wire cuts off the pipe to a proper length, and a traveling table removes it from the machine. This machine will turn out from 12 to 50 drain pipes a minute, according to their diameter. Pipes of 18 inch or 2 feet diameter are manufactured at the rate of 40 or 50 an hour.

PEAT MADE INTO CEMENT.—One of the most novel manufactures proposed abroad is that of Mr. J. C. Russel, of London, who makes cement of peat. The peat as cut from the bog is first dried by any suitable means, and broken up or pulped with nearly its own weight of gas tar. The peat or tan, as the case may be, is put into a kettle, and may, if desired, be well mixed with a sufficient quantity of cocoanut fibre, or oakum, or cotton waste, or small twigs, or leather, or bulrushes, or grasses, or any of these together, or any material of a fibrous nature to give the product sufficient tenacity. The mixture is then mixed with either a combination of gas tar, pitch, Stockholm tar, Trinidad pitch, naphtha, benzole, spirit of turpentine, quicklime, hydraulic lime, chalk, pezzuolan, well washed or sifted sharp sand, flint glass in fine powder, any aluminous, calcareous, or silicious minerals or mixtures. Portland or hydraulic cement, iron filings or horiugs, slag, or scoria. The whole mass is well stirred, and heated by means of super-heated steam or otherwise until the materials which are capable of being softened or melted by a low heat that will not destroy the peat or tan, are melted or softened enough to enable the different materials used to become thoroughly mixed together, and the whole mass is finally raised to a temperature of at least 400° Fahrenheit. When used for paving purposes the material is removed from the receptacle in its heated state, and spread over the prepared surface or foundation of the road or other place, and consolidated by means of hot beaters or pressures until it is thoroughly set and even. In making drain pipes, the material in a hot state is transferred to suitable molds or to a drain pipe making machine, and the pipes are made in the usual way of making earthenware pipes or otherwise.

STOWING JUTE TO PREVENT DECAY. — The difficulty of transporting jute from Calcutta to Dundee and other British ports in a satisfactory condition is one which has constantly exercised the minds of those engaged in the trade. The chief cause of the bad state in which much jute reaches this country is what is known as "sweating." The bales are tightly pressed into the holds of the vessels soon after the crop is grown, and with the working on the passage steam rises from them, and, although there are numerous ventilators, these do not prevent a considerable quantity of water collecting in the form of beads on the under side of the upper decks and on the sides of the vessel. The result is that water gets to the jute, and rots it to such an extent that many bales on their arrival are not fit for use. According to the *British Trade Journal*, an admirable arrangement to prevent this destruction of cargo has been introduced in the ship *Morayshire*, one of the Dundee jute fleet: To save time in loading, permanent dunnage has been placed up the side of the ship, and as a space is left between it and the cargo, the water, instead of injuring the cargo, finds its way to the wells. The under side of the deck boards has been laid on an angle, and the result is that the "sweat" is conducted to the sides, and by them to the wells. That this system works well is seen from the state in which the bales were recently put on shore from the *Morayshire*, those that may be said to have been most exposed to danger having turned out without the least damage.

RAILROAD LAMP.—A Connecticut inventor has devised a safety lamp for railroad cars. A kerosene lamp is placed outside the car at one end, throwing its light by a reflector into a tube a foot and a half in diameter, which runs alongside of the ventilating deck. At intervals the tube is "tapped" for light, a system of reflectors distributing the light through the interior of the car. An attachment is provided which extinguishes the light the instant the lamp is off its balance, so that in the event of an accident, it is claimed that no fear of fire need be apprehended. The tube conducts the light so admirably, it is said, that fine print can be read at a distance of 40 feet from the lamp.

PROGRESS OF SHOE-MAKING MACHINERY.—Forty-five millions of pairs of sewed shoes and 55,000,000 of pairs of pegged shoes were made and sold by the manufacturers of the United States in 1877, and 85% of the work done on these shoes was done by machinery. The uppers are cut out by hand, simply because of the variableness of the quality of the leather in the same skin. The soles are cut out by machinery, and the binding, pasting, closing, crimping, stitching, heeling and polishing are all done by machinery, without the aid of human hands.

SCIENTIFIC PROGRESS.

Archæology in the Mississippi Valley.

The *Popular Science Monthly* calls attention to the archæological investigations which are in progress in the "Great American Bottom," lying on the east side of the Mississippi, in Illinois, between Alton on the north and Chester on the south, and having an average width of eight or nine miles. The remains of ancient occupation there abundantly found prove the mound-builders were not blind to the agricultural value of this remarkable tract. It was indeed "one of their greatest seats of empire," in the language of Mr. H. R. Howland, who has published, in the *Bulletin of the Buffalo Society of Natural Sciences*, an account of certain notable archæological researches made in the "American Bottom." The mounds in this tract seem to have been divided into three principal groups: one lying within the limits of East St. Louis; another on the banks of Long lake, 12 miles northward; and the third, one of the most extraordinary groups in this country, between Indian lake and Cahokia creek, some six miles from the Mississippi, and eight miles to the northeast of East St. Louis. In this last group is the great Cahokia mound, by far the most important monument left by the mound-builders. The several groups are connected by lines of mounds at irregular intervals, and the total number is at least 200. Some two or three years ago Mr. Howland, having learned that one of the mounds in the second group was being removed to procure material for road making, repaired to the spot and found the work of destruction already well advanced. In the meantime some interesting discoveries had been made. At the hight of four or five feet above the base of the mound the workmen came upon a considerable deposit of human bones, and on the same level were discovered a number of valuable relics, some wrapped in a sort of matting. This was made of a coarse, cane-like fiber, simply woven without twisting, the flat strands measuring about one-eighth of an inch in width. Among the articles found were several tortoise shells of beaten copper. One of these was about one sixty-fourth of an inch thick, two and one-eighth inches long and thirteen-sixteenths of an inch in hight. This was the largest one of three in the author's possession. Their shape is remarkably true, the workmanship evincing delicate skill. Each tortoise shell appears to have been originally covered with several wrappings; first a woven cloth of vegetable fiber, then a softer, finer fabric of rabbit's hair apparently, next a membranous coating, finally a layer of non-striated muscular fiber, possibly intestine or bladder. Besides these singular objects are two specimens of the lower jaw of the deer, the part which contains the teeth being encased in a thin covering of copper, and the whole wrapped in the same manner as the tortoise shells. Other relics found in the same mound, specimens of handicraft, sea shells from the Gulf of Mexico, etc., give evidence of the high grade of technical skill and the far reaching intercourse of the prehistoric people who, in the long-forgotten past, inhabited the "Great American Bottom."

Examination for Trichina.

We are not aware that the dread trichina has yet been found alive in this State, though no one can tell how soon it may appear. Notes of the best ways to recognize it may be of value to our amateur microscopists. For a first examination under a microscope, use a one-inch objective. Place a fine piece of the muscle in question on a glass slide in a drop of serum, or aqueous humor, or a 1% solution of common salt. Teaze out the fibres and separate them from one another by means of fine needles set in sticks for handles; keep the eye all the while on the work, and watch for the dim outlines of the worm. Perhaps the cyst will appear first; it may be that your manipulations will have torn the cyst and let the worm out. A little dilute hydrochloric acid added when the cyst is once discovered with decalcify it and render the parasite visible through its translucent walls. When the tissue is well displayed by the above means, a thin glass cover should be placed over it; the focusing will be better and the parts more distinct. Judicious pressure on the cover glass may often be made to bring the trichina into view by thinning and displacing the parts under it. It is often an aid to use some staining fluid; Beale's carmine, or the hæmatoxylon fluid. I have have often placed a drop of this fluid at the edge of the cover glass, watching the field while it made its way by capillary attraction among the fibres of the tissue, and have seen the outlines of the parasite come out clearly and distiutly when nothing could be seen before.

The examinatiou by thin sections may be practiced with advantage. If the muscle be carefully dried, very beautiful sections may be made with a sharp razor dipped in dilute alcohol. These may be easily handled with a camel's hair pencil. The thinnest should be placed upon a slide under a cover glass, and may be examined directly in staining fluid or in the salt solution. Excellent sections may be cut from frozen tissue or from tissue soaked for a few weeks in strong alcohol, or in a 10% solution of bichromate of potash.

The Intra-Mercurial Planet.

Of course the discussion of the existence of a planet with an orbit within that of Mercury, begins afresh upon the claim of discovery during the eclipse being advanced by two observers. The following are the records of the discoverers: Prof. J. C. Watson, of Ann Arbor, says: I have the honor to report that at the time of totality I observed a star of the four-and-a-half magnitude in R. A. 8h. 26m. dec. 18 deg. North, which is, I feel convinced, an intra-mercurial planet. I observed with a power of 45, and did not have time to change the power so as to enlarge the disc. There is no known star in the position observed, and I did not see any elongation, such as ought to exist in the case of the comet very near the sun. The appearance of the object observed was that of a ruddy star of the four-and-a-half magnitude. The method which I adopted prevents the possibility of error from wrong circle readings; besides I had memorized the Washington chart of the region, and no such star was marked thereon. By comparison with the neighboring stars on Argelander's scale, the magnitude of the plan would be the fifth, although my direct estimate at the time of the observation was four and a half as stated.

An amateur, Mr. Lewis Swift, of Rochester, N. Y., shares with Prof. Watson, of Ann Arbor, the honor of rediscovering Vulcan, the hypothetical planet of Le Verrier. The independent statements of Mr. Swift and Prof. Watson go far, by their coincidence, to prove the rediscovery. Mr. Swift says the new planet was to the southwest of the sun about three degrees off (a distance, say, about six of the solar diameters) and was of the fifth magnitude. Prof. Watson hooked the same object southwest of the sun, about two and a half degrees distant, and rated its magnitude at four and a half. There is here sufficient difference of data to show no understanding between the two observers to make out a case. In the haste of the work degrees of distance and magnitude could only be guessed at. The agreement of the two men is near enough to establish very strongly the existence of the planet Vulcan, when it is known that no fixed star (visible in the eclipse) occupied either of the assigned positions.

The finding of Vulcan amid such difficulties sheds lustre on American science, which has but lately, in the department of astronomy, won the blue ribbon with the moons of Mars.

HAYDEN'S SURVEY IN THE FIELD.—Dispatches from Washington contain a letter from Prof. F. V. Hayden, in which he gives notes of his field operations. He says: Two divisions of the survey under my charge left Granger station, on the Union Pacific railroad, on July 24; one division, under Mr. Garnett, started northward of the valley of the Green river for the Yellowstone Park, and the other division, under Mr. Clark, for the Teteou district. No information has been received from them. The primary transportation division, under Mr. A. D. Wilson, and the photographic division, under Mr. Jackson, left Point of Rocks station, on the Union Pacific railroad, July 24, and proceeded northward toward the Wind River mountains. Important observations were made of the eclipse of the sun, July 29th. The first primary station has been made on the Wind River peak, and we are near the northern end of the range. We then attempt the ascent of the Grand Teteon. The two parties will then separate. Mr. Wilson goes to Henry's lake to make a primary station, while the party under Mr. Jackson will proceed at once to the Park. We have been eminently successful so far in every undertaking, and have secured much valuable information. We have no trouble from Indians. Some of the Bannocks are now camped, fishing and hunting, within a few miles of us, but most of them have just returned to their reservation near Fort Hall. They are understood to be perfectly peaceable. It is not probable there will be another opportunity to communicate with the Department before some time in September, when we reach Monmouth Hot springs, in the National Park.

ELECTROSCOPE OF SILK.—M. Rameaux has recently exhibited before the Societe de Sciences of Nancy a simple and sensitive electroscope. It consists of a fine fiber of white silk, fixed at one end by means of a little wax to any support, and free to oscillate in any direction under its point of attachment. A single thread would, of course, suffice for the ordinary purposes of electroscopy properly so called, but it is preferable to employ two near each other, taking care to space them so that they cannot foul each other during their swing, or influence each other reciprocally. One of the threads is charged by means of a glass rod with positive electricity. Everybody who attracts one of the threads so charged and repels the other is necessarily electrified. The other is charged by means of a stick of resin with negative electricity. Its electricity is of the same sign as that of the thread which it repels. The sensibility of these electroscopes is greater within certain limits as the threads are made finer, longer and less conducting.

ANTIMONY IN BATTERIES.—Mr. R. J. Nunn calls the attention of electricians to the use of antimony as a negative element to replace carbon in some galvanic batteries where sulphuric acid is used as the exciting fluid. He mentions among its advantages its cheapness, the absence of scaling and disintegration, and the fact that galvanization begins almost immediately on immersion.

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

CALIFORNIA.

AMADOR.

Bunker Hill.—*Ledger*, Aug. 24: Looks well. Last run averaged $17. Ore in sight to run 10-stamp mill two years. Shaft sinking satisfactorily; 50 feet out the 100 finished.

Gover.—Quantity and quality of ore improved. New shaft down 815 feet; three-foot ledge of excellent rock at bottom. In other portions of the mine the ore is seven feet and over, in width. As with other mines of the county, the ledge has shown signs of pinching out only to expand again with good promise.

Items.—H. Reese, present owner of the Hercules mine near New Chicago, will proceed at once to develope it. The old Philadelphia mine's 20-stamp mill is being put up at the Centennial. Dr. Folsom, who is to introduce the Willard roasting furnace, will shortly open an assaying office in Jackson. Work resumed on the Moore mine; powerful hoisting works and a small mill are to be put up. Steam power may soon avoid all difficulties from an intermittent water supply at the Lincoln mine. Nearly 100 Chinamen are employed at the Carbondale coal mine. Since the 20th the quartz mills from Jackson to Drytown have been idle owing to a break in the ditch. The Oneida discharged this week 10 or 12 miners. The last Montirichard clean-up yielded above the previous run.

CALAVERAS.

Hydraulics.—*Chronicle*, Aug. 24: The water supply has failed and all the claims are making final clean-ups. This is a disappointment, for last winter was a comparatively wet one, and it was thought the placers might he run well into September.

Whisky Slide.—The contract recently let for sinking the shaft at the Whisky Slide mine, Jesus Maria district, is finished and the work of crosscutting the ledge was commenced last Tuesday. The shaft is now 130 feet deep. At that point the ledge shows splendidly. The vein is about six feet in width, all milling ore. A fair proportion of the rock carries free gold visible to the naked eye.

Items.—Pumping is prosecuted energetically at the Banner. The Sundermier mine, at Independence has sent to San Francisco 500 pounds of quartz specimens.

INYO.

General Outlook.—*Independent*, Aug. 17: There is greater inquiry for mining prospects and more new discoveries weekly reported than at any time for years past. Old districts are producing new ledges of excellent prospect. The new Byrnes discovery has drawn many towards Deep Springs. Capt. Endy is taking out rich gold ore from new openings on the Eclipse The old Waucoba mines, in new hands, promise well. Old mines and new discoveries near Swansea will aid that region. Everything on Kearsarge hill and in Alabama is on a more solid basis than ever before.

MONO.

Bodie District.—Every week the report from this district is most glowing. Prospectors and influential mining men are arriving every day. New claims are being located. "From the Blackhawk on the north to the Sigourney on the south, the hills are fairly alive with miners." Each issue of the Bodie *Standard* contains reports from mines almost numberless. So many of them are there that it is impossible to notice all even with hare mention. This week the Blackhawk with its handsome strike of a 3-foot ledge (propably a fissure vein) of high-grade ore; the Standard in which an incline has followed the ledge to a depth of 800 feet, and now finds assays at the bottom averaging $125; and the Booker, with its excellent prospects, have received the lion's share of notice this week. Those that have established an undeniable reputation do not require mention as much as others that are struggling upward. We try to give each its turn.

Syndicate Tunnel.—The main tunnel is in 1651 feet, the face in hard porphyry formation. The ground works better than for a month past, The East crosscut is in 360 feet, face also in porphyry. Both main and cross have cut quartz veins.

White Cloud.—Work resumed. Combined with the Red Cloud on the south, the company is running a shaft on the line. It is 30 feet down, and a 10-inch ore stratum is running in the bottom.

University.—Shaft, 60 feet. Ledge, 3 feet. Ore from the 18-foot drift is being worked in an arastra. About three tons extracted daily.

Alabama.—Prospects of a good ledge. Shaft 65 feet. Will go 50 feet deeper.

May Belle.—An incline is to follow the ledge down 220 feet. Decomposed quartz and clay in the bottom of the incline.

Concordia—This claim is parallel to the Red Cloud and 400 feet west. Promising 2-foot ledge seems inclined to widen. The shaft will go 100 feet deeper.

Ray of Hope. This is the first north extension of the Sigourney. It was located by Isaac Misamore. Shaft, 20 feet; formation, favorable.

Other Mines.—The shaft in the Express is down 70 feet; the bottom drift is in 25 feet; the ledge is very small.—Eighty feet down on the Imperial shaft a 3-foot ledge was struck, but a cave necessitates a new shaft, which will be sunk at once. The Humboldt shaft, already down 45 feet, will be continued as soon as timbering is finished.—The Rustler shaft is 32 feet deep, the ledge 10 to 14 inches wide, pitching east.—The Dale ledge is about 1 foot wide, and promises to widen; the shaft is down 11 feet.—The Sunbeam owned by S. E. Curria and G. Menz is a new location, and work has but just commenced.—The South Burgess shaft is down 70 feet, and the owners are enthusiastic.—The Niagara has but just commenced.—The Buffalo shaft is down 25 feet.—The Hylridge shaft, down 15 feet, is meeting with strata. The Little Rock shaft, down 10 feet, is reported in excellent condition.

Dog Town Placers.—For a long time very little work has been done on these placer diggings, but with the revival of prospecting in this section, parties are again turning their attention to placer digging and there are now about 20 men at work. The diggings cover several thousand acres and are said to turn out handsomely. Heretofore the great scarcity of water has been the drawback to their development, but there seems to be no doubt that an immense volume can be brought from the lakes in the mountains, a distance of perhaps three-fourths of a mile, to Greene river, and from there of course follows a natural channel to the claims. Some think water, at a very small outlay, could he brought from Twin lakes.

NEVADA.

Swiss-American Company.—Grass Valley *Union*, Aug. 25: This new organization of San Francisco capitalists will work on the western portion of New York hill, on the old Victor and Emmet ground. It is near the late rich discoveries on that favored hill. The claim is 1,900 feet in length, and is bounded on the west by the New Rocky Bar, on the south by the Ford & McDonald, on the southwest by the Grass Valley or Bobby Smith claim, and on the north by the Black Lead. It will be seen from this, to those who are familiar with the claims in that part of the district, that the Swiss-American is most favorably located. Nothing of a systematic character has yet been done on this ground, the owners not being prepared to put up necessary machinery. The ground has been long held by working miners and more or less work has been done upon it, but nothing of a systematic character. The deepest shaft has been sunk to a depth of only 40 feet, and the crushings of rock have paid from $10 to $45 per load. It has also produced some very rich specimens. The ledge at the bottom of the 40-foot shaft shows a strong two-foot ledge. It is believed that this ledge is the same as that in adjoining ground, or the same system of ledges which are rich gold bearing that are found so near together there. A perpendicular shaft will be sunk 125 or 150 feet, then a crosscut made to the ledge. The shaft will be on the western part of the hill, about 400 feet west of the Ford & McDonald shaft and east of the road leading to the old North Star mine. The Phenix hoisting machinery has been bought and is expected to be in running order in from two to three weeks. Thomas Cracklin is Superintendent.

Items.—In the Derbec mine, 55 tons of gravel gave from 80 out of about 600 feet of boxes a yield of at least $13.50 to the ton. The Belle or Green Emigrant claim, near Auburn, has lately cleaned up over $11,000. The ledge in the Brunswick drift of the New England mine is four feet thick and heavily sulphuretted. The Last Chance mine, near Omega, is about to be worked. The new air drills at the Murchie work well; the incline goes down rapidly; the new battery will crush about 30 tons per day. The Live Oak company are applying for a U. S. patent to their quartz claim in the south end of Grass Valley township. John Van Martin, Cleveland and others have struck favorable gravel in their Round mountain tunnel.

PLACER.

You Bet.—Dutch Flat *Forum*, Aug. 22: The mines are all running here yet, with favorable results. A blast of 800 kegs of powder was exploded in the Brown's Hill claim, which did all that could he expected. The Waloopa is running yet and paying very well. The Nevada company have three claims running yet, all of which are panning out splendidly. The Hussey claim is running and paying first-rate.

Greenwood.—*Herald*, Aug. 24: Frank San Francisco, A. Lee and another prospector, recently struck near Greenwood a ledge so rich that they have been able to make from $20 to $30 per day by crushing and panning out the decomposed rock. Besides this, they have ready some milling ore that may reach into the hundreds.

Items.—The Hayward mines at Chalk Bluff are still running. L. Moore, J. Hughes, Dr. Dozier, and another prospector, have struck in Ophir district a ledge that assays over $1,000 to the ton.

SHASTA.

Copper City.—*Reading Independent*, Aug. 22: It is thought that the Northern Light has very good prospects. At last accounts the winter cave of the bank and tunnel had not yet been cleared away; but work with that end in view was vigorously progressing. There is said to be sufficient ore in sight to justify the building of a mill. The company are now constructing a wagon road from their mill to Copper City, and as soon as completed they intend to haul down and have 100 tons crushed in the Extra company's mill. The other mines of the district are producing ore in most cases equal to that of the Northern Light, and have all good ledges.

SIERRA.

Items.—Downieville *Messenger* Aug. 24: Manson & Archambault are getting the machinery fixed at the Pliocene mine preparatory to sinking. They will put in a steam pump capable of throwing at least 80 inches of water, and with its help there is no doubt of their being able to keep the shaft clear. The pump was formerly used at the Independence mine. The York brothers have contracted to prospect in the river below Downieville for a silver ledge supposed to cross the stream somewhere there. Mr. Benham, superintendent of the Oriental quartz mine and others have relocated the Oak Flat claim, purchased the mill and will develop the property. The Sierra Buttes company are taking out good milling ore from the Independence ground.

SISKIYOU.

Empire Mine.—Yreka *Union*, Aug. 24: The new mill superintendent Mr. Ferguson has arrived, the flume and ditch are completed, and it is hoped that a start will soon be made. This mine is being opened by citizens, who, knowing little themselves about quartz mining have engaged competent men. The interests of the county will rise or fall according as this enterprise proves to be success or failure.

Hamburg Bar.—Encouraging news comes from this region. The last winter slide in the McCrary and Marten claim has been away, the channel has been reached and large quantities of dust are being taken out. Below this claim, on McCrary Bros.' claim, last year's tailings are being washed, yielding $100 per day. These tailings are exposed to the air for this great length of time and to soften them in a measure. In Mr. W. B. Morgan's claim, below Hamburg, but in the same channel, over $900 was taken out last week. Kittlewood & Co., who have the large claim in the river, above Hamburg have got their derrick in.

Items.—A rich quartz ledge has been struck in the Pacific mine. Cornish & Co. will soon finish their crushing and clean up. Warren & Nesbit have already cleaned up and will start their mill on rock from another ledge.

TUOLUMNE.

Philadelphia Gravel Mine.—*Independent*, Aug. 17: This mine is 13 miles northeast from Columbia, between the middle and south forks of the Stanislaus. It covers 600 acres, of which over two-thirds is gravel. A brief supply of water was obtained from Rose creek, and with one "giant" five-inch nozzle, under 200 feet pressure, eight men in 29 days secured $4,150. Now they have no water and are preparing to obtain a permanent supply, either from the middle fork or from the reservoirs on the south fork. When the water comes they will double forces for perpetual work.

Items.—Jones and Woodman, *alias* Star mine, is in a dry and lonesome place just now. Riverside mine, with 20 men and 20 stamps, all busy, does more than pay expenses while it drives its tunnel in from the level of the mill site. The Evans mine, with one arastra, makes money while it pushes its drifting. The Garrote gravel mines have suspended operations for the present, and work will hereafter start in at another point. In the meantime the company are disposing of the water from their ditch to the other mining companies in that section. Phelps, Shepard & Cowie have taken down and broken up the "giant crusher" on the Alahama claim, and have removed it to the foundry to he melted over for other uses. O. Cowan is hauling rock to his mill on Brown's Flat from the Jack Barry claim near Dragoon gulch. The ore improves as sinking progresses.

NEAVDA.

WASHOE DISTRICT.

Con. Virginia.—Gold Hill *News*, Aug. 28: The daily yield of ore has been reduced to 145 tons. This was owing first to the intense heat on the lower levels, and secondly to a delay of 48 hours in the hoisting caused by the breakage of the pump rod at the C. & C. shaft. There is no change worth noting of any of the ore-producing sections of the mine. At the C. & C. shaft the 2050 station is in, and the shaft is being sunk rapidly to make a sump. As soon as that is completed a drift will be started to the westward to connect with winze No. 3 for the purpose of opening and ventilating the 2050 level. The joint east crosscut from the Best & Belcher joint winze is making steady progress, streaks of quartz showing occasionally in the face. On the 1850 level a new winze (No. 3) has been started downward to connect with west crosscut No. 2 on the 1950 level for air purposes. Winze No. 3 below the 1750 level continues downward in excellent ore. This winze was started upon a streak of ore but a few inches wide, which has gradually widened until the full size of the winze is now in good ore. The south drift on the 1300 level has been retimbered for a distance of 370 feet.

Sierra Nevada.—The hoisting reels and other necessary machinery at the head of the south winze, below the 1700 level, is in place and works splendidly. Enlarging the winze so as to make another working compartment is also making good progress. Sinking the winze below the 2100 level was interfered with to some extent during the week, but is again making fair speed, the bottom still scalping the quartz and ore vein, with every indication still of the most favorable character.

Lady Washington Con.—The north drift on the 1300 level is still advancing, the face in vein matter and quartz.

Julia Con.—A most important and, to Julia stockholders, valuable contract and compromise has been made with the Sutro tunnel company. By the terms of this contract the tunnel company are to complete and connect with the Julia shaft at the earliest day possible a south branch of their tunnel which will serve the double purpose of a drain and working tunnel for the conveyance of timbers and supplies. Work on this branch tunnel is to be prosecuted from both ends, and has already been commenced on the tunnel side. As soon as the tunnel reaches the Julia shaft, the shaft will be doubled in size and be used for the hoisting and lowering of supplies through the tunnel, a depot being established for that purpose. For the privilege of the drain the Julia company is to pay $100,000; and for each foot of tunnel run from the Julia side the company is to receive back $70. Not the least important feature of the contract is that the Sutro tunnel company release all claim to that portion of the Julia claim lying within the limits of the Sutro corporation, and liable to dispute by them. Taken all together it is most certainly a splendid bargain for the Julia. The main south drift on the 2000 level has been cleaned out and repaired to a few feet beyond the junction of crosscut No. 2. Crosscut No. 1 on the 2000 level has been cleaned out and repaired to the face, and is being again driven forward as fast as the intense heat of the level will permit. The face has already cut some very fine quartz and ore, but not yet reached the point at which it is expected to cut the best ore.

Lady Bryan.—Good work has been done in freeing the shaft from the water which has for so many months submerged the mine from the bottom of the shaft up to the 250 level. The water is sufficiently reduced to allow of the old upper drifts being cleaned out and the investigation of the ore merits of the mine being resumed. The shaft is 600 feet deep, but the last station opened before work was suspended, was at the 500 level. This new shaft was commenced nearly five years ago, and openings made from it into the old mine at the 80, 170, 250 and 380 levels respectively. Merely the incline from the old workings was found to have penetrated to that depth, all the drifts and other explorations being above that point. The mine has been extensively worked in years past on the three upper levels mentioned, and although a large amount of good paying ore has been extracted therefrom, thousands of tons yet remain which can be extracted and worked with good profit. Some very rich spots and bunches of ore were formerly found on the 80 level, of the green chloride character, with a considerable amount of free gold. On the 170 level the ledge commences changing to the regular white Comstock character, and silver predominates. The ledge is a very large one, and on the 380 level lateral drifts were run 700 feet south, and 250 feet north from the shaft, following the east wall, and some little crosscutting was done. The ledge was found to be all quartz, and considerable ore of a fair grade was met with, but as further exploration and development could not be conducted to advantage, all work was stopped until the present new pumping and hoisting machinery could be brought to bear in the case.

Savage.—Owing to an accident which prevented the Savage and Hale & Norcross pumping machinery from working in concert during the first part of the week, the water gradually rose in the main shaft to within a few feet of the 2000 station. Yesterday morning, however, the pumps were again working in unison, and to-day the water is being again rapidly lowered.

Sutro Tunnel.—Total length 20,473 feet. The header is making good progress, and rapidly nearing the west wall of the Comstock ore belt. Definite and satisfactory arrangements having been made with the Julia Mining Company, fully recognizing and acquiescing in the claims of the Sutro Tunnel Company, a branch tunnel south was commenced day before yesterday, which is intended to connect with the Julia mine, and continue south to Gold Hill. This south lateral branch will he the full size of the main tunnel—ten feet wide by eight feet high—and its point of commencement is 19,715 feet from the mouth or entrance of the tunnel. The distance through the branch from the main tunnel to the Julia shaft is just 1,400 feet, and as work is also to be commenced from the shaft, it is calculated that the branch will be completed to that point, and connection made by the first of December. Meanwhile a large ditch or conductor for water is to be constructed throughout the entire length of the Sutro Tunnel, as well as the branch, of sufficient capacity to carry all the water which may he pumped or discharged into it from the Julia or other mines of the Comstock. As this water will he hot, the drain will he carefully covered throughout, in order to prevent the heat and steam from it rotting the timbering or heating the air of the tunnel.

California.—The average yield of ore was lessened for the week by the stoppage of 48 hours, caused by a breakage of the pump rod at the C. & C. shaft. That has been repaired, however, and the average daily extraction of about 200 tons of ore per day resumed. At the C. & C. Shaft the water rose rapidly when the pumps gave out, but has been drained and the sinking resumed. This shaft is now down ten feet below the 2,050 station, and will he continued down twenty feet further to form a sump before commencing to drift on the 2,050 level. The joint Ophir winze below the 1,950 level has reached the 2,000 level, at which point preparations are being made to start a south main lateral working drift, designed to connect

with the C. & C. shaft, and form a working base for the opening up of the mine to that depth.

OPHIR.—The south winze below the 1900 level has reached the 2000 level, and will now be connected with the south drift on that level for air purposes. As soon as that is done, it is the intention to continue this south drift directly through the California ground to the C. & C. shaft, forming a working base for the development of the entire levels of both mines. A tank and pump station is being cut out at the 2100 station. Retimbering the main shaft above the 1465 level is making steady progress, the repairs being conducted in such a manner as not to interfere with the use of the shaft.

UNION CON.—The north drift on the 1600 level is being steadily advanced, the face in soft prophyry, mixed with quaatz and clay. It is now in a distaunce of 617 feet. It is still uccessary to keep men at work retimbering portions of the drift where the swelling ground has crushed in the timbers. The chamber for the winze at the east end of the joint crosscut, on the south line on the 1600 level is nearly completed.

YELLOW JACKET. On the 2400 level the south drift is in 205 feet from the winze. The face of this drift continues in dry and fair working material, consisting of porphyry, with seams of quartz. The new shaft is down 1721 feet, The bottom is somewhat harder material, and continuing dry. It is calculated that about 100 feet will be made in siuking the shaft during the present month of August.

ORIGINAL KEYSTONE.—Sinking the maiu working shaft has made excellent progress siuce last weekly report, the rock working well and the influx of water remaining about the same. In the prospecting shaft at the north end of the mine a station is being opened and 16 feet of drift has been run in hard blasting rock since last Saturday. In softer material to-day. The erection of the building for the hoisting works will be commenced at once, all the requisite lumber being now on the ground.

SOLID SILVER.—The main tuunel or adit of this mine has recently been repaired, retimbered and put in complete order throughout, preparatory to commencing the extraction of ore from the winze below the tunnel level. This winze has been sunk near the fine ore chimney developed about 1100 feet from the mouth of the tunnel, and is 100 feet in depth. At the bottom it ent into a body of excellent pay ore, and it is now proposed to extract and mill the same.

LEVIATHAN.—On the 750 level the two lateral drifts north aud south are pushing ahead, running in the black dyke foot-wall formation underlying the west side of the ore vein. Streaks and bunches of ore giving good assays, and evidently offshoot or feeders from the vein, are frequently passed through iu both drifts, the the north drift showing the best in this respect.

BULLION.—The west drift on the 2000 level is steadily advancing, the face in hard ground, interspersed with slips of clay and small seams of quartz. There is a light seepage of water coming in, which creates a hot steam, making the progress slow and tedious. The east crosscut on the 1700 level is making steady progress, the face iu porphyry carrying streaks of quartz of a favorable character. Siuking the main incline is making excellent progress, the entire bottom in quartz of a fine, healthy character.

UTAH.—Sinking the main incline below the 1150 level is making the best of progress. It is now down 105 feet on the slope. The uprise conneeting with the perpendicular shaft is being enlarged and the chutes put in. The hoisting engines and other machinery are all in place and work finely. The bottom of the incline is in a lively character of vein matter.

CALEDONIA.—The south drift on the 1400 level is being pushed vigorously forward, the face in soft porphyry carrying streaks of lively, healthy looking quartz. There is still a considerable quantity of water in the bottom of the joint winze on the Overman line.

MEXICAN.—Excavating the chamber for the winze below the 1600 level in the joint east drift on the Union Con. line is making steady progress. The joint east crosscut on the Ophir line is being pushed ahead with the usual vigor, the face in hard blasting porphyry. It is now in a distance of 248 feet. The heat in both drifts is very great.

WARD.—The plans and specifications for hoisting and pumping machinery, second to none on the Comstock in power and utility, are being drawn, which machinery will he erected at the earliest day possible.

GOULD & CURRY.—Sinking the main incline is going slowly forward, the ground being hard and the heat intenso. The joint east crosscut on the Savage line is advancing, the face in vein porphyry streaked with quartz.

NORTH CON. VIRGINIA.—Sinking the main shait is making good progress, considering the hard character of the rock penetrated. The rate of progress is about 2½ feet per day. The flow of water is quite strong hut is easily handled by the pumps.

CONSOLIDATED DORADO.—Sinking the shaft is going forward vigorously and good progress is being made in sinking and timbering. Everything is in good working shape, and the development of the mine making steady headway.

JUSTICE.—The quartz and ore in the bottom of the winze below the 1300 level continues to snow a steady and favorable improvement, the streaks of ore encountered being wider and of a richer quality. The upraise from this level is also in good quartz and ore. Sinking the winze below the 1225 level to connect with the upraise is making the best of speed.

TROJAN.—The quartz in the face of the south drift at the fourth station level continues to improve, some of the assays running as high as $75 per ton. It is in a distance of 384 feet. The car samples from this station have averaged $41 per ton for the past week.

CROWN POINT.—The north drift on the 2300 level is being pushed vigorously ahead, the face in rock of a harder character than any that has heretofore been encountered. It is now in a distance of 298 feet. The two west crosscuts on the 500 level have been stopped, and two east crosscuts, directly opposite the west drifts, have been started, both of which are advancing in fine vein matter.

SILVER HILL.—Siuking the main incline is going ahead at the rate of two and a half feet per day, the rock in the bottom blasting out well and the flow of water giving but little trouble. The east crosscut from the main south drift on the 800 level is in fine quartz, which may change to paying ore at almost any moment.

BELCHER.—The breakage of the pump rod has been repaired and everything is again ready to start up. During the past week it has been necessary to pass the water through the 1600 level to the Overman shaft, through which it is taken to the surface.

CHOLLAR COMBINATION SHAFT.—Work was progressing finely both at the pump station and in the drift running to connect with the Sutro until two days ago, when a cog was broken in one of the driving wheels, which caused a breakage of the sole plate of the engine. It will probably take seven or eight days yet to repair the damage.

ALPHA.—Another west crosscut has been started at a point 150 feet south of the north line of the mine on the 2400 level, the face of which is in quartz and vein matter of a very favorable character.

HALE & NORCROSS.—The pumping machinery is all again in good repair and is working splendidly, lowering the water as rapidly as it is possible for it to be accomplished.

MORNING STAR.—Cleaning out aud repairing the main tunnel is going vigorously forward, in order to reach and prospect the ore vein at the point where the tunnel was stopped several months since.

CHERRY CREEK DISTRICT.

STAR.—*Territorial Enterprise*, Aug. 23: At Cherry Creek the Star is the principal mine. It has first-class hoisting works, and Burleigh drills are used in the underground operations. The company have a fine 20-stamp mill, and are taking out bullion at the rate of about $50,000 per month. The lead is from five to eight feet in width and the ore is somewhat refractory, requiring to be roasted. Their lowest working level is 360 feet below the surface, hut they have just reached the 460 level, and are now taking it out preparatory to extracting ore. The same good quality of ore is found at this depth that was obtained from the workings above. The total yield of the mine thus far has been between $400,000 and $500,000. There are several other very promising mines in the district, among which may he named the Mary Ann, Flagstaff and Pacific. The towu contains a population of about 500 souls. There are no idle men in the camp. The Star mining company, at their mine and mill, give employment to about 75 men. The Star will uudoubtedly prove a permanent mine.

NYE.

GOOD REPORT.—*Eureka Sentinel*, Aug. 21: State Mineralogist Whitehill is on his annual round to the mining districts of eastern Nevada. He has made a thorough examination of the mining outlook of Nye county, and states that it was never so bright as it is to-day. He devoted some days to the Carhonate Point region, which he pronounces hardly second to Eureka in point of mineral wealth. The Alexander mine, at Grantville, owned hy San Pedro & Co., bids fair, he says, to become one of the greatest mining properties in the State. There is more ore in sight in this mine than was ever disclosed on a single level in Con. Virginia or California. The ledge is 150 feet in width in places, and never goes below 60 feet. It carries millions of tons of ore worth from $30 to $40 to the ton, and interspersed through this immense mass are streaks of chloride ore which goes much higher. At Downieville there is also another fine property, owned hy the Downey Bros. One furnace is being operated with flattering results. The large new mill in the same section will he completed and ready for service within 60 days. Mining matters at Belmont have lately received a fresh impetus. The Old Belmont mine is looking hetter than for years, while the Highbridge Con., under the new management, is coming to the front with some rich developments. This latter property is to he worked on an extensive scale, giving employment to a large number of men, aud adding materially to the general prosperity of the town and county. The mines of the Tybo Con. company, at Tybo, are likewise looking and yielding splendidly. There has been a marked improvement in this property recently, and increased bullion shipments are confidently predicted. The mill of the company has just been started up, the mine yielding large quantities of ore that may ho successfully treated by tho amalgamating proccss. Good reports are also received from Reveille and Danville districts. On the whole, Mr. Whitehill is disposed to view the general revival of the mining interests of Nye county as establishing heyond question the prosperity of that section of the State for years to come.

NEVADA ITEMS.—The Sherman mine of Pyramid has just struck a very rich streak of ore. It is reported that the Jones & Kinkead company are soon to build a mill of their own. They are about to contract for a tuunel about 1,000 feet long, from the main ravine to strike the ledge several hundred feet below the surface. The Crown Prince tunnel will strike the ledge 450 feet below the surface. The mine is a promising one. The new mill site is surveyed. The Jenny A. mining company, at Hamilton, will not build a furnace this year, but will continue to prospect. Superiutendent Wermuth reports strong indications of oro in the Hoosac at the bottom of the shaft, now about 200 feet deep. The Oreana furnaces have been thoroughly repaired and will be run on Montezuma & Pearl Gold and Silver mining company's ore. Work has been resumed on the Red Deer mine in Mt. Rose district. The two and a half to three and a half foot vein on the lower level of the Fairmount grows richer and richer in antimonial sulphuret ore. Rich oro is coming from the Rescue mine, Silverado. The Leopard mill runs to its full capacity on Leopard oro. Shaft sinking progresses rapidly. In the Hussey mine the usual quautity of first-class ore is being taken from the stopes in the 120 and 230-foot levels. A promising strike was made August 17th, in the Connolly mine. It is the best showing tho mine has had for some time. Krenkle's copper mine, in Harmony District, is to be opened. Samples has assayed from 25% to 40% copper. The Mountain Bride mine sends large quantities of ore to the Auburn mill at Reno. Operations under the new management have commenced in the Highbridge mine. Rich copper prospects are reported south of the railroad, some 60 miles from Toano. Nine hundred dollar-ore has been found in the old Burke mine. J. B. McGee has been appointed Superintendent of the Day mine. Garrison and Riepe will work the mine in Silver King District which they recently purchased for $1,500 from John Heuss. Mining matters in Lincoln county begin to look more cheerful. The Hillside machinery is nearly set up.

MONTANA.

DEWEY'S FLAT.—*New North-West*, Aug. 16: Dewey's arrastra is running on Argyle ore, and Allen Hays' on Argyle float rock. The Monroe Co's mill is not running, but some ten or a dozen men are at work in the mine and taking out good ore. Milo French is foreman of the mine. Legatt & Co. are working four men sinking on the Argyle. They have over 200 tons of good ore on the dump. A. M. Madison is sinking on the Greeley—mine looking well. Dewey & Co. employ four men on the Argyle. Spurr & Mansfield are taking good ore out of their mine. Several men are making money gathering float on Quartz Hill.

MONTANA ITEMS.—The Alice M. Co., at Butte, is adding another five stamp battery to the mill, and is puttiug up two furnaces, each of daily fifteen tons capacity. The additions completed more men will he worked. Work on the La Platta ten stamp mill progresses favorably. Wilson, Lavally and McDennett are putting up a ten stamp mill about a mile above the La Platta mill. Wm. Wilson runs the Davis arastra on Gonion ore. Other mills in Butte are being huilt; so this county will have more than double its reducing capacity this year. The Sallie Belle mine, Red Mountain, has struck the lead 125 feet below the surface, the end of a 320 foot tunnel. The ore is as rich as that at the surface. The new silver Bow mill, with fifteen stamps and room for twenty, will probably make its first run early in October. W. A. Clark aud John Noyes have had surveys made for a ditch from near the head of Buffalo gulch to a 20,000 gallon reservoir to be constructed just below the Acquisition hoisting works. Ed. Barton has struck a honanza on Silver Creek. James Embody's Bisser lode has an eight foot crevice and $500 ore. James Sullivan who is working a placer claim ou Bonlder Bar has picked up in his sluices two nuggets, one $60, the other $80. Prospecting for quartz ledges has been lively in Montana this season.

News in Brief.

REVOLUTION is threatened in New Grenada.

A WORM is destroying the turuips in Kildare, Ireland.

A GREEK has attempted to assassinate General Todleben.

THE silver mine at Ikuno, Japan, has entirely petered out.

HOP-PICKERS are wanted in the vicinity of Healdsburg.

ONE thonsand Philadelphia iron mills men have struck.

THE San Jose gas company furnish gas at $1.50 per 1,000 feet.

OREGON grain this year will average 62 to 63 pounds to the hushel.

THE fare from Bodie to San Francisco hy the Sonora stage is reduced to $26.

THE Masonic Savings and Loan Bank of San Francisco has failed.

EXTENSIVE canneries of halihnt have been established on the Straits of Fuca.

THE coal production of China has already reached 3,000,000 tons annually.

THE army worms have disappeared from the Central Colony, in Fresno county.

SONOMA and Marin potato crops are thought to promise a good yield.

THE Mikado has opened the new buildings of the Tokio Engineering College.

FIRST-CLASS carpenters at $3 per day are wanted at the New Almaden mines.

THE Moore murder trial cost Ventura county about $8,000.

HELENA capitalists will build a tramway around the falls of the Missouri.

A NEW Russian 5% loan of 300,000,000 roubles, issue price 93 cents, is announced.

EACH offeuse of smoothing, cuttiug or boring silver dollars will requiro $1,000 fine.

THE wool clip of Josephine county, Oregon, will amount to 25,000 pounds this year.

A BLACK bug is destroying the potato crop in the vicinity of Prescott, Arizona.

ON August 26th ground was broken for the south lateral drift of the Sutro tunnel.

J. L. SMITH, of Louisville, claims to have discovered a new element, "mosandrum."

THE total product of Mexican mines from 1535 to 1877, is estimated at $4,067,119,321.

IT is estimated that property in Bodie has increased 50% in value in the last three months.

SILVER has been discovered eight miles north of Colorado City. The ore assays $65 per ton.

A HUMAN body ticketed from the planet Mars, has been found in an aerolite from Peru.

GLASS blowers in Wheeling, W. Va., have struck because a man withdrawing from their Uniou is not discharged.

A RAILROAD party is now surveying a route from Benton toward the Snoqualomie Pass, Washington Ter.

A BREAD-FRUIT tree has been acclimated in the State Capitol grounds at Sacramento, and is now in healthy bearing.

PREPARATIONS are being made for the four-day National Soldiers' Re-union at Marietta, Ohio, beginning September 3d.

AT the University of Oregon free tuition is given one student from each county and one for each member of the Legislature.

A LARGE carp pond is in the course of construction on L. D. Latimer's ranch, two miles east of Windsor, Sonoma county.

AUSTRO-HUNGARY may export this year: Wheat, 13,000,000 quintals; rye, 2,500,000; barley, 4,000,000; oats, 3,000,000.

DEER slaughtering is progressing at such a rate in the northern counties of California as to threaten the extinction of the species.

WORK has been unexpectedly suspended for a time on the great Brooklyn bridge. Causo, failure of the two cities to provide funds.

A MAN named Shepplar and his "pard" have struck an immensely rich gold quartz ledge on Dog creek. The ledge is four feet wide.

TURKEY wants England to accept the Cyprian revenue as security for a loan with which to carry on reform.

FOR a long time the temperature in the face drill holes of the Sutro tunnel has been 110°. The stratum is about 1,000 to 1,600 feet deep.

DURING the past year the United States Land Department of California surveyed 157 miles, containing about 3,240 acres, making 381 maps.

INFORMATION with regard to pre-emptible land in northern California can he obtained at the Humboldt, Shasta and Susanville Land Offices.

THE bullion product of the Black Hills for the year 1877, was nearly $4,000,000, and will not fall short of $8,000,000 for the present year.

THE recovery in trade is generally satisfactory, although several commercial centers, notably Manchester and Glasgow, still complain.

IT is reported from Deadwood, D. T., that the California company have purchased the Old Ahe, Palmetto and American Flag mines, adjoiuing the Homestead.

AT Negaunee, Mich., the works of the Miners' Powder Company exploded Aug. 22, doing terrihle execution upon buildings, feuces, glass and trees, and killing five men.

DURING the week ending Augnst 20th, 54,976 pounds of snlphur and 36,360 ponnds of quicksilver were shipped from Calistoga to San Francisco.

BIAGGIO GUERRERO has struck a ledge in the Columhia mine, near Wells-Fargo, at a point 110 feet from the surface, which assays from $12 to $19.

GORHAM BLAKE, of Boston, has seven ledges containing pay rock in Georgia. He has lately visited this coast to study improvements in mining.

AN artesian well on the Norris ranch, Sacramento county, is now down 1987 feet, and the stratum of soapstone which has already been hored through 400 feet, still continues.

AT the annual meeting of the shareholders of the Swiss Mining Company, the following officers were elected: N. Giamboni, president; A. Decourtieux, treasnrer; A. Sbarboro, secretary.

A CONGRESS of Industry and Commerce met August 20th, the President of the Paris Chamber of Commerce heing Chairman. Delegates from England, the Uuited States, Belgium aud Russia wero appointed Presidents.

BRITISH wreck register for year ending June 30th, 1877, reports: Wrecks and collisions, involving total loss, 511; involving partial loss, 3,653. The average for the past 10 years has been 2,417 vessels.

HENRY JOHNSON thinks he has found a meteorite. It will weigh at least 1,800 pounds, is of a dark gray color, ohlong shape, aud is smooth and rounded like a honlder. Location, five and a half miles north of Virginia City.

ON August 22d, Capt. W. E. Jndd, foreman of the Keystone mine, foll 65 feet to the bottom of the mine and sustained injuries from which he has since died. The careless connection between the cable and the lowering tub cansed the accident.

Work of the Burleigh Air Compressor.

Not long since the Richmond Consolidated mining company, one of the two principal mining companies of the flourishing town of Eureka, Nevada, had occasion to make inquirv into the merits of the best air compressors and rock drills in the market, with the view of introducing them in their mines. The compauy is an English one, and the mine is one of the very few on the coast owned by English capitalists which has been a financial success, and the managers are deserving of having the best machinery procurable. To accomplish this they desired the dealers representing the different machines offered for sale to send to the company indicator cards, taken from both air and steam cylinders; also frictional cards—intimating that whichever could practically demonstrate the greatest possible economy per horse-power would be the one selected. Messrs. Parke & Lacy, agents of the Burleigh drill and air compressor, in this city, sent the indicator cards of their machines, but no other manufacturers complied with the request. So that the result was Parke & Lacy obtained the order for $25,000 worth of machinery of the Burleigh pattern, which includes air compressors, drills, columns, etc. The compressor alone weighs 24 tons, and is a duplicate of that owned by the Eureka company.

As a matter of interest to engineers and mining men we have had engravings made to represent these indicator cards by which those versed in such matters may see how the compressors work.

To those not understanding the indicator diagrams it may be explained that the indicator is a small instrument temporarily attached either to the top or bottom of the cylinder for the purpose of ascertaining the pressure of steam at various parts on the stroke. It not only discerns the actual power at work in the engines, but it enables one to ascertain the working condition of the engine, and whether there are any defects in those parts of the machinery by which the steam is admitted to the piston; for instance, whether the slides are properly set or leaky; whether the stopes on the intermediate shafts are properly placed; whether the steam ports are large enough; and consequently whether a different arrangement of the working parts of the machinery would be advisable. In fact, in the hands of a skillful engineer, the indicator is as the stethoscope of the physician, revealing the secret workings of the inner system and detecting minute derangements in parts obscurely situated.

Fig. 1 represents the steam card taken from an 18-inch diameter cylinder, 24-inch stroke, making 40 revolutions per minute; steam cut off at one-sixth stroke; consequently shows that five-sixths of the steam is worked expansively, the above working with a boiler pressure of 77 pounds. But initial pressure on steam cylinder is 70 pounds, which, after working one-sixth of the stroke, shows a pressure of 69 pounds. After traveling four inches more, a pressure of 50 pounds is shown. In another four inches, 28.50 pounds is shown, then 20.50 pounds, then 16 pounds, and at completion stroke pressure on steam piston is only 12 pounds, making in all a mean pressure of 36.4 pounds throughout the strike.

Fig. 2 represents the card taken off the air cylinder, working in connection with and driven by the engine, the card of which is shown in Fig. 1. The diameter of air cylinder is 24 inches; stroke, 20 inches; making 40 revolutions per minute. Of course the piston commences at atmospheric pressure, and in making the first five inches of the stroke, it shows five square inches pressure in the air cylinder; the second five inches, 17.50; the next five inches, 46.50. The last five inches shows the full compression up to 46 pounds. The half pound at the 46.50 point is due to the lifting of the valve in the air receiver. When the air piston commences to descend, it forms a partial vacuum for about one-third of the downward stroke of the air piston, which the card explains, showing that there is no back pressure in the air cylinder, and that every portion of the air is expelled at each stroke. This is due to a small injection of water forced into the air cylinder during its stroke. This air card shows an entire pressure throughout the stroke of 473½ pounds, or a mean pressure of 23.69 pounds.

Fig. 3 shows the steam card of the same engine described as per card shown in Fig. 1, except that it is working at a higher pressure. In Fig. 3 the engine is making 56 revolutions, boiler pressure 80 pounds, or initial pressure 74 pounds; cut-off at one-quarter stroke. This card shows a total pressure of 1,055 pounds, and a mean pressure of 43.5 pounds.

Fig. 4 is the card from air cylinder of the same size as that shown in Fig. 2, worked under condition of steam as shown in Fig. 3, and in connection with it. The total pressure shown is 710.50 pounds, and the mean pressure is 35.50.

Fig. 0 shows a frictional card from the same sized steam cylinder running free as shown in Figs. 1 and 3, but making 60 revolutions with a boiler pressure of 78 pounds and an initial pressure of 55 pounds in the steam cylinder. All the cards are on a scale of 40 to the inch except Fig. 2, which is 30 to the inch.

These cards are made from tracings of the original cards taken off the machine now working the Overman mine on the Comstock. Although we have been frequently asked for information as to the relative efficiency of air-compressing engines by intending purchasers, we have not before had an opportunity to exhibit cards from any of the machines on the market. These cards will show to any engineer or mechanic exactly what is performed by the machine from which they are taken. We shall be pleased to publish the cards from other compressing engines if they are furnished to us for the general information of our mining readers, as it will be a benefit to all.

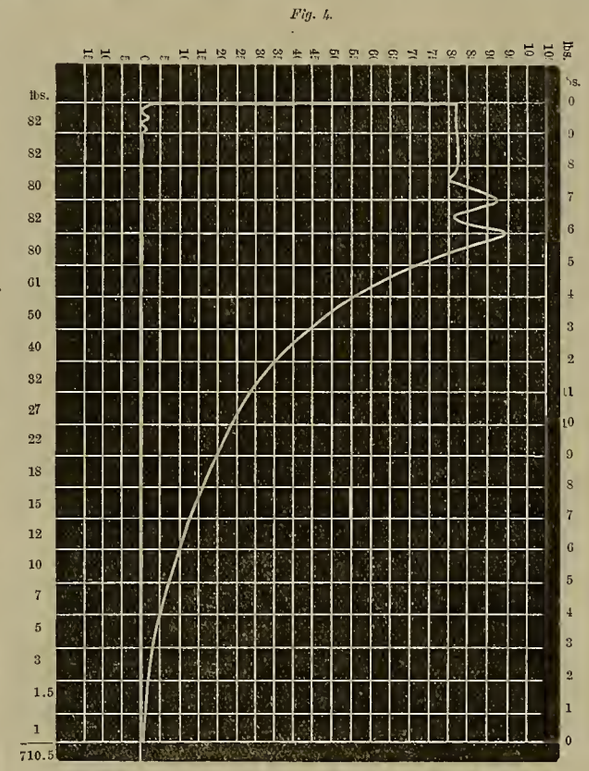


Fig. 4.

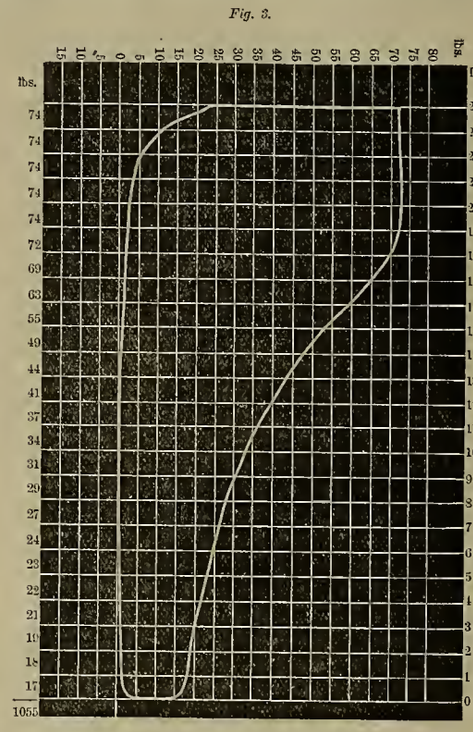


Fig. 3.

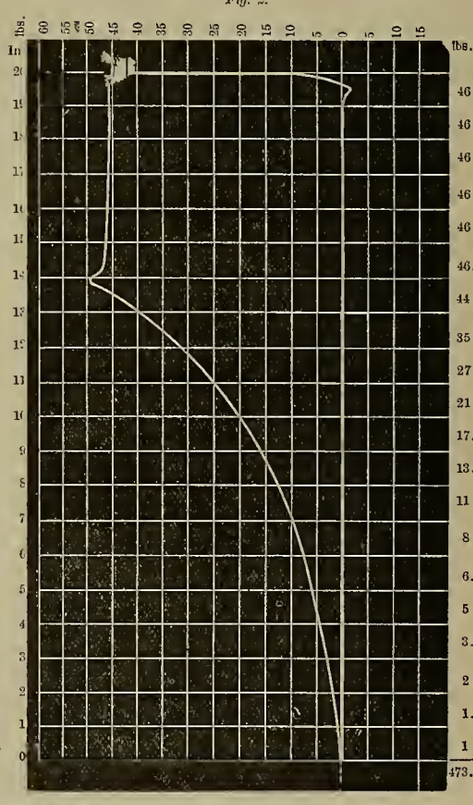


Fig. 2.

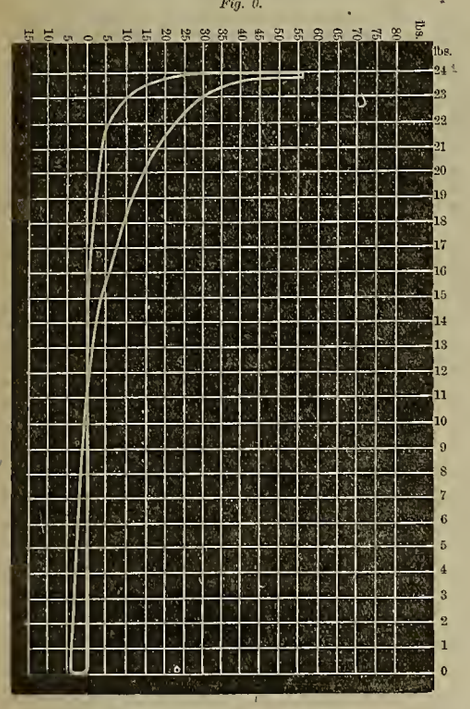


Fig. 0.

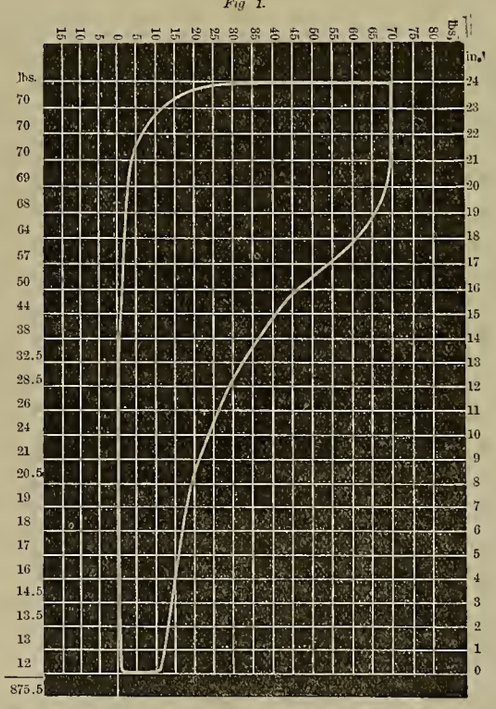


Fig 1.

INDICATOR CARDS SHOWING WORK OF BURLEIGH AIR COMPRESSOR.

A most distressing famine afflicts Morocco.

The Sun Made of Metal.—In a recent article in the *Nineteenth Century*, by Mr J. Norman Lockyer, the writer very strongly objects to Dr. Draper's discovery of oxygen in the sun. Mr. Lockyer says he has gone carefully over the whole ground, and finds: First, that the photograph on which Dr. Draper bases the discovery is not one competent to settle such an important question. Second, that he does not find the coincidences between bright solar lines and oxygen lines in the part of the spectrum with which he is most familiar. Third, that comparing Dr. Draper's photograph with the fine photograph of the spectrum obtained by Mr. Rutherford, he "fails to find any true bright line in the sun whatever coincident with any line of oxygen whatever." Mr. Lockyer sums up the evidence as to the sun's composition in these words: "So far as our uncontested knowledge goes, the sun is chiefly made of metal, and on this account is strangely different from the crust of our earth, in which the metals are in large minority."

Contracts for building 40 iron bridges on the Chili and Southern Railroad are said to have been secured from the Chilean Government by American manufactnrers.

Continued from page 130.

Union Pacific railroad. This divides the Rocky mountain forest into a southern and a northern portion. The southern is completely isolated. This northern, in a cooler and less arid region, is larger, broader, more diffused. Trending westward, on and beyond the northern boundary of the United States, it approaches and here and there unites with the Pacific forest. Eastward, in northern British territory, it makes a narrow junction with northwestward prolongations of the broad Atlantic forest.

So much for these forests as a whole, their position, their limits. Before we glance at their distinguishing features and component trees, I should here answer the question, why they occupy the position they do; why so curtailed and separated at the south, so much more diffused at the north, but still so strongly divided into eastern and western? Yet I must not consume time with the rudiments of physical geography and meteorology. It goes without saying that trees are nourished by moisture. They starve with dryness and they starve with cold. A tree is a sensitive thing. With its great spread of foliage, its vast amount of surface which cannot diminish or change, except by losing that whereby it lives, it is completely and helplessly exposed to every atmospheric change, or at least its resources for adaptation are very limited, and it cannot flee for shelter. But trees are social, and their gregarious habits give a certain mutual support. A tree by itself is doomed, where a forest, once established, is comparatively secure.

Trees vary as widely as do other plants in their constitution, but none can withstand a certain amount of cold and other exposure, nor make head against a certain shortness of summer. Our high northern regions are therefore treeless, and so are the summits of high mountains in lower latitudes. As we ascend them we walk at first under spruces and fir trees or birches. At 6,000 feet on the White mountains of New Hampshire, at 11,000 or 12,000 feet on the Colorado Rocky mountains, we walk through or upon them; sometimes upon dwarfed and depressed individuals of the same species that made the canopy below. These depressed trees retain their hold on life only in virtue of being covered all winter by snow. At still higher altitudes the species are wholly different; and for the most part these humble alpine plants of our temperate zone, which we cannot call trees, because they are only a foot or two or a span or two high, are the same as those of the Arctic zone, of northern Labrador, and of Greenland. The Arctic and the Alpine regions are equally unwooded from coal.

As the opposite extreme, under opposite conditions, look to equatorial America, on the Atlantic side, for the widest and most luxuriant forest tract in the world, where winter is unknown and a shower of rain falls almost every afternoon. The size of the Amazon and Orinoco, brimming throughout the year, testifies to the abundance of rain and its equable distribution.

The other side of the Andes, mostly farther south, shows the absolute contrast, in the want of rain and absence of forest; happily it is a narrow tract. The same is true of great tracts either side of the equatorial regions, the only district where great deserts reach the ocean.

It is also true of great continental interiors out of the equatorial belt, except where cloud-compelling mountain chains coerce a certain deposition of moisture from air which could give none to the heated plains below. So the broad interior of our country is forestless from dryness in our latitude, as the high northern zone is forestless from cold.

Regions with distributed rain are naturally forest-clad. Regions with scanty rain, and at one season, are forestless or sparsely wooded, except they have some favorable compensations. Rainless regions are desert.

The Atlantic United States in the zone of variable weather and distributed rains, and the Gulf of Mexico as a caldron for brewing rain, and no continental expanse between that great caldron and the Pacific, crossed by a prevalent southwest wind in summer, is greatly favored for summer as well as winter rain.

And so this forest region of ours, with annual rainfall of 50 inches on the Lower Mississippi, 52 inches in all the country east of it bordering the Gulf of Mexico, 45 to 41 in all the proper Atlantic district from East Florida to Maine, and the whole region drained by the Ohio, diminished only to 34 inches on the whole Upper Mississippi and Great Lake region, with this amount of rain, fairly distributed over the year, and the greater part not in the winter, our forest is well accounted for.

The narrow district occupied by the Pacific forest has a much more unequal rainfall, more unequal in its different parts, most unequal in the different seasons of the year, very different in the same place in different years.

[To be Continued.]

Material and Labor.—A piece of iron, costing, in its rough state, one franc, is estimated by a French journal connected with the metal trade to be worth, when made into horse-shoes, three francs; into agricultural implements, four francs; forged into ornaments, 45 francs; converted into needles, 75 francs; steel buttons, 900 francs; employed as polished steel for decorative purposes, 2,000 francs; and made into shirt studs, 6,000 francs.

An International Exhibition will be held in Melbourne in 1880.

Useful Information.

Oils Used on the German Railways.

A paper by W. R. Browne in the *Railroad Gazette* gives various particulars concerning the operations of German railways. We quote a few paragraphs concerning the results of their experiments with lubricating oils:

Rape Oil.—Raw rape oil, without any admixture, has been in general use on most German railways since the year 1846. At first from 25% to 75% of pure turpentine was mixed with it to prevent its congealing in cold weather, but this was soon abandoned on account of its high price and because it clogged the cotton-waste used for drawing the oil to the journal. A better mode of rendering rape oil fit to be used in cold weather in axle-boxes with cotton-waste has been invented by Dr. Ziureck, of Berlin, and consists in adding rectified petroleum. The experiments made by him have shown that a mixture of 95% of rape oil and 5% of rectified petroleum congealed at 8°-9° Cent.; 90% of rape oil and 10% of rectified petroleum congealed at 10°-12° Cent.; 85% of rape oil and 15% of rectified petroleum congealed at 15°-16° Cent.; 80% of rape oil and 20% of rectified petroleum congealed at 19°-20° Cent. On several lines the rape oil is being mixed with oil of rosemary (½ lb. in 100 lbs.) for the purpose of rendering it unfit for domestic uses.

Olive Oil.—The excellent lubricating qualities of olive oil are shown by the small quantity of free oleaginous acid and slimy albuminous matter it contains, which makes it less liable to clog, by its moderate degree of cohesion and complete absence of mineral acids. Several large railway companies in Germany have employed it for these reasons almost exclusively; but as rape oil is generally much cheaper in that country, strong efforts have been lately made to supersede olive oil by rape oil, and on almost all German lines these have been successful. On English lines, however, olive oil is still preferred, where grease has not superseded it.

Oil of Rosin.—Oil of rosin in the raw state is not adapted for lubricating purposes, as it contains acids which gradually act upon the iron axles; but by neutralizing it with potash, soda or magnesia, it can be made into a good lubricant. A better method is to add to the rosin from 5% to 10% burned lime previously to subjecting it to a dry distillation process, by which the acids are confined at the moment of their generation. A lubricant supplied to the Austrian State railway in 1861 and 1862, and consisting of two parts of oil of rosin and one part of olive oil, gave a better result than either pure rape oil or olive oil, but it disappeared again from the market when the rosin rose in price during the Rebellion

Mineral Oils.—Filtered raw petroleum has lately been employed as a lubricant on the Austrian railways, the volatile parts having been first evaporated at the boiling point of water, and a small percentage of vegetable and animal oils added. The first experiments made with it were not very promising, the oil being too thin and the journals heating frequently; but by degrees the oil was improved and special axle boxes were made to meet its requirements, so that petroleum is now rendered a reliable lubricant, at a considerably lower cost than rape oil.

New Use for Seals.—An English exchange has an article on the possibility of training seals to catch fish. The following are the leading points. There exists an animal which might be trained to render us great service, that is the seal, which is slaughtered so mercilessly for the sake of its oil and skin. Intelligent and affectionate, it possesses all the qualities suitable for a domestic state. The director of the museum at Dijon had so skillfully tamed one some years ago that, though by nature amphibious, its primitive habits were changed, and it rarely went into the water, placing itself during the winter close to its master in the warm corner of the fireside, stretched on the wood ashes. If pains were taken to teach the seal, it might become to the fisherman what the dog is to the hunter. Nor need we despair of such a result, for the Chinese train the remora or sucking fish to catch turtles, and the heron and cormorant to capture fishes. The coasts of England would be fit places for the education of the seal. The value of such help may be imagined when we think of the great solitude of the sea, so many times larger than the space covered by land, where man has no ally, and can only count upon those who dread him. What an interest for him in the very element itself to have a friend and companion who would follow him in his fishing expeditions! There are not wanting conclusive results which have been obtained in individual cases; and if the same care were extended to the race, we may say that the seal is an ally ready prepared by nature.

Recipe for a New Explosive.—Bjorkman of Stockholm, Sweden, gives the following recipe for the manufacture of the new explosive vigorite. Mix in a wooden or rubber vessel 5 to 20 parts of sugar or molasses, 25 to 30 parts of nitric acid, and 50 to 75 parts of sulphuric acid. Twenty-five to 50 parts of this mixture, called nitroline, are mixed with 15 to 35 parts of nitrate of potash and 15 to 35 parts of cellulose.

Basket Willow on Embankments.—Basket willows are warmly recommended by a German official for the planting of the slopes of railroad excavations and embankments, especially where the soil is loose. On one of the leading railroads of Prussia they have been tried and found to answer admirably. A perfect network is formed by the roots which binds the whole surface firmly, the thick green growth transforming the raw and ghastly gashes in the earth into a beautiful thicket; the men who take care of and watch the track can easily care for the willows, which grow readily in dry as well as wet soil, if it is a little loose, and where there is market for basket material the growth can be made profitable. There are hundreds of kinds of willows, but those recommended for this purpose are the *Salix viminalis*, the *Salix prucinosa*, but most of all the *Salix amygdalina* (*triandria*). In dry ground the cuttings should have a good length underground. They will then put out a multitude of roots in every direction and make up for the want of abundant moisture by the extent of the ground from which they draw. If there is any way to hide some of the horrible wounds which railroads have made on Nature's face, it is much to be hoped that it will be tried; and the advantage offered by the willow in preventing the washing of slopes, gives an economic as well as an esthetic reason for planting it.

The Best Baits for Insect Traps.—M. E. C. Carriere has lately been trying a number of experiments on the best baits for insect traps, and gives an account of them in the *Revue Horticole*. The results effectually disprove the truth of the old saying "that we may catch more flies with a spoonful of honey than with a gallon of vinegar." A number of glass fly-traps filled with different liquids, sweet and sour, were placed under some fruit trees which were subject to the attacks of flies and other insects. The traps were baited with honey, weak wine and water, beer and water, vinegar and water, pure beer, pure wine, crushed pears and water, and other liquids; and the victims were counted, after the traps had been exposed for three weeks, with the following results: The trap containing beer and water stood at the head, and contained 850 flies and other insects; pure beer stood next, with 631; the crushed pears, weak wine, and pure wine coming next, pure honey being at the bottom of the poll, with only 17 sufferers. No doubt the odor of the beer and water, which was in a strong state of fermentation, had a great deal to do with attracting the insects.

Coloring Brass.—The *Polytechnic* translates from a German authority an old recipe for the production of various colors on brass, but which, as it may be new to many of our readers, we reproduce: Dissolve 60 grains bitartate of potassa in a liter of water, to which add 30 grains tin salt (protochloride of tin) dissolved in a fifth of a liter, heat to boiling, and allow the resulting precipitate to settle. The clear liquid is now to be poured, under constant stirring, into a solution of 180 grams of hyposulphite of soda in one-fourth liter of water, and again heated to boiling, during which operation a quantity of sulphur will be separated. The resulting clear solution is now ready for use, and gives to brass articles suspended in it, or when applied on the metallic surface, according to the length of the exposure or the amount of the application, a great variety of shades of color. First follows a light color, then all shades successively from red, dark blue, light blue, and finally brown. The sulphide of copper produces similar effects.

Good Health.

A Preventive of Suicide.

We lately had a paragraph from distinguished Eastern students of insanity to the fact that suicide was not necessarily the result of insanity. Dr. G. A. Shurtleff, the able Superintendent of the Insane Asylum at Stockton, in a paper on Suicide read before the San Joaquin County Medical Society, bears the following testimony to the influence of religion as a preventive of suicide:

"There is nothing which, in contemplation of the final hour, so solemnly and profoundly affects man, or so surely influences his acts, as an unquestioned and steadfast belief in what concerns his condition beyond this brief, mortal life. This is religion, and if born and trained in its faith, it becomes an organized element of his mind, an acquired instinct, which is more likely to direct his thoughts and acts in these matters than aught which depends solely on the logic of human evidence and knowledge. Through this faith a belief in things unseen and not of this world, which lie beyond the reach of science, of human reason and of natural evidence, is established. The weapons which would assail it are human and of the earth, and do not extend to the mysteries of another world, which are seen only by the eye of faith. This professed belief itself must be insincere and a false pretense if it fail to exercise, in the same mind, control over the conduct of him who avows it.

"I can say positively, from my own extensive observation, that the precepts of the Christian religion, especially as taught in their long-established forms, exert a strong influence even in the disordered as well as the rational mind in deterring from suicide those who put a sincere and absolute trust in its faith. I have often heard expressed, under suicidal thoughts and temptations, the irresistible conviction of the tried and chaste Imogen:

> 'Against self-slaughter
> There is a prohibition so divine
> That cravens my weak hand.'"

Color Blindness.—We recently had a paragraph on the subject relating chiefly to the color blindness of railway engineers. Investigations have lately been made by Professors Cohn and Magnus, of the sight of 5,000 children with the following results: Of 2,761 boys there were 76 who suffered from this blindness, or 2.7%. Of 2,318 girls, there was only 1 incapable of distinguishing colors. Further a curious fact was established. Among 1,947 Christian boys, 42 were unable to make this distinction, or 2.1%; among 814 Jewish boys 34 or 4.1%; among 836 Jewish girls, not one. These results seem to prove that in the case of girls color blindness hardly exists at all, and that among Jewish boys it is about twice as common as among Christian boys, though local influences might possibly affect the results. In this connection we note that M. Favre has lately been studying Daltonism in France, and he finds there are in that country more than 3,000,000 persons thus affected. The number of females affected is to that of males as 1:10. He says that nine cases of Daltonism out of ten may be easily cured in young subjects, the best mode of treatment being methodical exercise upon colored objects. Mothers should be careful to develop the chromatic sense in their children. Examinations and exercises in colors should be conducted in all schools, etc.

Restorative Soup for Invalids.—Take one pound of perfectly fresh beef or fowl, chop it fine, add eight ounces of soft or distilled water, five or six drops of pure hydrochloric acid, 30 or 40 grains of common salt, and stir well together. After three or four hours the whole is to be thrown on a hair sieve, and the fluid allowed to pass through with slight pressure. On the flesh residue in the sieve pour slowly two ounces of distilled water, and let it run through while squeezing the meat. There will be thus obtained about 10 ounces of cold juice, possessing a pleasant taste of soup, of which a wineglassful may be taken at pleasure. It must not be warmed, at least not to a greater extent than can be effected by filling a bottle with it and standing this in hot water, since it is rendered muddy by heat, and deposits a thick coagulum of albumen with the coloring matter of the blood. If from any special circumstance, such as a free secretion of gastric juice, it is deemed undesirable to administer an acid, the soup may be well prepared by merely soaking the minced meat in plain distilled water. Children will frequently take the raw meat simply minced when they are suffering from great debility. One teaspoonful of such meat may be given every three or four hours.

Painless Operations.—The new antiseptic method of surgery which has but recently been introduced into this country, has been twice successfully tried at the Alexian Brothers' Hospital, Chicago, during the past two weeks. In each case a leg was amputated, and the patient rapidly recovered, experiencing no pain whatever from the use of the surgical instruments. The method of operation is as follows: The surface of the limb to be amputated is first sponged with a solution of one part carbolic acid to 20 parts water. The instruments are placed in a solution of one part carbolic acid to 40 of water. While the operation is going on, a spray atomizer throws a stream of a solution of carbolic acid, one part to 40 of water, into the wound. This makes the operation perfectly painless, and does away with the necessity for using chloroform or ether. The wound is then dressed with oiled silk saturated with sulphate of lead, which indicates the presence of sulphate of hydrogen by turning black, and shows whether the wound is suppurating. Six layers of medicated gauze are then placed over the wound, and the whole is covered with Mackintosh cloth.

The Stupidity of High Heels.—The absurd and ungainly practice of mounting the hinder part of the feet on stilts while the toes press the ground and bear the weight, is one against which it is not easy to write with temper. It does not need a knowledge of anatomy to convince the shallowest that the foot is forced into a wholly unnatural position and distorted, by the heel being raised and the body made to rest on the ball of the toes! It should be unnecessary to explain that this disturbance of the foundation throws the whole superstructure out of gear, and deranges every mechanical function. But as the foot looks somewhat smaller as seen from the front or side when placed obliquely, fashionable people will cling to the practice.

How to Meet a Dog.—A gentleman gives the following advice in relation to dogs: "If," says he, "you enter a lot where there is a vicious dog, be careful to remove your hat or cap as the animal approaches you; hold the same down by your side between yourself and the dog. When you have done this you have secured perfect immunity from an attack. The dog will not bite you if this advice is followed. Such is my faith in this policy that I will pay all doctors' bills from dog bites and funeral expenses for deaths from hydrophobia."

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The Week.

The operations in mining stocks swell the volume of banking business immensely. This morning, August 29th, the clearance at the San Francisco clearing house was the largest ever made since the establishment of the institution. It amounted to $3,181,000, settled by the movement of $555,000.

Further evidence of prosperous activity on our coast is furnished by the reported determination of the Virginia and Truckee railroad company to build a branch to Bodie, and, though it may seem somewhat paradoxical, by the mining suits threatened, commenced and in progress.

The new railroad will take the route from Gold Hill to Dayton, to Fort Churchill via Sutro, across the Carson to Walker lake, to be crossed by ferry from the south shore of this lake to Aurora, to Bodie. It will pass through Lyon and Esmeralda counties, and perhaps a corner of Churchill. The country drained is reported by prospectors to be rich in mineral resources. Even if this prove visionary, the first spike driven in a road connecting us with Bodie, will mark the opening of an era most happy for all concerned.

When a man finds something that is very good, there are always plenty of individuals watching keenly for a chance to wedge in some claim, even if it be but the part of one. Some characters seem willing to lose the spicy pleasure of anxious, hopeful labor, if some one else will only guarantee them their bread and butter. It can hardly be unjust to class among these, men who, after abandoning mining ground to more acute and enterprising workers, until these latter have found a good thing, show then a disposition closely related to that exhibited in the nursery by the dog in the manger, and try to *get back* that "good thing" which they neither ever owned, nor of themselves would ever have heard of. We have enough of this and to spare in California and Nevada. In so far as it concerns the quality of our mines, it is not altogether a bad sign. May the law be prompt to defend all honest claims, and quick to protect industrious and daring men in the possession of their just acquisitions. For if the law halts, justice will find a shorter path. Violence will repeat the story of the Black Hawk mine.

The Corona.

We have been the guests of old sun for a goodly number of millenniums. We have partaken of his good cheer; we have sat by his fireside; in fact, we, together with our respected globe, have lived, longer than we can remember, the lives of mere parasites, drawing every iota of our physical nourishment from the sun. Still, it is only within the last few decades that we have commenced to inquire in earnest who and what our host and ruler is. At first we learned from Egypt the small conceit that the sun and all the heavens rolled obedient to our will, and Egypt knew how to calculate eclipses so well that for 16 centuries we believed her. Then Kopernik and Kepler overthrew the doctrines of the Almagest; the telescope was invented, and the world began to "find out a thing or two" about that nearest star, upon which, as was little by little discovered, they were so helplessly dependent.

With true fidelity to human nature, the telescopists first discovered the faults in the sun's surface; they pointed to the "sun spots." When a total eclipse offered opportunity, the rose-colored promineuces and the "corona" excited wonder and admiration. And, to-day, whenever a total eclipse is heralded by the astronomers, observers hurry from all parts, armed with the most costly instruments, to witness a phenomenon that is not only imposing in its sublime beauty, but that becomes with the advance of science, at each recurrence, more instructive.

The rose-colored prominences may be studied now with the aid of a spectroscope without waiting for an eclipse. Of the attractive objects at an eclipse, the corona is at present the most interesting of those immediately connected with the sun.

What is the corona, and what is its relation to the sun and its influence on us, are questions that are by no means answered. As science and art have advanced, every new means has been made use of to aid in answering these questions. As in every other department of progressive research, theories have been brought forward according with the knowledge of their times and have one by one fallen back before the arguments of the next more fully equipped and enlightened investigators. The study of these theories and of the growing knowledge with regard to the corona is the study of the development of many arts and sciences, with here and there thrown in, as a relief from abstract reasoning and weary details, an entertaining picture of human nature.

When the corona was first observed the pictures of it were drawn from memory after the eclipse was over. This opened the door to personal errors and gave the imaginations of excitable observers a chance to astouish the world with the strange appearances of the corona. The views of the corona that come to us from these times, present, as might be expected, great differences and the variations in verbal testimony are quite amusing. To one the corona resembled "the ornament around a mariner's compass." To another it looked like "jets of steam spurting out from behind a ball of iron." By and by they reduced it to the now standard simile, and it remains to this day like "the glory seen around the heads of saints in old pictures." One Frenchman in Brazil got up such a striking picture of the corona that his conscientious brethren gravely remarked that it was a great pity there was no one else there to see it. According to some reports, the corona was pure white light and round in shape. Others made it greenish-white and trapezoidal. Then it has been yellowish and pinkish-green and silver-gray, until one begins to realize the task of a judge in taking testimony. By one school the corona was ascribed to the atmosphere of the moon; by another to the influence of our own atmosphere; by still another it was regarded as a solar appendage. We can appreciate Burton's mood when he wrote: "In the meantime the world is tossed in a blanket amongst them, they hoyse the earth up and down like a ball, make it stand and goe at their pleasure. One saith the sun stands; another, he moves; a third comes in, taking them all at rebound, and, lest there should any paradox be wanting, he finds certain spots and cloudes in the sun, by the help of glasses, which multiply, saith Keplerus, a thing seen a thousand times bigger *in plano*, and make it come 32 times nearer to the eye of the beholder."

But we are growing older now. Photography removes all danger from excitable temperaments in observers. Polarization of light has been investigated and brought to our aid. The spectroscope has added its indispensable quota. Unending improvements in all instruments have helped us. We have learned that the moon has no atmosphere. A peculiar line in the spectrum of the corona proves that it cannot be due to our own atmosphere. And, to-day, although there is still indefinite ground for investigation, many concurring evidences point to the theory that the corona is nearly related to the aurora borrealis and the zodiacal light, and is probably an infinite collection of little meteors, subjected to never-ending attraction towards and repulsion from the sun, and containing, or else associated with, some element which we have never met upon the earth.

What does all this amount to? Is not the product sadly disproportionate to the outlay? What use under the sun is this theory to a man struggling after his bread and butter? Only let him be patient and some such theory may some day make his planting and sowing easier and his watching for the harvest less anxious.

Absorption of Knowledge.

When a man goes into the country for a vacation, who has been accustomed to office work, he finds, perhaps, the greatest enjoyment in being in the sunshine. He lies at full length in it, basks in it, revels in it. Unconsciously, he absorbs health, strength and spirits from old Sol's beams, and comes back with the skin off his nose, perhaps, and a bronzed complexion; but the sun baths have invigorated him more than anything else could have done. He feels the good effects for many months after, but needs at least an annual repetition of the prescription to keep him in health.

Perhaps this unconscious absorption into the system does no more good than what we endeavor to force there; and this holds true as well with the mental as with the physical faculties. Many people who never have the opportunity or time to read or study, still become as well informed on general topics as others who pay no attention to what they see about them, but put their trust entirely in books. It is worthy of note, that, as a general thing, the information gained by those who get their knowledge by observation is more practical and more ready at hand, than that of those who read rapidly and forget rapidly, too.

A great deal of this knowledge which we acquire during our lives comes to us unconsciously. We do not remember where or how we learned a certain fact, although knowledge of it comes to us when we need it. It seems as if the mental faculties were always at work storing away facts when the orgauism in which they are placed is unconscious of the act. Other things which a passing glance brings to our attention, we forget in a moment, to remember years afterward when the occasion for the use of the knowledge then acquired, arrives.

With these facts before us, then, should it not be a duty with all of us of progressive tendencies to place ourselves in the way of absorbing information? We always recognize a traveled man, who has seen many lands, as one possessing more than usual knowledge, and whose fund of information is such as to give pleasure to himself as well as others. When we come to think of it, he has simply trusted his body to the care of certain railroad, steamship and stage companies, and been rolled across the ocean, or trundled over a continent, from place to place, and his mental faculties have been at work all the time, gathering, absorbing and accumulating information on all manner of people, countries and subjects. We never hear of travelers taxing their brains much, as, in fact, many travel to relieve themselves of thinking, and others go to rest their brains. They exercise their bodies enough, but when they return we see less change in their physical than in their mental faculties, showing that the brain has unconsciously worked without regard to the man. The dullest-minded, however, have been improved simply from the unconscious absorption of knowledge.

We, who have not the opportunity of seeing many lands, but whose circle of observation is bounded by narrow limits, should take every opportunity to explore those limits to the fullest. We need not trouble ourselves very much further than the mere physical exertion is concerned, for the mind will unconsciously work for us. Of course the more prudent among us will direct the attention of the mind upon various subjects, and thus far assist the faculties; but even if we do not, the mind will not be idle under any circumstances, but will continue its work silently, but surely, in the absorption of knowledge.

It is not intended to imply that study or observation should be ignored, or that our faculties should not be exercised on all occasions where it is possible they should be; but simply that we should give our minds an opportunity of receiving impressions which may be valuable to us. When international exhibitions are given, those of us able to go should go. When local exhibitions of arts and manufactures are arranged for our benefit, we should take advantage of the occasion and visit there also. In any building or place where the works of man are brought together, no one can be a visitor without learning something of value from even the most casual examination. Even if the visit is made to pass away the time, the mental faculties will take note of many things and store them up for future reference.

Who Wants Employment?—The New Almaden Quicksilver M. Co. is now employing a number of Chinamen at common labor for $1 per day, merely as a makeshift for white labor at $2 per day, which the Superintendent is unable to obtain. If there are any good white laborers at $2 per day who want the place, they can have it by applying at the mine.—*San Jose Mercury, August 27th.*

Connecticut used Paris green to kill potato bugs. The rains carried the poison to the rivers and killed the fishes.

The Bicycle.

Most of the visitors to the Fair this year have noticed the English bicycle, which is on exhibition near the carriage exhibit. To the casual observer it is simply a curious toy. To those who remember the old velocipede, about which there was a short lived furore upon its advent seven or eight years ago, it will at first appear to be an overgrown modification of the old machine, and thus will most likely pass it by, with the thought or remark that such machines are of little use. This is a mistake which naturally arose, partly from the defective construction of most of the old velocipedes, which were hastily put together, and soon became so worn that their rattle could be heard for blocks; and partly because the seat was placed so far back that the movement of propelling was a forward push, which must be resisted by an equal pull with the arms, and would soon exhaust the most expert rider.

With characteristic impatience we threw it by; but the English people, believing that there was something in it, set to work to improve, until the present bicycle is the result.

The principal features are the enlarged front and diminished hind wheel, which renders it easy to mount and dismount; the saddle placed so nearly over the front wheel that the propelling is a downward push, almost identical with the motion of walking, but without the labor of carrying the body, which is supported by the saddle, and the employment of rubber tires, and a perfection of mechanism which renders the machine absolutely noiseless upon any sort of road. The great size of the wheel gives a movement of from 12 to 15 feet for each revolution, consequently what appears to be a very dilatory and slow movement, will easily pass over from five to seven miles per hour, and this is one great charm of the machine to those not ambitious of racing honors.

Upon any ordinary country road and over any reasonable hills such a pace can be maintained, with but little fatigue, for an entire day; while a speed of 10 or 12 miles per hour can easily be attained upon a good smooth road. A vast number of tourists in Europe employ the bicycle, as being more rapid and independent than any other method of travel, and they make from 40 to 100 miles per day, according to their ability, desire, or the quality of the road.

Two young Frenchmen started from Paris on the 16th of March and returned on the 24th of April, having traveled in France, Italy, and Switzerland, a distance of over 3,000 miles during the trip. Their longest single day's run was 90 miles. The race this year from Bath to London, England, upon the public road, 100 miles, was won in a little over eight hours, a feat beyond the powers of any horse.

The State Fair.

From a correspondent we learn that the efficient Secretary of the State Agricultural Society, Major Robert Beck, is hastening the many improvements to be made to the pavilion and park, and that everything will be in readiness by the time set to open the fair, September 16th. Among the many improvements and alterations being made for the comfort and convenience of exhibitors and visitors at the pavilion, might be mentioned a grand balcony on the west side of the hall, 126x18 feet, with two rows of seats. New stairs seven feet wide have been put up between the lower and upper halls. A new floor has been laid in the new hall on the east and all the shafting and gearing has been removed to a building in the park 80x90 feet, erected especially for the exhibition of machinery. The department from which it was removed will be devoted to the exhibition of vegetables, fruits, and flowers.

An amphitheatre is being erected at the park for the exhibition of stock. The building is in the form of a double octagon, having 80 feet in diameter, 16 sides and 16 angles. Forty feet around the center pole will be furnished with seats for the use of visitors, and the remaining space will be devoted to the exhibition of stock.

The stands in the park have been enlarged and improved and have a seating capacity for 6,000 people. Provision has also been made for stabling for 500 animals, together with large and convenient pens for sheep, Angora goats, swine, and coops and cages for fowl. In fact the appointments and accommodations are confidently believed to be superior to any other agricultural society in the union. The officers feel assured that the fair will be a grand success.

On August 27th Jack O'Harra and three others tried to jump the Blackhawk ground at Bodie. The employes fired upon them and O'Harra was fatally wounded.

It is stated that a new Turkish loan of £5,000,000 is in contemplation, to be guaranteed by the British Government.

Sir George Nares, the Arctic explorer, is about to survey the dangerous parts of the Straits of Magellan.

The heavens at Helltown, according to the Chico *Record*, have showered down manna in the shape of fishes.

The Lowe Gas Process.

There is hardly a branch of technology which has given rise to more vexed discussions of late years than the manufacture of illuminating gas. There seems to be a certain amount of dissatisfaction at all times afloat in a community which is ever ready to become fixed upon any corporation or body of men who are receiving a reasonable return for capital invested. Aware of this, it is not our purpose to attack in any manner the existing gas companies; but simply to state such facts as appear to be proved with reference to what seems to be an important improvement in gas manufacture.

The idea of manufacturing an inflammable gas from the action of steam upon burning charcoal and then giving to it an illuminating power by charging it with some hydrocarbon vapor is not a new idea by any means. Such a process was in existence at least 25 years ago. But there were certain practical objections to the method of manufacture in vogue at that time, which finally led to its abandonment.

The subject has, however, never been entirely given up, but it has been kept alive while progress was made in other branches of technology. The Simens gas producer, which has proved such an aid in metallurgical operations, was invented, then the regenerator principle was discovered, and finally the increasing discoveries of petroleum so cheapened the price of the illuminant hydrocarbons that all the conditions for the new improvement were ripe. Prof. T. S. C. Lowe was the man who took advantage of these favorable conditions, and strikiug out in an entirely new path, invented what seems without exception to be the most improved method of manufacturing water gas.

For a moment let us consider the chemical principle involved in the production of the so-called water gas. It is a familiar fact to all who are acquainted with even the first principles of chemistry that when steam passes through a layer of red-hot coals there is produced by the double decomposition a mixture of hydrogen and carbonic oxide gases, there being by supposition a sufficient amount of ignited carbon to complete the reaction. Otherwise carbonic acid in varying proportions will be an ingredient also. In case the reaction is complete there will be produced for each volume of steam at 100° C. which has been decomposed, one volume of carbonic oxide and one volume of hydrogen. This mixture of equal volumes of hydrogen and of carbonic oxide is then water gas pure and simple. In practice less carbonic oxide is usually formed, and in its place appears a variable but small amount of carbonic acid. This mixture is very inflammable and produces a great heat when ignited, but is not a light-producer. It must be mixed with some hydrocarbon vapor or gas. In this the various methods differ somewbat in detail. In the more successful of them, like the Tessie do Motay, the water gas is drawn from a gas receiver where it has been stored since its production, and is passed over a sheet of crude petroleum or naptha heated from without by hot water, and the gas thus saturated with hydrocarbon vapor is changed entirely into a mixture of permanent gases hy passing it through retorts heated from without, and filled with bricks to increase the heating surface.

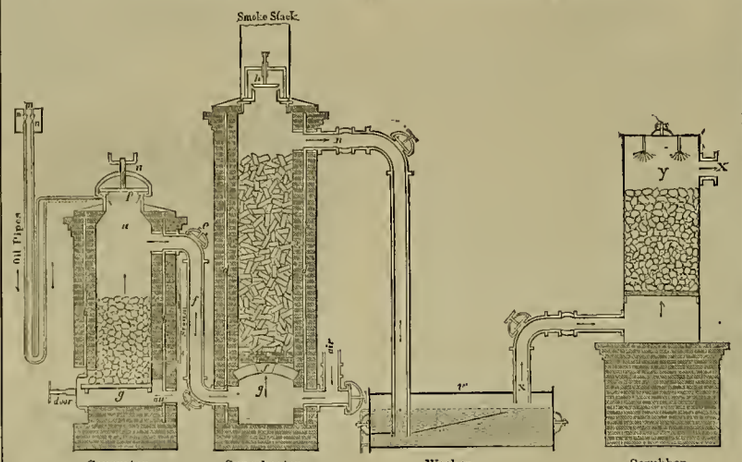
The Lowe Apparatus.

We now come to the method of Prof. Lowe. The apparatus is shown entire in the accompanying cut. The only change is a slight shortening of the connecting pipe and an omission of the lime boxes. It consists of a generator, a superheater, a washer and a scrubber, the essentials, of course, being the generator and the superheater. They are both built of brick, with a fire-brick lining, *c*, *c*, and *e*, *e*, with a space for non-conducting material, *b*, *b*, and *d*, *d*, between the two brick walls, and are both surrounded with a shell of boiler iron. The generator is in effect a cupola furnace, with an air-tight grate door and an air blast at the bottom. A pipe allows the introduction of steam into the midst of the burning fuel when necessary. The charging of fuel takes place through the clamped door, *n*, at the top.

The superheater is a similar stack, somewhat higher, and filled with fire brick loosely piled together. At the bottom an air blast can be introduced, and at the top is a valve, *h*, which can be kept closed or open at pleasure by a weight and pulley. The process is now as follows: The grate, *g*, of the generator being covered with kindling, the apparatus is charged with anthracite or coke from the top to the depth of three or four feet. The fire is lighted and the air blast turned on at the bottom. The door, *n*, being closed, the gases, essentially carbonic oxide, coming to the top of the fuel, pass in the direction of the arrows down the connecting pipe till they reach the bottom of the superheater, at *g*, where they are ignited and are supplied with air by the blast pipe shown in the cut. The valve, *h*, is left open and consequently the intensely heated gases pass up the superheater, and impart their heat in the most effective way possible to the mesh of fire brick with which it is filled. As this gas, being now mostly carbonic acid, is useless for gas purposes, it does not pass into the washer, but through the open valve, *n*, into the smoke stack. By the time the anthracite has become heated to a good red, the bricks of the superheater have assumed a white heat. At this point the air blasts are both shut off; the valve, *h*, of the superheater is closed, a steam jet is let in at the bottom of the glowing coal of the generator and the mixture of carbonic oxide and hydrogen gases pass up from the fuel. At the same time a constant stream of crude petroleum, or of naptha or gasoline, when that is obtainable at a less price, is let in from the oil pipes through the jets, *p*, in a shower upon the ignited fuel. It is thus instantly vaporized and the mixture of carbonic oxide and hydrogen gases pass into the superheater saturated with these illuminant vapors. Here they come into contact with the white-hot bricks and become changed into permanent gases. The exact nature of the chemical reactions which occur in the superheator is not known. It is certain, however, that they vary according to the proportions of water-gas and hydrocarbon vapor, the temperature of the bricks, the rapidity of the current, etc. The operation is repeated when the apparatus is cooled below a certain point. The rest of the operations which the gas undergoes, the washing, scrubbing, lime purification, etc., are precisely like those of ordinary coal gas, with the exception that it is claimed to be less difficult to purify.

One cannot fail to admire the simplicity and compactness of the whole apparatus in comparison with the extensive space required by the retort system.

According to the report of Prof. Henry Wurtz, Nov. 1st, 1875, an apparatus of the following dimensions: a generator nine feet high, 28 inches internal diameter, half filled with clean anthracite, and a superheater, 15 feet high by 28 inches internal diameter, produced at each run, 3,000 cubic feet or more, according to the degree of heat attained; and as the average time of heating up and generating gas was altogether one hour, 24 such runs were made in a day, or over 70,000 cubic feet of gas are obtainable in 24 hours from such an apparatus.



SECTIONAL DIAGRAM OF THE LOWE GAS APPARATUS.

So much for a brief description of a process whose success has been one of the vexed questions of the day, and about which there have been more contradictory statements than about any other question of a technical nature which has come to our notice for many years. Ever since 1875 the *Engineering and Mining Journal* has steadily given its sanction to the process, and we have carefully followed up the controversy which took place upon its pages, and have lately re-read the various articles, reports, replies and editorials which extend through several dozen numbers. On the other hand the *American Gas Light Journal* has as steadily fought the new process. So that between the opposing statements it is almost impossible to ascertain the truth. It is not our intention to enter this controversy. We shall merely give what seems to be established, and shall reserve our verdict until we have a better knowledge of the bottom facts.

The First Great Objection

To the water gas has been the amount of carbonic oxide which it was said to contain. We take from the report of Profs. Rogers and Stevens which appeared in the *Gas Light Journal*, November 2d, 1877, page 179, the following analysis of the Lowe gas:

Lowe Gas From Gasholder at Manayunk.

Hydrogen	42.86
Marsh gas	44.28
Olefiant gas	5.18
Carbonic oxide	3 43
Carbonic acid	.69
Sulphuretted hydrogen	.80
Oxygen	.14
Nitrogen (estimated)	.56
Ammonia, etc	2.00
	100.00

Lowe Gas taken from Pipe Tapped Between Purifier and Large Meter.

Hydrogen	64.66
Marsh gas	24.73
Olefiant gas	4.81
Carbonic oxide	2.72
Carbonic acid	.19
Sulphuretted hydrogen	.30
Oxygen	.41
Nitrogen (estimated)	1.31
Ammonia, etc. (estimated)	.37
	100.00

Analysis of Manayunk City (Coal) Gas for Comparison.

Hydrogen	47.72
Marsh gas	38.53
Olefiant gas	5.20
Carbonic oxide	1.90
Carbonic acid	.94
Sulphuretted hydrogen	1.03
Oxygen	.17
Nitrogen (estimated)	.85
Ammonia, etc (estimated)	3.66
	100.00

For the purpose of a more extended comparison, we give the following analysis of purified coal gas from some of the principal cities of Europe, which are taken from an address of Prof. Chandler read before the Gas Light Association (*Engineering and Mining Journal*, January 1st, 1876, page 11.):

	Heidelberg.	Bonn.	Chemnitz.	London Common.	London Canned.
Hydrogen	44.00	39.80	51.29	46.00	27.70
Marsh gas	38.40	43.12	36.45	39.50	50.00
Carbonic oxide	5.73	4.66	4.45	7.50	6.80
Olefiant gas, etc.	7.27	4 75	4.91	3.80	13.00
Nitrogen	4.23	4.65	1.41	0.50	0.40
Oxygen	.....	.....	0.41	.....	.....
Carbonic acid	0.37	3.02	1.08	0.70	0.10
Aqueous vapor	.....	.....	.....	2.00	2.00

It is evident that the smallest amount of carbonic oxide contained in this table exceeds by nearly 30% the greatest amount contained in the Lowe gas as given by Profs. Rogers and Stevens. But there is no doubt that there is usually a much larger amount of carbonic oxide in the Lowe gas. The analyses given by Prof. Morton and by Prof. Henry Wurtz usually place it as high as 26% to 27%. We have not as yet been able to find exact statements of the poisoning power of this gas. But it has been probably over-estimated. At any rate, wood gas which contains large amounts of it has not been found to be more dangerous than ordinary coal gas. Besides this, it is a matter of fact that the Lowe gas has a distinct odor, though different from that of coal gas. The great opposition to water gas in general is founded upon the fact that it was originally used without carburization for producing light by heating a coil of platinum foil. This gas had no odor. But the Lowe gas contains hydrocarbons from the petroleum and has a distinct odor, perhaps slightly less disagreeable than that of coal gas.

A More Serious Objection

Has, however, been brought up. The opponents of the process claim that it deposits soot and tar in the pipes of the consumers. The Lowe party claim on the contrary that the deposits are from the old coal gas accumulations that have been taken up from the pipes by the peculiar dissolving powers of their gas. We have been unable to sift the truth from the mass of conflicting statements that have come to our notice. It is not improbable that "soot" is produced at certain stages of the Lowe process. Tar, etc., occurs, but, according to Prof. Wurtz, in less amounts than in coal gas. But after all, the soot, etc., seems not to be a necessary ingredient of the *purified* gas, and its presence in the mains seems merely to indicate lack of sufficient purifiers.

Next as to Cost of Production.

This of course depends upon the price of anthracite and petroleum or naptha at the particular locality. From the report of Profs. Rogers and Stevens 5,200 cubic feet were made in half an hour with 248 pounds anthracite coal and 16 gallons of crude petroleum. This gives 48 pounds of anthracite and 3.08 gallons of petroleum to 1,000 cubic feet. It should be remarked that the candle power of this gas was low (12.51 to 13.95 candles), but the method of collecting and treating the gases was open to grave objections, and has been severely criticised. Besides, these gentlemen state that "it is within the power of the manufacturer to control, within a wide range, its [the illuminating power] by the use of a larger or smaller quantity of oil." The Lowe men, however, only claim to make a gas of 20 candle power with 90 to 60 pounds of anthracite, according to its freedom from ash, and three gallons of crude petroleum. At the works at San Jose, Cal., where a 20 candle gas is produced, they state that 50 pounds of anthracite are used and three gallons of crude petroleum. This estimate for coal includes all that is burned under the boilers for steam making. The engineer of the Lowe gas works at Baltimore, in a private letter dated May 9th, 1878, states that they were making with six sets of the apparatus 690,000 cubic feet in 24 hours. Using for this purpose for each 1,000 cubic feet in the holder, 60 pounds of anthracite and 4¾ gallons of naptha. The amount of coal includes all used for steam purposes, heating, building, etc.

The Relative Economy

Of this gas and of coal gas is a question which will depend very much upon circumstances. When anthracite and petroleum or naptha are cheap, and gas coal is high, with no market for coke, the water-gas method, with the small outlay for its compact apparatus, will have a great advantage, if all that is claimed for it be true. But on the other hand, when the conditions are reversed, the margin of profit will be much less. The gas men claim that it is not so much the cost of production which troubles them as the storage and distribution of the product itself.

We do not apprehend the need of any great terror on the part of the gas stock owners. If the new process proves itself a success they should certainly be the first to inform themselves of the fact. If they find that they can supply their customers with a better gas at a lower cost to themselves, it will certainly pay them better than any outsider to adopt the new improvement. It is just in such things that cautious progress stands in opposition to unwise conservatism. We would add a word to those most interested. Give the process a trial beside the retort system and under the direction of competent experts, and then you will be able to judge for yourselves whether or not it is worth your while to slowly introduce the new system as necessity arises of increasing production or of replacing worn-out retorts.

In the short space of such an article it is impossible to more than glance at the salient points of this interesting process. We have taken steps to settle some of the disputed issues, and hope shortly to be able to express a more unqualified opinion on this subject.

Address all communications to Chas. Holmes, Secretary Lowe Gas Co., room 14, No. 330 Pine street, S. F.

New Incorporations.

The following companies have filed certificates of incorporation:

Silver Queen M. Co.—Capital stock, $1,000,000. Directors—W. S. M. Wright, David Clark, T. J. Ludroig, C. G. Ames and G. L. Crane; all of Santa Rosa, California.

Calabasas L. & M. Co.—Location: Pima county, Arizona. Directors—J. P. Jones, Juo. Currey, E. L. Sullivan, George C. Perkins and C. P. Sykes. Capital stock, $10,000,000.

Old Dan M. Co.—Location: Bodie district. Capital stock, $10,000,000. Directors—C. H. Hobbs, F. B. Reynolds, A. H. Rutherford, C. A. Singletou and J. P. Dyer.

Last Resort M. Co.—Location: Bodie district. Capital, $5,000,000. Directors—W. M. Stewart, W. B. Carr, L. F. Lovelaud, James Morgan and F. W. Clute.

Monte Aquacarte M. Co.—Location: California and Costa Rica. Capital, $5,000,000. Directors—John Stuart, C. B. Dahlgren, Henri A. R. Moyne, D. E. Mellis and C. W. Carter.

North Fork G. M. Co.—Object: To operate the Calias and other gravel mines in Nevada county. Capital, $500,000. Directors—David L. Hill, E. Nichols, L. P. St. Clair, George Hill and Robert Cryer.

Ruby Silver M. Co.—Location: Arizona. Capital, $1,000,000. Directors—E. G. Freeland, H. M. Rosekrans, J. W. Kinsman, F. H. Wells and L. B. Seaver.

South Comstock Con. M. Co. — Capital, $10,000,000. Directors—Robert Sherwood, George Schultz, W. F. Myers, G. W. Rogers and J. M. Buffington.

Don Quixote M. Co.—Object: To mine in Mono county. Capital, $10,000,000. Directors—C. K. Hobbs, C. F. Singletary, A. H. Rutherford, F. B. Reynolds and J. P. Dyer.

Quartz Mt. G. M. and T. Co.—Object: To operate in California. Capital, $5,000,000. Trustees—H. H. Pearson, O. H. LaGrange, J. R. Hardenbergh, W. R. DeFrees, W. B. Murdock.

Handly M. Co.—Object: To operate in California. Capital, $10,000,000. Directors—Clintou Gurnee, R. F. Bunker, R. G. Brown, C. Reis, J. M. Walker.

R. E. Lee T. and M. Co.—Object: To operate in Bodie district. Capital, $6,000,000. Directors—W. B. Davenport, J. G. White, W. S. Chapman, Fred. W. Hadley, F. K. Bechtel.

Mont Blanc Con. Gravel M. Co.—Object: To operate in Nevada county. Capital, $1,000,000. Directors—Francis Souchet, George Edwards, Henry Bush, Apolonaire Ganthier and A. B. Brady.

The Ida mining company's stock has been listed on the San Francisco Board. This property lies between the Black Hawk and the Summit mines, in Bodie district.

There is said to have been an important discovery of gold diggings in the Shoshone mountains, Montana.

Mining and Scientific Press Patent Agency.

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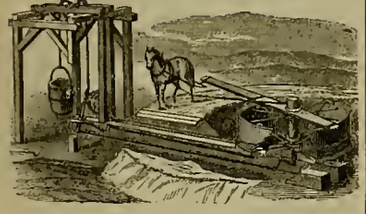

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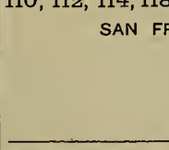

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Name of Company.	Week Ending Aug. 8.		Week Ending Aug. 15.		Week Ending Aug. 22.		Week Ending Aug. 29.	
Alpha	16½	10	14⅜	10½	16	13¦	17½	13½
Alta	11	8½	12	8⅜	15	9⅜	13⅜	13⅜
Andes	60c	35c	80c	40c	90c	60c	80c	65c
Alps								
Argenta	50c	40c	70c	45c	70c	40c	1.15	60c
Baltimore Con								
Belcher	10	4.45	9⅞	4½	11⅜	9	15	10½
Belmont	2.75	90c	1.80	75c	3	1.30	2.60	2
Best & Belcher	17¾	14½	20	14½	20½	17½	28	18
Bullion	8½	5½	9½	5	13	9½	12½	10½
Bechtel	5	1.80	3⅜	1.60	3.10	2.20	3	2.10
Bodie	25	17	46	17	48	23½	52	37½
Benton	3.90	3.40	6¼	3.10	5½	3½	5.90	4.90
Caledonia	3.35	2.15	3⅜	2.10	4	3	5½	3⅜
California	12¾	9½	12¾	9⅝	11½	10¾	14½	11½
Challenge	1¼	1	2.15	1½	2.10	1¼	1.90	1½
Chollar-Potosi	35½	29½	38¼	29	39	33	40	36½
Confidence	7	5	8¼	5½	8	4½	7	5½
Con Imperial	5	70c	1¼	85c	1¼	85c	1.40	1
Con Virginia	10¾	8½	10½	8½	10⅜	9¼	13	9¼
Crown Point	9¼	7½	11½	8½	10¾	8¾	11	9
Dayton	50c	25c	50c	30c	50c	40c	45c	40c
DeFrees	20c	10c	25c	15c	30c	15c	30c	15c
Day		40c	1	55c	90c	60c	90c	75c
Eureka Con	48	44	48½	42½	45	36¾	43	36½
Exchequer	1	5¾	3.90	6	4	6¾	5	6½
Endowment	2	1	1¼	90c	2	1	1.10	50c
Gen Thomas								
Graud Prize	3.50	3¼	6¾	3¼	5½	3¼	6	5½
Gila	55c		55c	50c	55c	40c	50c	35c
Golden Chariot	25c		50	25	60c	25c	50c	45c
Gould & Curry	9	7⅜	11¼	7	11¼	9¼	14	9½
Hale & Norcross	9¼	7	11	7⅜	9¾	8½	11	9¼
Hussey	90c	55c	90c	45c	60c	40c	1	65c
Julia	12¾	8	13¾	8½	17	13½	17	9¼
Justice	8	5½	7¼	5½	9¾	6¾	9½	7½
Jackson	4½	3¾	5	3½	5½	4½	6¾	5½
Joe Scates								
K K Con								
Kentuck	6	4½	6¾	4¾	6	4¾	6¼	5¼
Kosuth	5c		30c	10c	25c	20c	25c	20c
Lady Wash	8¾	8	12	8½	14½	11½	13½	12½
Leopard	1.35	1	1½	95c	2.70	1.20	2¼	1½
Leviathan	95c	40c	75c	60c	95c	60c	75c	65c
Leeds	1	25c	1	90c		80c	1	90c
Modoc	30c	20c	33c	25c	80c	25c	50c	50c
Manhattan	5¾	3½	6¾	5½	9¾	5½	7	6¾
Meadow Valley			1	25c	40c	25c	40c	40c
Mexican	24½	13¾	26¾	13½	24¾	20	31	22½
North Con Virginia	5¾	1.45	4¼	1½	5¾	3	4¼	3
New York	1¼	95c	1.70	1	2.35	1.20	2	1½
Northern Belle	1	9	1¼	9	1¼	9	1¼	1
New Coso	40c		45c	40c	40c	40c	50c	30c
Navajo	50c	45c	65c	45c	95c	65c	1.10	80c
Occidental	1.40	1	1.65	1	1.70	1	1¼	1
Ophir	46	38½	48	41	46½	41	50	43
Overman	18	11½	18	11½	18	13½	21¼	15½
Panther	30c		20c		30c	15c	45c	15c
Raymond & Ely	3.95	3	4¼	2.85	5	3	3¼	2¼
Rock Island								
Savage	13	10½	14	11½	14½	12	14½	12½
Seg Belcher	26½	22	30	35	35	31	40	35
Sierra Nevada	33¾	13	31¾	11½	41¼	25	31	40
Silver Hill	2	1	1.65	1.90	4	1.45	4	3¼
Succor	2.70	1.05	2¼	1.10	2¼	1.15	2¼	1.80
Solid Silver	4	2.40	4.40	4	5	3½	6¼	5
Star	2¼	1	1.95	1	1¼	80c	2	1
Trojan	65c	50c	85c	45c	3.55	50c	85c	65c
Union Con	30	10c	23¼	9	30	24½	37	27
Utah	16	10½	17¾	11½	18	15	39	19½
Wells-Fargo	20c	5c	20c	15c	95c	15c	75c	45c
Woodville	75c	60	85c	45c	85c	50c	90c	80c
Yellow Jacket	16	10½	16	10½	16	13	28	14½

Sales at S. F. Stock Exchange.

Friday A.M., August 23.

1685 Alta 14¦@14½
200 Alpha 15¦@15⅜
415 Andes 75c@80c
65 Best & Belcher 18½@18¾
2835 Bullion 11½@11⅝
1785 Belcher 11½@10½
740 Con Virginia 9¦@9¼
650 California 11¦@11⅜
60 Chollar 36
460 Crown Point 9⅝@9½
250 Confidence 55½@c
100 Challenge 1.90
3810 Con Imperial 1.00¦1.05
1860 Caledonia 40¦@c
200 Con Washoe 1½
300 Dayton 45c
1400 Dauey 25c
1950 Exchequer 6¾@6¾
520 Gould & Curry 10½@10¾
345 Hale & Nor 9¦@9¼
2.75 Justice 9¼@9¾
1330 Julia 15¾@15½
230 Kentuck 5½@6
450 Kossuth 20@25c
120 Lady Bryan 2
565 Lady Wash 13¾@12½
280 Mexican 22¼@23
1395 New York 2@1.90
730 Overman 15½@16½
370 Ophir 43
1340 Sierra Nevada 40¦@40½
430 Savage 12½@12½
1100 Succor 2@1.90
7425 Silver Hill 34@33½
20 Seg Belcher 1.30
1320 Union Con 27¾@27
240 Utah 19¾@20
520 Ward 3.90@3.95
2130 Wells-Fargo 50@45c
515 Yellow Jacket 14½@15¼

AFTERNOON SESSION.

400 Argenta 65c@60c
345 Aurora T 42¦@41
1840 Benton 5¦@5.90
1620 Bechtel 2½@2
210 Bodie 46c@45
950 Belmont 21¦@22
180 Bullion 14¦@13¾
1670 Boyle 2@2.10
850 Black Hawk 2
740 Belvidere 4¦@4
1450 Champion 2¦@2
800 Concordia 22¦@c
2800 DeFrees 20c@15c
600 Day 80c
400 El Dorado S 25c
3845 Endowment 90c@1.10
90 Eureka Con 36¦@36¾
510 Graud Prize 6¾@6½
950 Gila 35c@40c
875 Goodsha 1.10@1.15
1300 Golden Chariot 50c@45c
490 Hillside 30¦@
3865 Hussey 80c@c
1485 Highbridge 21¦@2.40
1655 Independent 2¦@2.40
400 Ida 1
1050 Jackson 6¼@5½
1470 Leopard 2¦@2.45
100 Leeds 1
610 Leviathan 65c@70c
950 Lee 85c@90c
120 Manhattan 7
1220 May Belle 90c@1
400 Morning Star 3¦@3½
1440 Mexican 2.20@c
1560 Modoc 50c@70c
2050 Navajo 90c@80c
2.0 North Con Vir 3¦@3½
395 Ophir 1¼@1.40
3100 Panther 45c@40c
400 Prospect 45c
310 Rough & Ready 2
820 Silver Prize 15c
2130 Summit 4¦@5½
270 Scorpion 4½@4
225 Syndicate 4¦@4¼
700 Star 1.10¦1.20
400 St Louis 45c@50c
255 Solid Silver 5½@5
600 Sitting Bull 1
1150 Tiptop 1.45@1.40
50 Tioga Con 3

3495 Silver Hill 3.90@4
50 Succor 2
265 Utah 38@36½
2440 Union Con 32½@33
578 Woodville 80@90c
1655 Ward 4¦@4¼
2700 Wells-Fargo 60@75c
950 Yellow Jacket 17c¦16

AFTERNOON SESSION.

750 Arizona C 3
1115 Andes 80@70c
220 Argenta 75c
1320 Aurora T 6
630 Bodie 37½@38½
205 Bulwer 15@14½
1625 Bechtel 1½@2
1150 Belvidere 4½@5¼
1365 Belmont 2.60@2
1400 Belle Isle 2@2.10
1205 Black Hawk 2@1.65
450 Champion 2@2.10
550 Concordia 75@80c
125 Day 80@75c
520 DeFrees 30@25c
280 Eureka Con 40¾@41¼
5870 Eudowmeut 30@50c
150 El Dorado S 25c
835 Grand Prize 5½@c
150 Gila 40@30c
1345 Leopard 2@1.90
1350 Leviathan 70@65c
545 Morning Star 40@35
1485 Modoc 70@55c
275 Manhattau 7
600 Meadow Val 50c
60 Martin White 6
4570 McClluton 2¼@2
100 New Coso 30@25c
75 Northern Belle 10½@10
1345 Occidental 1
1400 Hussey 80@90c
1.85 Hillside 4@3.90
2510 Highbridge 2½@2.30
1250 Independent 2.40@2.30
1030 Ida 1
520 Jacksou 6½@6¾
10 Leeds 1
1345 Leopard 2@1.90
1350 Leviathan 70@65c
545 Morning Star 40@35
1485 Modoc 70@55c
275 Manhattau 7
600 Meadow Val 50c
60 Martin White 6
4570 McClluton 2¼@2
100 New Coso 30@25c
75 Northern Belle 10½@10
2720 Navajo 90c@1
530 Oriental 1½@1.40
3035 Panther 40@35c
100 Prospect 35c
445 Raymond & Ely 3@3¼
300 Rough & R'dy 2
200 Red Cloud 2
730 Scorpion 5c@4½
275 Solid Silver 5½@5
175 Sunnyside 5@4
300 Syndicate 4¦@4
75 St Louis 45c@50c
1900 Star 1½@1¼
1500 Silver Prize 15c
1500 Tiptop 1.30
1535 Trojan 85c@70c
2750 Tioga Con 2½@2.40
890 Vermont Con 4½@4¼
40 W Cloud 1
Tuesday A. M., Aug. 27.
1050 Alpha 16c@15½
1615 Alta 13c@13½
325 Best & Belcher 19c@19½
1645 Belcher 12½@12½
1760 Bullion 12c@11½
2645 California 12c@11½
1830 Con Virginia 11½@11¾
5270 Con Imperial 1.05c@1.10
445 Confidence 6½@6¾
2630 Crown Point 10½@11
2670 Caledonia 4½@5½
195 Chollar 36c@37½
2050 Daney 50c@30
1330 Exchequer 6½@5¾
675 Gould & Curry 10½@10¾
525 Hale & Nor 9½@9¾
1930 Justice 9½@9¾
1815 Julia 14½@13¾
415 Kentuck 5½@5¾
1040 Bulwer 14c@13
2775 Black Hawk 2@1.95
1185 Bodie 46c@48
2640 Belvidere 5c@4.70
1100 Champion 2½@2½
200 Coso Con 40c
300 Comanche 60c
165 Chollar Con 1.65@1½
300 Concordia 75c
1750 DeFrees 25c
950 Day 85c
70 Eureka Con 41
1785 Eudowment 75c@65c
50 Gila 45c@50c
2240 Goodshaw 95c@1.05
550 Golden Chariot 50c
930 Grand Prize 5¼@c
2190 Highbridge 2c@1¾

SALES OF LAST WEEK AND THIS COMPARED.

Thursday A.M., Aug. 22.

1455 Alpha 13¦@13¾
1140 Alta 13c@14½
385 B & B 18@17½
1735 Bullion 9¦@9¼
1780 Belcher 9½@9¾
155 Chollar 33c@3
1490 Con Virginia 9¾@9½
1115 California 11¦@11¼
1960 Caledonia 1.3½@c
805 Crown Point 8¼@9
4090 Con Imperial 85c@1
50 Challenge 1½
180 Confidence 5½@c
1000 Daney 30c
200 Dayton 40c
2230 Exchequer 5c@5
1770 Gould & Curry 9½@9¾
800 Hale & Nor 8¾@9
2215 Julia 17c@13½
2020 Julia 13¾@13¾
615 Kentuck 4½@5
1155 Mexican 20½@21½
875 New York 1.20@1¼
375 Overman 16½@16¾
590 Ophir 42½@43
410 Succor 1.80@1.90
865 Savage 12¾@12¾
2610 Sierra Nevada 36½@37½
50 Seg Belcher 33
1500 Silver Hill 3@3¼
1340 Union Con 25c@26
720 Utah 17½@18
540 Yellow Jacket 13¾@13¾

AFTERNOON SESSION.

400 Aurora T 4¦@4.20
250 Arizona 65c@70c
1035 Andes 60c@55c
50 Bulwer 13
925 Belmont 2½@2¾
565 Belvidere 3¦@3½
100 Belle Isle 35c
2800 Black Hawk 2@2.05
360 Bodie 39¦@40
1220 Bechtel 2¼@2½
925 Benton 5½@5¾
970 Boyle 2
50 Champion 1½
240 Con Washoe 1¦@1.40
1000 Coso Con 50c@55c
950 Concordia 80c@90c
500 Con Arizona 1½
1400 DeFrees 15@20c
310 Day 85c
340 Eureka Con 36@36½
420 Endowment 1.20@1.30
200 Grand Prize 5½@5¾
3185 Hussey 90c@1
50 Hamburg 2½
370 Hillside 3¦@4
1250 Independent 2.20@2½
150 Ida 95c@1
380 Jackson 6
385 Leopard 2½@3
995 McClinton 1.90@2
250 Manhattau 7
100 May Belle 1½
250 Meadow Valley 40@50c
675 Modoc 70@65c
630 Star 1½@1.10
400 Sitting Bull
1075 S Bodie 1.80@1.85
190 Northern Belle 10¦@10½
1920 Navajo
910 Oriental 1½@1.60
1470 Summit 5½@5¾
920 Tiptop 1.40
770 Tioga Con 2.70@2¼
1845 Con Virginia 11½@12
705 Crown Point 11@10½
380 Alpha 16@15¾
295 Best & Belcher 19½@20
1155 Belcher 12½@12½
1470 Bullion 9¾@9½
1470 Summit 5½@5¾
920 Tiptop 1.40
770 Tioga Con 2.70@2¼
1845 Con Virginia 11½@12
705 Crown Point 11@10½
630 Star 1½@1.10
400 Sitting Bull

Wednesday A.M., Aug. 28.

3375 Alta 13½@15¾
380 Alpha 16@15¾
295 Best & Belcher 19½@20
1155 Belcher 12½@12½
1470 Bullion 9¾@9½
1470 Summit 5½@5¾
920 Tiptop 1.40
770 Tioga Con 2.70@2¼
1845 Con Virginia 11½@12
705 Crown Point 11@10½
630 Star 1½@1.10
400 Sitting Bull
1075 S Bodie 1.80@1.85
190 Northern Belle 10¦@10½
1920 Navajo
910 Oriental 1½@1.60
1470 Summit 5½@5¾
920 Tiptop 1.40
770 Tioga Con 2.70@2¼
1845 Con Virginia 11½@12
705 Crown Point 11@10½
630 Star 1½@1.10
400 Sitting Bull

AFTERNOON SESSION.

2225 Caledonia 5½@4.95
12500 Con Imperial 1.10@1.20
1025 Confidence 8@7
360 Challenge 2
2240 Exchequer 5½@5¾
770 Gould & Curry 10¾@11
215 Hale & Nor 9½@9¾
2675 Justice 7½@8
3040 Lady Bryan 3@c
1835 Mexican 23½@c
345 New York 2@1.90
1750 Ophir 47¾@46½
1755 Sierra Nevada 59½@60
305 Savage 13½@13¼
2460 Silver Hill 3.90@c
730 Succor 1.60@2
40 Seg Belcher
2125 Union Con 42¾@43
729 Utah 33½@37
2310 Yellow Jacket 20@20¾

AFTERNOON SESSION.

1420 Argenta 1@1.15
1500 Aurora T 5½@c
575 Arizona 65c@65c
355 Bodie 52½@50
1365 Bechtel 1½@2
1755 Belmont 2¼@2.20
1820 Benton 52½@c
200 Bullion 9
1300 Booker 2@3
670 Black Hawk 2@1.95
830 Belvidere 5¾@3¾
850 Champion 2¼@2¾
200 Coso Con 55c
1300 DeFrees 20@30c
400 Day 75@90c
350 Eudowmeut 70@75c
325 Eureka Con 41@41½
630 Goodsha 1.05@1.15
1040 Grand Prize 6½@5¾
75 Gila 50c
900 Golden Chariot 45@50c
250 Highbridge 1½@1.70
3825 Hussey 80c@c
100 Honestake 10
150 Hillside 4
1495 Independent 2¼@2.40
400 Ida 1
665 Jackson 5½@5¾
1500 Leviathan 70c
1350 Leopard 2½@2¾
820 Morning Star 1½@1¾
650 Manhattan 7½@c
450 Mides 2.90@3
150 M White 8
1700 Modoc 70@65c
630 McClluton 1.80@1¼
100 Meadow Valley 45c
200 New Coso 35@50c
1000 No Con Virginia 4@4½
3600 Navajo 1@1.10
1500 Northern Belle 1¼@1.10
1000 Oriental 1½@1¾
100 Occidental 1@1¼
1500 Leviathan 70c
330 Lady Wash 12½@13
820 Morning Star 1½@1¾
650 Manhattan 7½@c
450 Mides 2.90@3
150 M White 8
1700 Modoc 70@65c
630 McClluton 1.80@1¼
100 Meadow Valley 45c
200 New Coso 35@50c
1000 No Con Virginia 4@4½
3600 Navajo 1@1.10
1500 Northern Belle 1¼@1.10
1000 Oriental 1½@1¾
100 Occidental 1@1¼
1500 Leviathan 70c
330 Lady Wash 12½@13
820 Morning Star 1½@1¾
650 Manhattan 7½@c
450 Mides 2.90@3
150 M White 8
1700 Modoc 70@65c
630 McClluton 1.80@1¼
100 Meadow Valley 45c
200 New Coso 35@50c
1000 No Con Virginia 4@4½
3600 Navajo 1@1.10
1500 Northern Belle 1¼@1.10
1000 Oriental 1½@1¾
100 Occidental 1@1¼

Thursday A.M., Aug. 29.

1165 Alta 17¦@18½
936 Best & Belcher 2½@27
2955 Bullion 11½@10½
860 Belcher 15@14
40595 Con Imperial 1.40@1.20
805 California 14½@14
715 Confidence 12½@9
680 Chollar 40@39
1340 Crown Point 11@10⅝
110 Daney 60c
1625 Exchequer 6½@5¾
1470 Gould & Curry 11¼@12
1895 Justice 9½@8¾
970 Kentuck 6¾@6
1485 Mexican 24½@c
985 Overman 20½@19¾
100 Succor 2½
3100 Sierra Nevada 58½@c
2600 Scorpion 14½@14
1485 Andes 95c@80c
1630 Belmont 3¾@c
1830 Benton 5½@6
2600 Bechtel 2¼@2½
970 Black Hawk 2@2.05
230 Bodie 50c@50½
1565 Belvidere 2@3
1135 Boyle 2½@2¾
1195 Caledonia 4½@4¾
100 Coso Con 60c
300 Concordia 50c
270 Champion 1½
1000 Con Washoe 1½@1.40
800 DeFrees 20c@30c
830 Day 80c@65c
430 Eureka Con 40@41
830 Endowment 70@75c
250 Grand Prize 5½@6
850 Gila 40c@35c
2020 Goodshaw 1.15
140 Golden Terra 4

700 Gila 45@50c
1400 Golden Chariot 50c
50 Homestake 10
2310 Hussey 80@a1
420 Highbridge 1½@1.60
1150 Hussey 70@c
50 Hillside 4@4½
6 Hamburg 2½
3425 Independent 2.30@2.40
310 Jackson 5½@5½
1 3350 Kossuth 25@35c
2000 Lee 85@90c
1650 Leopard 2@2.40
250 Leeds 1
340 Lady Wash 15@16½
370 Leviathan 75c
325 Mides 2½
20 Martin White 8
1140 Modoc 70@65c
440 Manhattan 6½@c
150 Meadow Valley 40c
1550 Morning Star 6@6½
2210 McClinton 1.20@1¼
335 N Con Virginia 4@3.80
535 Northern Belle 9@9¼
2185 Navajo 1@1¼
1250 New Coso 50c
2290 New York 2@1½
100 North Carson 15c
150 Oriental 1.40@1¼
270 Occidental 1@1.15
1370 Phil Sheridan 2½@2.60
100 Prospect 35c
500 Panther 35c
85 Raymond & Ely 3½
1100 Rough & Ready 2@2½
670 Solid Silver 7
970 Summit 4@5
5 2395 Silver Prize 20@15c
760 Scorpion 5@6
3800 Silver Hill 3½@4
230 Star 1¼
2425 S Standard 1@1¼
400 St Louis 50c
1 2030 Tioga 2½@2¾
745 Tiptop 1.35@1.40
550 Trojan 60@65c
330 Vermont Con 6½@6¾
1045 Wells-Fargo 95c@1.10
2 2030 Ward 2.30@2
700 Woodville 75c

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS—STOCKS ON THE LISTS OF THE BOARDS.

Company.	Location.	No.	Amt.	Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business
Alps S M Co	Nevada	13	1 00	May 21	Aug 14	Sept 10	O D Squire	331 Montgomery st
Alta S M Co	Washoe	12	1 00	July 18	Aug 22	Sept 10	W H Watson	302 Montgomery st
Belcher S M Co	Washoe	15	1 00	July 17	Aug 26	Sept 10	Jno Crockett	419 California st
Bullion M Co	Washoe	7	1 50	Aug 12	Sept 16	Oct 7	J Gruss	418 California st
Bechtel G M Co	California	2	50	Aug 14	Sept 19	Oct 10	W H Lent	309 Montgomery st
Belmont M Co	Washoe	18	40	July 29	Sept 2	Sept 24	J W Pew	310 Pine st
Boyle M Co	Nevada	1	15	Aug 1	Sept 4	Sept 23	Wm H Watson	302 Montgomery st
DeFrees M & M Co	Nevada	10	10	Aug 5	Sept 6	Sept 23	Thos E Atkinson	310 Pine st
El Dorado South Con M Co	Nevada	13	25	July 27	Aug 30	Sept 23	C A Sankey	331 Montgomery st
El Dorado W & D G M Co	California	18	2 00	Aug 15	Sept 16	Oct 4	Thos Price	524 Sacramento st
Endowment M Co	Nevada	1	50	Aug 23	Sept 30	Oct 21	R H Brown	327 Pine st
Grand Prize M Co	Nevada	1	10	July 9	Aug 15	Sept 5	R H Brown	327 Pine st
Gila Con M Co	Arizona	2	03	Aug 8	Sept 28	Oct 15	P B Pettigrew	419 California st
Gila S M Co	Nevada	2	25	Aug 27	Oct 3	Oct 24	Wm W Farris	328 Montgomery st
Hale & Norcross S M Co	Washoe	59	1 00	Aug 13	Sept 18	Oct 9	J F Lightner	58 Nevada Block
Jnstice M Co	Washoe	26	1 50	Aug 13	Sept 18	Oct 9	R E Kelly	419 California st
Kentuck M Co	Washoe	13	1 00	Aug 7	Sept 9	Sept 30	J W Pew	310 Pine st
McCracken Con M Co	Arizona	1	50	July 10	Aug 24	Sept 28	H Aug Whiting	211 Sansome st
Modoc Con M Co	California	5	50	July 17	Aug 26	Sept 16	J W Pew	310 Pine st
Martin White M Co	Nevada	3	1 00	July 13	Aug 23	Sept 3	J J Scoville	309 Montgomery st
Mint G & S M Co	Washoe	22	20	Aug 8	Sept 11	Oct 2	D A Jennings	401 California st
New York M Co	Nevada	16	30	Aug 1	Sept 3	Sept 24	D L Thomas	419 California st
Northern King M & M Co	Arizona	3	10	Aug 17	Sept 21	Oct 9	G F Glover	318 Pine st
N Con Virginia M Co	Washoe	13	1 00	Aug 13	Sept 16	Oct 4	W M Helman	309 California st
Prospect G & S M Co	Washoe	6	25	July 13	Aug 20	Sept 10	Warner Craig	320 Sansome st
Raymond & Ely M Co	Washoe	8	1 00	Aug 6	Sept 7	Sept 28	J W Pew	310 Pine st
Silver Hill M Co	Washoe	3	50	July 18	Aug 22	Sept 12	W E Dean	419 California st
South Standard M Co	California	2	25	July 23	Aug 27	Sept 17	C A Sankey	331 Montgomery st
Sierra Nevada M Co	Washoe	55	1 00	July 31	Sept 4	Sept 25	W W Stetson	309 Montgomery st
Succor M & M Co	Washoe	19	50	Aug 12	Sept 16	Oct 5	W H Watson	302 Mongomery st
Tiptop S M Co	Washoe	3	50	July 15	Aug 21	Sept 18	D F Verdenal	327 Pine st
Wells, Fargo & Co	Nevada	10	10	July 22	Aug 23	Sept 9	W M Helman	309 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Aurora T & M Co	Bodie	1	15	Aug 12	Sept 20	Oct 10	A Baird	304 California st
Almaden Quicksilver M Co	California	1	25	July 30	Aug 31	Sept 21	W J Forde	207 Sansome st
Benton M Co	Nevada	1	35	Aug 1	Sept 5	Sept 24	Wm H Watson	302 Montgomery st
Colorado River C & G M Co	Arizona	2	25	July 5	Sept 9	Sept 30	P A Whiting	211 Sansome st
California W Co	California	20	16	Aug 13	Oct 15	Nov 5	G P Thurston	315 California st
Cal & Arizona M Co	Arizona	3	05	Aug 26	Sept 30	Oct 18	T E Jewell	507 Montgomery st
Echo G & S M Co	Nevada	1	02	Aug 21	Sept 26	Oct 18	T C Winchell	[302 Montgomery st
Excelsior S M Co	Nevada		25	July 16	Aug 20	Sept 6	Francis P Devine	304 Post st
Eagle S M & M Co	Nevada	9	15	July 13	Aug 16	Sept 6	R H Brown	327 Pine st
Gover S M & M Co	California	37	60	Aug 9	Sept 03	Oct 21	W Wilson	402 Front st
Golden Rule M Co	California	7	75	July 15	Aug 17	Sept 9	J B Russell	432 Montgomery st
Henrietta G M Co	California	3	10	June 7	Aug 12	Sept 6	F Klosterman	309 California st
King M & S Co	Nevada	1	25	June 24	July 29	Sept 19	Chas K Clark	111½ Leidesdorff st
Morgan M Co	California	4	50	June 1	July 8	July 29	John J Raphael	533 Kearny st
Mono G M Co	California	1	50	Aug 28	Oct 21	Oct 23	W H Lent	309 Montgomery st
Murphy C & S M Co	California	1	20	July 2	Aug 3	Sept 3	S D Rogers	Merchants' Exchange
McElroy G M Co	California	2	10	July 23	Aug 28	Sept 17	Lewis Lillie	519 Montgomery st
Mariposa Land & M Co	California	14	1 00	July 10	Aug 12	Sept 9	Leander Leavitt	309 Montgomery st
McClellan Con G & S M Co	Nevada	2	25	Aug 5	Sept 5	Sept 23	Otto Metchke	328 Montgomery st
Newton H & D M Co	California	1	03	July 21	Sept 2	Sept 20	G W Cummings	330 Sansome st
Oak Grove M Co	Arizona	1	05	Aug 6	Sept 10	Sept 30	R D Bogart	16 Leidesdorff st
Richmond Co	California	1	50	Aug 26	Sept 30	Oct 22	W H Lent	309 Montgomery st
Real Del Monte M Co	Nevada	3	1 00	July 18	Aug 26	Sept 16	A Baird	304 California st
Summit M Co	California	4	05	July 17	Aug 19	Sept 10	J W Clark	318 Pine st
Tiger M Co	Arizona	1	30	July 16	Aug 26	Sept 20	W H Lent	309 Montgomery st
Telegraph C & S M Co	California		03	July 17	Aug 19	Sept 9	I T Milliken	528 California st

MEETINGS TO BE HELD.

Name of Company.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Arnold G & S M Co		A Judson	120 Sutter st	Annual	Sept 7
Crown Point Ravine G & S M Co	Washoe	J M Buffingtou	309 California st	Annual	Sept 2
East Branch M Co		J W Clark	318 Pine st	Annual	Sept 3
Mono G M Co	California	Burgess, Act. Pres't	53 Nevada Block		Sept 5
Northern Belle M & M Co		Wm Wilson	29 Nevada Block	Annual	Sept 9
Oakland Q M Co	California	W W Traylor	37 Nevada Block	Annual	Sept 2
Succor M & M Co	Washoe	W H Watson	02 Montgomery st	Annual	Sept 2
South Standard	California	C A Sankey	331 Montgomery st	Annual	Sept 12
Silver King South M Co	Arizona	A Judson	320 Sansome st	Special	Sept 9

LATEST DIVIDENDS—WITHIN THREE MONTHS

Name of Company.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Bodie G M Co	California	W M Leut	309 Montgomery st	5 00	Aug 31
Bodie G M Co	Nevada	Wm M Lent	309 Montgomery st	3 00	Aug 14
California M Co	Washoe	C P Gordon	Nevada Block	1 00	Aug 15
Con Virginia M Co	Nevada	A W Havens	Nevada Block	1 00	June 15
Eureka Con M Co	Nevada	W W Traylor	37 Nevada Block	3 00	Aug 20
Eureka G M Co	California	R Wegener	414 California st	25	April 25
Excelsior W & M Co	California	Geo F Thurston	315 California st	50	July 15
Excelsior W & M Co		Geo F Thurston	315 California st		Aug 15
Eureka Con M Co	Nev	W W Traylor	309 Montgomery st	3 00	July 20
Empire M Co	California	David A Jennings	401 California st	25	June 15
Georgia S M Co	Washoe	R Wegener	414 California st	3	April 16
Independence M Co	Nevada	R H Brown		25	July 20
Independence M Co	Nevada	R H Brown	327 Pine st	25	Aug 20
McMillen S M Co	Arizona	A C McMeans	Safe Deposit Bldg	5	June 20
Napa Con M Co	California	W H Parrish	Safe Deposit Building	10	Aug 15
Silver King M Co	Arizona	W H Boothe	320 California st	50	Sept 10
Silver King M Co	Arizona	Wm H Boothe	320 California st	50	May 30
Standard G M Co	Cal	W Willis	309 Montgomery st	1 00	Aug 12

Pacific Board—Latest Sales.

Wed'sday A.M., Aug. 28.

80 Alpha 1c@16½
160 Alta 14½@14
40 Best & Belcher 20@19½
570 Bullion 11@10½
295 Belcher 12½@12
55 California 15½@12
575 Crown Point 10½@10½
2440 Con Imperial 1.10@1.15
785 Con Virginia 11½@12
20 Chollar 38
400 Caledonia 5@5½
280 Exchequer 5¼@5½
240 Gould & Curry 10½@10½
250 Hale & Nor 9½@10
350 Julia 13½@13

945 Justice 7¾@8
95 Kentuck 5¼@5
900 Mexican 30@c
165 Ophir 47@47½
125 Overman 20½@21
230 Savage 13½@13¾
135 Sierra Nevada 60¼@67½
290 Silver Hill 3.85@3.70
220 Union Con 43½@44
10 Utah 36
220 Yellow Jacket 20@20½

AFTERNOON SESSION.

450 Andes 75c@80c
180 Alta 15c@15¾
275 Aurora T 4@4½
160 Belcher 12½@12½

100 Bechtel 2½
50 Bodie 55
50 Bullion 11
125 Benton 5½@5¾
50 Black Hawk 2
190 Best & Belcher 20@20½
120 California 13c@12½
110 Caledonia 5@4.80
220 Con Virginia 12@12½
60 Ophir 48@49
10 Confidence 8
400 Con Imperial 1.15
220 Crown Point 10½@10½
260 Daney 50c
30 DeFrees 30c
1100 Endowmeut 75c
120 Exchequer 5½
100 Grand Prize 20c
110 Goodsh 1.10@1.05
85 Gould & Curry 10½@10½
525 Hussey 90c@c
1025 Julia 16@16½

295 Justice 8¼@8¾
50 Kossuth 30c
50 Leopard 2½
300 Leviathan 75c
100 Mexicau 32½@33
100 Monumental 17c
40 Northern Belle 10c@10½
300 New York 1½@2
60 Ophir 48@49
40 Overman 21@20½
20 Raymond & Ely 3¼
35 Savage 13¾@14
60 Succor 1½
300 Summit 4@5

Mining Share Market.

The week has been undisturbed by any startling good or bad reports. The market has been steady, with an immense volume of business. The decline at the end of last week did not frighten Virginia City holders, which perhaps was a sign that it was caused by want of definite news rather than by fear of bad reports. No important news has come this week from the Comstock, and holders seem inclined to wait quietly for further unmistakable developments. The Solid Silver, immediately west of the Union Con. and Sierra Nevada, has attracted some attention through its sympathy with those neighbors. Julia, in the face of good news, has persisted in a fall. Last Friday it was $15.10; Tuesday it got down to $12.25. Perhaps the $100,000 contract with Sutro has had a hand in this. It is reported, however, that the decline is caused by Geo. D. Robers, who, being refused admission to the mine, immediately threw his stock on the market. The fall in Justice may probably be attributed to the Rough & Ready suit. The Bodie quotations afford a very interesting study at present. Suits are commencing in that district and make themselves felt in the San Francisco Boards. The rumored conflicting claims to Bodie created a tendency at the beginning of the week to sell that stock. The following, from the Gold Hill *News*, shows the want of good reason for such tendency: "Those who recently went from this section to Bodio to look after their mining interests, and who claim a location of the Bodie mine nine days prodious to that of those now holding the mine, have returned. They report no intended suit for contesting the title." The suit of the New York company, the Empire, against the Beehtel, Tioga and the Black Hawk has, as will be seen by reference to the quotations, affected the stock of these mines. It is stated, however, on good authority, that this suit will be only a waste of time, talcut and money. Tho *Stock Report* says: "The Empire company was organized in 1864, worked their ground until 1867, unprofitably, and then abandoned it. Judge Beehtel informs us that the abandonment was complete and final. They did not in any particular comply with the mining laws of the district, which provided a way to hold possession of their claim if they wished to. They simply gave it up in disgust, left their mill to rot away, and finally in 1875 it was sold for taxes—the mill, not the ground as the complaint implies.

The Fair Season.

The following is a partial list of the coming fairs. We shall be pleased to add to it if readers will send us the dates and locations of their respective exhibitions:

San Francisco Mechanics' Institute, San Francisco, August 13th to September 14th.

Napa and Solano district fair, at Vallejo, September 3d.

Golden Gate district fair, at Oakland, September 9th to 10th, inclusive.

El Dorado county fair, at Placerville, September 13th to 15th, inclusive.

California State Agricultural Society, September 16th to 21st, inclusive.

Sonoma and Marin district fair, at Petaluma, September 23d to 28th, inclusive.

Northern district fair, at Marysville, September 23d to 28th, inclusive.

San Joaquin valley district fair, at Stocktou, September 24th to 28th, inclusive.

Montana Agricultural, Mineral and Mechanical fair, at Helena, September 23d to 20th, inclusive.

Santa Clara valley fair, at San Jose, September 30th to October 5th, inclusive.

Upper Sacramento Agricultural Society's Fair at Chico, September 30th to October 5th, inclusive.

Siskiyou county fair, at Yreka, October 2d to 5th, inclusive.

Nevada State Agricultural, Mining and Mechanical fair, at Reno, October 7th to 12th, inclusive.

Stanislaus County Stock Growers Fair, at Modesto, October 9th to 11th inclusive.

Monterey county district fair, at Salinas City, October 8th to 12th inclusive.

Oregon State fair, at Salem, October 8th to 18th, inclusive.

Southern California Horticultural Fair, at Los Angeles, October 14th to October 19th, inclusive.

Southern California Agricultural Society's Fair, at Los Angeles, October 14th to October 19th, inclusive.

Plumas, Lassen and Modoc District Fair, at Susanville Lassen county, October 21st to 25th inclusive.

BULLION SHIPMENTS.—Since our last issue shipments of bullion from the prominent mines have been as follows: Northern Belle, Aug. 19th, $3,131.88; Aug. 24th, $7,912.78; Bodie, July 30th to 23d, $428,076.29; Aug. 23d, $32,800; Aug. 24th, $36,000; Aug. 25th, $15,400; Aug. 26th, $17,000; Aug. 27th, $30,000; Standard, $20,000; Aug. 25th, $21,146.23; Eudowment, $4,272.86; Manhattan, Aug. 22d $12,232.08; Tybo Con., Aug. 19th, $4,631.25; Aug. 21st, $4,636.12; Aug. 23d, $4,536.75; total for August, $52,049.90; Star, Aug. 19th $3,038; total for August to date, $11,751; Con. Virginia, Aug. 24th, $123,735.18; California, Aug. 24th. $116,713.46; Independonce, Aug. 19th, $6,177.22; Aug. 26th, $8,000; Silver Reef, Aug. 16th, $4,244 28; Ontario, Aug. 16th, $2,977.64; Aug. 17th, $2,871.87; Aug. 19th, $5,226.63; Aug. 20th, $3.019.52; Aug. 21st, $2,719.86; Aug. 22d, $2,906.03; Old Telegraph, Aug. 17th, $2,400; Raymond & Ely, Aug. 20th, $5,436.23; McCracken, Aug. 26th, $8,784.70; Christy, Aug. 28th, $5,504.

Woodward's Gardens were never more attractive than at present. Besides three lions already mentioned, six monster living alligators, several iguanas and a boa-constrictor have just been added. New stars are constantly engaged for the Pavilion exercises. Rates of admission as usual.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch from Washington, D. C.

FOR THE WEEK ENDING AUGUST 13TH, 1878.

BLASTING WEDGES—Otto T. Brockhausen, Reno, Nev.

WHEELBARROWS—John Lennon, S. F.

HORSE-POWER EQUALIZERS—Lowry L. Rowland, Monmouth, Oregon.

PROPELLING VESSELS—Samuel H. Cowles and Benjamin B. B. Brewer, Sacramento, Cal.

LAWN MOWERS—Adolph H. Ran, S. F.

STOVE ATTACHMENTS—Lorenzo B. Lawrence, Monticello, Cal., and A. G. Strawbridge, Sharon, Pa.

—The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

[Communicated.]

The Pacific Mineral Land Company.

A company will shortly be incorporated, under the above name, in this city with a large capital stock, for the purpose of acquiring and working mineral land on the Pacific coast of the United States and adjoining countries. The company will mine coal, iron, silver, gold and other minerals, sink petroleum wells, make coke and establish iron manufactories, build railroads where necessary, own and run steamers, and seek in every profitable manner to develop the resources of this coast.

A gentleman of life-long practical experience in the coal and petroleum regions of the East will devote his services to the company as President. A special feature will be made of coal, the safest and most lasting of all the minerals. Arrangements have already been made for the acquisition of valuable and accessible coal fields on the northern part of the coast, work on which will be commenced without delay. It is intended before New Year's to lay down coal of the best quality in San Francisco at lower price than has yet been done. The company will arrange for the immediate construction of large and powerful steamers suited for carrying coal, merchandise and passengers, thus ensuring the shipping of their coal at a small expense.

A sufficient working capital for all purposes will render further calls on the stockholders unnecessary, and no assessment will be levied on the stock. Every facility will at all times be offered for full examination of the company's affairs by individual shareholders. Gentlemen well and honorably known both here and in the East are interested in the undertaking, and their names are a guarantee that the affairs of the company will be conducted in a perfectly fair and honorable manner. A large amount of stock has already been applied for in this country and in Europe.

This will be the strongest company ever organized on this coast, and offers unequaled inducements for the safe and profitable investment of capital, the stability and sure rise in value of real estate being here combined with the profits of mining and manufacturing, whilst the variety of operations to be carried on reduces the risk to a minimum.

Further particulars will be announced in these columns in the course of a few weeks.

OCEAN VILLA, SANTA CRUZ.—Mr. Geo. H. Bliss, Proprietor of this flourishing watering place, offers large, well furnished rooms, single or in suites, to visitors. Also cottages for families that desire them. Grounds large, romantic and pleasant. Situated forty feet above tide water, having a beautiful view of the Bay, Ocean, City and Mountains. Premises extend to river's edge, affording rare facilities for boating, bathing and fishing. No pains spared to please guests. Address, P. O. BOX 106. Santa Cruz, Cal.

PIOCHE, Nev., Aug. 17th, 1878.

MESSRS. DEWEY & CO.—*Dear Sirs:* My letters patent for car brake through your Agency has been duly received, for which please accept my many thanks. And allow me to say that your valuable advice so kindly tendered to inventors through your MINING AND SCIENTIFIC PRESS and circulars, together with the brevity and promptness of your action in securing letters patent to applicants, cannot be too highly endorsed. Again thanking you, I subscribe myself obediently one among your many friends. Respectfully, H. H. GARRISON.

EXAMINE the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,420.94. Lewis C. Grover, President; L Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansomo St., San Francisco.

WATSONVILLE, July 20th, 1878.

MESSRS. DEWEY & CO.—*Gents:*—I was not expecting my patent so soon. You certainly kept your word when you said no time would be lost. I remain, yours truly,
W. T EASTERDAY.

LOS GATOS, Aug. 9th, 1878.

MESSRS. DEWEY & CO.—*Sirs:*—I received by express the letters patent, dated June 18th, 1878. I am very much pleased with the specification and all, for which accept thanks. Very truly yours, MILTON ROSS.

MR. W. J. WOODLEY, who took out a Canadian Patent some four years ago, is requested to call at the MINING AND SCIENTIFIC PRESS PATENT AGENCY OFFICE. Business of importance.

MODEL MAKER AND MACHINIST.—I. A. Heald, No 514 Commercial St., San Francisco, (fourth floor).

METALS.

[WHOLESALE.

WEDNESDAY M., August 28, 1878.

IRON.—	
American Pig, ton	28 00 @30 00
Scotch Pig, ton	28 00 @30 00
White Pig, ton	28 00 @— —
Oregon Pig, ton	— @— —
Refined Bar	2½@ 3
Horse Shoes, keg	5 00 @— —
Nail Rod	—@ 7
Norway, Oval	—@ 7
COPPER.—	
Sheathing, lb	34 @ 35
Sheathing, Yellow	21 @ —
Sheathing, Old Yellow	12 @ —
Composition Nails	24 @— —
Composition Bolts	24 @— —
STEEL.	
English Cast, lb	13 @ 14
Anderson & Woods, ordinary sizes	15 @ — —
Drill	15 @— —
Cast Bar	14 @ 19
Plow Steel	8½@ 12½
TIN PLATES.—	
10x14 I C Charcoal	7 50 @ 8 50
Banca Tin	23 @ 24
Australian	17 @ 17½
ZINC.	
By the Cask	9 @— —
Zinc, Sheet 7x3 ft, 7 to 10, lb	9 @— 10
7x3 ft, 11 to 14	10 @— —
8x4 ft, 8 to 10	11 @— —
8x4 ft, 11 to 10	11 @— —
NAILS.—	
Assorted sizes	3 15 @3 25

LEATHER.

[WHOLESALE.]

WEDNESDAY M., August 28, 1878.

Sole Leather, heavy, lb	22 @ 29
Light	20 @ 24
Jodot, 8 Kil, doz	48 00 @50 60
11 to 13 Kil	65 00 @70 00
14 to 19 Kil	80 00 @90 00
Second Choice, 11 to 16 Kil	55 00 @70 00
Cornellian, 12 to 15 Kil	57 00 @67 00
Females, 12 to 13 Kil	63 00 @67 00
14 to 16 Kil	71 00 @76 00
Simon Ullmo, Females, 12 to 13 Kil	58 00 @62 50
14 to 15 Kil	66 00 @70 00
16 to 17 Kil	72 00 @74 00
Simon, 18 Kil	61 00 @63 00
20 Kil	65 00 @67 00
24 Kil	72 00 @74 00
Robert Calf, 7 and 9 Kil	35 00 @40 00
Kips, French, lb	1 00 @ 1 35
Cal. doz	40 00 @60 00
French Sheep, all colors	8 00 @15 00
Easton Calf for Backs, lb	1 00 @ 1 25
Sheep Roans for Topping, all colors, doz	9 00 @13 00
For Linings	5 50 @10 5
Cal. Russet Sheep Linings	1 75 @ 4 50
Boot Legs, French Calf, pair	4 00 @— —
Good French Calf	4 00 @— 75
Best Jodot Calf	5 00 @ 5 25
Leather, Harness, lb	35 @ 38
Fair Bridle, doz	48 00 @72 00
Skirting, lb	33 @ 37
Welt, doz	30 00 @50 00
Buff, ft	18 @ 20
Wax Side	17 @ 18

LUMBER.

WEDNESDAY M., August 28, 1878.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE. RETAIL PRICE.	
Rough, M	13 00	Rough, M	18 00
Refuse	9 00	Fencing	18 00
Clear	23 00	Flooring and Step	28 00
Clear Refuse	13 00	Narrow	30 00
Rustic	23 50	2d quality	25 00
Refuse	18 00	Laths	3 50
Surfaced	20 00	Furring, lineal ft	¾
Refuse	14 00	**REDWOOD.** RETAIL PRICE.	
Flooring	20 00	Rough, M	18 00
Refuse	12 00	Refuse	14 00
Beadol Flooring	23 00	Pickets, Rough	15 00
Refuse	13 00	Pointed	16 00
Half-inch Siding	16 00	Fancy	22 50
Refuse	14 00	Siding	20 50
Half-inch Surfaced	20 00	Surfaced & Long Beaded	30 00
Refuse	14 00	Flooring	30 00
Half-inch Battens	16 00	Refuse	22 50
Pickets, Rough	11 00	Half-inch Surfaced	30 00
Rough, Pointed	12 50	Rustic, No. 1	30 00
Fancy, Pointed	18 00	Battens, lineal ft	—
Shingles	1 75	Shingles, M	2 00

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, August 28, 3 P. M.

LEGAL TENDERS in S. F. 11 A.M., 99¼@99.90. SILVER, 1¼@2. GOLD in New York, 100¼.

GOLD BARS, 890@910. SILVER BARS, 8@15 ⅌ cent. discount.

EXCHANGE on New York, ¼%; on London bankers, 49@49½. Commercial, 50; Paris, five francs ⅌ dollar; Mexican dollars, 94@95.

LONDON Consols, 94 11-16; Bonds, 103¼.

QUICKSILVER in S. F., by the flask, ⅌ lb. 43@45c.

Signal Service Meteorological Report.

Week Ending August 20, 1878.

HIGHEST AND LOWEST BAROMETER.

Aug 21	Aug 22	Aug 23	Aug 24	Aug 25	Aug 26	Aug 27
29.82	29.94	30.05	30.11	30.05	29.98	29.98
29.77	29.83	29.98	30.03	29.98	29.95	29.94

MAXIMUM AND MINIMUM THERMOMETER.

61	65	62	65	62	63	65
53	54	54	54	54	56	56

MEAN DAILY HUMIDITY.

79	75	80	80	84	80	78

PREVAILING WIND.

W	SW	W	W	SW	SW	SW

WIND—MILES TRAVELED.

445	262	225	260	312	302	240

STATE OF WEATHER.

Cloudy	Fair.	Fair.	Fair.	Cloudy	Cloudy	Fair.

RAINFALL IN TWENTY-FOUR HOURS.

Total rain during the season, from July 1, 1878, .01 in

PACIFIC MAIL STEAMSHIP CO.

The Company's Steamers will sail as follows, at 12 M.:

CITY OF TOKIO.....August 31st.
For YOKOHAMA and HONGKONG.

GEORGIA.....September 5th
For Panama and New York, calling at Mazatlan, San Blas, Manzanillo and Acapulco, connecting with Company's steamer at Acapulco for all Central American ports.

Tickets to and from Europe by any line for sale at the lowest rates.

CITY OF SYDNEY.....September 2d, at 12 o'clock, noon, or on arrival of the English Mails, for HONOLULU, AUCKLAND and SYDNEY.
$10 additional is charged for passage in Upper Saloon.

CITY OF PANAMA.....August 30th
For Victoria, Port Townsend, Seattle and Tacoma, connecting at Tacoma with Northern Pacific Railroad for Portland, Oregon.

Tickets must be purchased before 11 A. M. on day of sailing, at Wharf office.

For freight or passage apply at the office corner First and Brannan streets.

WILLIAMS, BLANCHARD & CO., Agts.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Excelsior Silver Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Potosi District, Lincoln County, Nevada.

NOTICE.—There are delinquent upon the following described stock, on account of assessment levied on the 16th day of July, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names	No. Certificate.	No. Shares.	Amount.
Floris Antunavich	234	100	$25 00
Sarah Feeney	229	25	6 25
Jerome Horn	274	200	50 00
Horn, Julia F	265	50	12 50
A W Lind	204	50	12 50
J Michelsen	263	100	25 00
Adolph Wirtner	208	80	20 00
S D Steevins	218	100	25 00
A Romero, trustee	222	200	50 00
A Romero, trustee	223	200	50 00
N Dabovich	271	100	25 00
N Dabovich	272	100	25 00
N Dabovich	273	600	150 00

And in accordance with law, and an order of the Board of Directors, made on the 16th day of July, A. D. 1878, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of the company, 304 Post street, on the sixth day of September, A. D., 1878, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

FRANCIS P. DEVINE, Sec'y.

Office, No. 304 Post Street, San Francisco, Cal.

Gover Mining & Milling Company.—Location of principal place of business, San Francisco, California. Location of works, Amador County, near Drytown, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the ninth day of August, 1878, an assessment (No. 37,) of fifty cents per share was levied upon the capital stock of the corporation, payable immediately in gold coin or legal currency of the United States, to the Secretary, at the office of the Company, Room 8, No. 402 Front Street, San Francisco, Cal.

Any stock upon which said assessment shall remain unpaid, on Monday, September 23rd, 1878, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, October 21st, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors

W. O. WILSON, Sec'y.

Office, Room 8, No. 402 Front Street, San Francisco, Cal

Pocahontas Gold Mining Company.—Location of Principal Place of Business, San Francisco, California. Location of Works, El Dorado County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 14th day of August, 1878, an assessment (No. 14) of One Dollar and a Half ($1,50) per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, Room No. 9, 411½ California street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 23rd day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before we will be sold on Wednesday, the 23rd day of October, 1878, to pay the delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors M. C. SOUTHARD, Sec'y.

Office, Room No. 9, 411½ California street, San Francisco, California.

Office South Comstock Gold and Silver Mining Company.

NOTICE.—The annual meeting of the stockholders of the South Comstock Gold and Silver Mining Company, for the election of Trustees and the transaction of such other business as may be presented, will be held on Monday, the 19th day of August, 1878, at two o'clock P. M. of that day, at the office of the Company. Transfer books will be closed on Saturday, August 10th, 1878, at the hour of 12 M. of that day.

J. M. BUFFINGTON, Secretary.

Office—Rooms 3 and 4, second floor, No. 309 California street, over Aetna Insurance office.

Telegraph Copper and Silver Mining Company.

Location of principal place of business, City and County of San Francisco, State of California. Location of works, Gopher Mining District, Calaveras County, California.

NOTICE.—There is delinquent upon the following described stock, on account of assessment (No. 1,) levied on the seventeenth day of July, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No Certificate.	No. Shares.	Am't.
Howland, W H	Not issued	1350½	$ 40 52
Jones, C C	Not issued	5640	169 20
McCrea, Wm	Not issued	4999	149 97
Bollinger, J C	Not issued	17,166	514 98

And in accordance with law and an order of the Board of Directors, made on the seventeenth day of July, 1878, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the Company, Room 2, 528 California street, San Francisco, California, on Monday, the ninth (9th) day of September, 1878, at the hour of 12 o'clock, M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

I. T. MILLIKEN, Secretary.

Office, Room 2, No 528 California street, San Francisco, California.

Vigorit Powder Company.—Location of works, California City, Marin County, State of California. Location of principal place of business, City and County of San Francisco, California.

Notice is hereby given that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 1) of fifty cents (50c.) per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, Room No 1, 109 California street, in the City and County of San Francisco, California.

Any stock upon which this assessment shall remain unpaid on Thursday, the twelfth day of September, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the second day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expense of sale.

JAS. W. BAKER, Sec'y.

Office, 109 California street, Room No. 1, City and County of San Francisco, California.

Thanks for Six Patents, Etc.

SACRAMENTO CITY, November 28, 1877.

MESSRS. DEWEY & Co.—*Dear Sirs:*—Please accept my thanks for the prompt and successful manner with which you have conducted my business in obtaining patents for fire brick, and for a smelting and condensing furnace, making six patents I have obtained through your patent agency. Four of the above patents were for the purpose of saving fine gold, quicksilver and amalgam, and the concentration of ores of all kinds. I can cheerfully recommend the firm to all with whom I may come in contact, especially inventors. I remain, respectfully yours,
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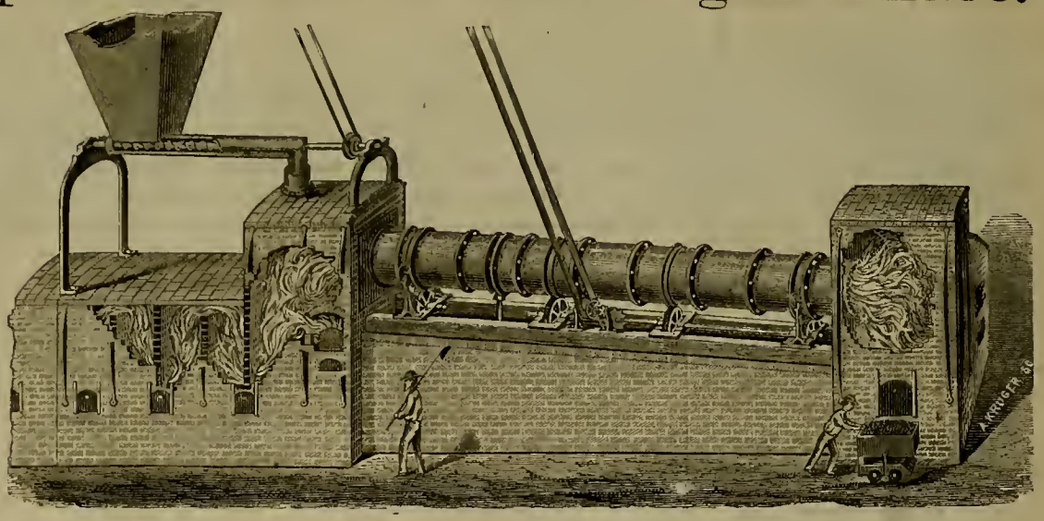

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SUMMER ARRAGEMENT, 1878.

COMMENCING SATURDAY, JUNE 1ST, 1878, AND until further notice, trains and boats will leave San Francisco at the new Ferry Landing, Market street:

5.00 A. M., via Alameda Ferry, daily, for Alameda, West San Leandro, West San Lorenzo, Mount Eden, Alvarado, Hall's, Newark, Mowry's, Alviso, Agnew's, Santa Clara, San Jose, Lovelady's, Los Gatos and Alms.

9.20 A. M., via Alameda Ferry, daily, for Alameda, Newark, Alviso, Santa Clara, San Jose, Los Gatos, Alma and all Way Stations, connecting at Los Gatos with Coolgrove's stages for Oil Wells, Patchen, Mountain Charley's, Martin's Ranch, Scott's Valley and Santa Cruz, or via Wright's Summit, Hotel de Redwood, Comstock's Mill, Mason's Grove, Soquel to Santa Cruz. Also connecting at Los Gatos with Blabon's stages for Saratoga and Congress Springs. (Dinner at Los Gatos).

4.20 P. M., via Alameda Ferry, daily, for Alameda, Newark, Santa Clara, San Jose, Alma and all Way Stations.

☞On Saturdays only stages will connect with the 4:20 P. M., train at Los Gatos for Santa Cruz and Saratoga. Returning, leave Santa Cruz at 4 A. M., Monday (breakfast at Los Gatos), arriving in San Francisco at 10:15 A. M.

EXCURSION TICKETS

Will be sold from San Francisco to San Jose and return, $3; to Los Gatos and return, $3.75; to Saratoga and Congress Springs and return, $4.50.

☞These tickets will be sold ONLY on SATURDAYS and SUNDAY MORNINGS.

The RETURN TRIP ticket will not be good for passage after the Monday following the date of purchase. Procure tickets at New Ferry Slip, foot of Market street, and at Park Street Station, Alameda.

FERRIES AND LOCAL TRAINS
Will leave as follows:

LEAVE SAN FRANCISCO, DAILY.

A. M.	A. M.	A. M.	A. M.	P. M.	P. M.
5.00	6.40	9.20	*10.30	4.20	6.20

LEAVE HIGH STREET, ALAMEDA.

A. M.	A. M.	A. M.	P. M.	P. M.	P. M.
5.40	7.30	9.26	*3.00	4.26	7.00

*Sundays only.

THOS. CARTER, Superintendent. GEO. H. WAGGONER, General Passenger Agt.

W. T. GARRATT'S
BRASS and BELL FOUNDRY

SAN FRANCISCO.

MANUFACTURER AND IMPORTER OF

Church and Steamboat BELLS and GONGS
BRASS CASTINGS of all kinds,
WATER GATES, GAS GATES,
FIRE HYDRANTS,
DOCK HYDRANTS,
GARDEN HYDRANTS

A General Assortment of Engineers' Findings.

Hooker's Patent Celebrated

STEAM PUMP

☞The Best and Most Durable in use. Also, a variety of other

PUMPS

For Mining and Farming Purposes.

ROOT'S BLAST BLOWERS,

For Ventilating Mines and for Smelting Works.

HYDRAULIC PIPES AND NOZZLES,

For Mining Purposes.

Garratt's Improved Journal Metal.

IMPORTER OF

IRON PIPE AND MALLEABLE IRON FITTINGS.

ALL KINDS OF

WORK AND COMPOSITION NAILS,

AT LOWEST RATES.

MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Publishers.

SAN FRANCISCO, SATURDAY, SEPTEMBER 7, 1878.

VOLUME XXXVII Number 10.

Willard's Desulphurizing Furnace.

This furnace, which is represented by the accompanying cut, is one of the most interesting exhibits at the Mechanics' Fair, and deserves the attention, particularly of mining men, which it is receiving. The furnace has for its object the thorough decomposition of sulphuret, arsenical, antimonial and telluride ores. It consists, as is seen in the figure, of a cylindrical chamber, which is made, according to its dimensions, of either wrought or cast-iron. This chamber or retort has a false bottom, somewhat on the principle of a Bessemer converter, which separates it from another chamber into which a blast of air is blown. The false bottom is perforated in order to allow a finely-divided current of heated air to pass up into the ore to be treated. The furnace is so arranged that charging and discharging are very easily performed, and the operation may without difficulty be made entirely automatic.

The operation of the furnace is as follows: The ore to be treated is mixed with about half its bulk of some finely-divided carbonaceous material, as straw, shavings or sawdust. These are used in preference to coal dust or charcoal dust because it is necessary that the mass retain moistnre longer than these last-named materials are capable of doing. The mixture is thoroughly moistened with a solution containing about as much salt as sea-water. The bottom of the retort is heated np to a dull red, no higher, and then the mixture, prepared as above, is charged into the furnace. The blast is now turned on below the false bottom, throngb which the air, heated by circulation over the hot bottom, passes np into the ore. The fire under the retort is now allowed to go out. The process continues for a length of time varying with and determined by the nature of the ore. When the roasting is over, the ore comes out a very porons, friable mass which has certainly every appearance of a dead roast. Its mechanical condition is such as to prepare it admirably for further treatment by any process, whether it be leaching or amalgamating.

After a little study it will he seen that this process is quite different from the ordinary roasting processes now in vogue. The presence of the carbon and hydrogen of the material mixed with the ore as above, and of the water of the salt solution, prevents not only the partial fusion of the ore, but also the formation of non-volatile oxides of antimony, so difficult to treat when once formed. Without careful analytical investigation it would be fruitless to attempt an explanation of the chemical reactions that take place dnring the operation.

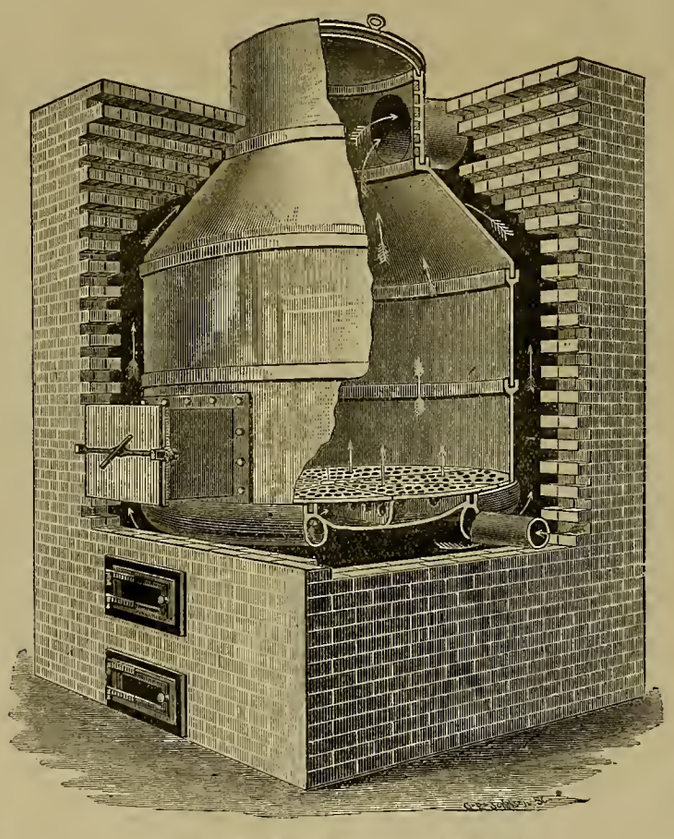
The Cost of the Proceee

In San Francisco has been calculated at present prices of fuel, labor, etc., for all the processes gone through with from the time the ore is delivered at the works to its appearance as retorted amalgam, *i. e.*, including crushing, pulverizing, roasting, amalgamating, etc. The calculated cost for all these operations is $5 per ton. The cost for roasting alone, including mixing, fuel, labor, etc., is from $1 to $1.50 per ton.

The following data furnish a basis for the calculation of cost in any district. The labor required to run six furnaces, each working a charge of one ton at a time, is as follows: For roasting and firing, one man; to assist in charging and discharging, one man; for mixing, one man. The last two of these men, the mixer and charger, may be dispensed with if automatic mixing and discharging apparatus is used, and then one man alone can run the furnaces. The capacity of each of these furnaces is from four to eight tons per day, according to the nature of the ore, low grade ore being more easily treated. All this, then, may be run by one man. So much for the labor. The air blast is driven in by a blower which requires from three to five horse-power. Soft wood for fuel, about one cord to 20 tons of ore, is required for heating the retort. Salt in small quantities must he obtained for the solution. Five per cent. by weight of saw dust is mixed with the ore.

Many object that the saw dust is difficult to obtain. If it is not obtainahle, any woody refuse, such as straw, shavings, leaves, brushwood, will do. Sawdust, however, seems best adapted for ready uniform mixing with the ore. It can be readily produced by means of a very simple machine which was originally invented to facilitate the extraction of dye-stuffs from various dye-woods.

Mr. Willard has already treated to the satisfaction of all concerned, many samples of different ores. We will mention a few only: gold-bearing pyrites from Sierra Co., auriferous arsenical pyrites from Plumas, auriferous pyrites from Butte, arsenical pyrites from Drytown, Amador, samples from Meadow Lake. Maurice Dore, Esq., and Messrs. Gleason and Pauson, may be referred to as having tried the process. The latter gentlemen stated that their Meadow Lake ores on which Mr. Willard tried his furnace, were among the most difficult that they had. Yet, so well satisfied were they with the results of the trial, that they have bought and shipped the only ton furnace that Mr. Willard had on hand.



WILLARD'S DESULPHURIZING FURNACE.

According to the Denver, Colorado, *Tribune*, chlorinations with the roasted ore gave from 88% to 99% of the assay value, the latter being the more usual.

Mr. Willard has two furnaces at the fair, a large and a small one. With the latter he exhibits his process, operating on small batches of ore. He uses a Baker pressure blower, which, however, gives more blast than is necessary. His largest furnaces will handle about a ton at a time. Those desiring further particulars will do well to visit the fair and see the operation. Mr. Z. A. Willard, the inventor, may be addressed at 1031 Market street, San Francisco.

Aug. 27th, Jack O'Harra and three others attempted to jump the Black Hawk ground at Bodie. They were fired upon, and O'Harra was mortally wounded.

A black walnut imbedded in a rock taken from the Black Star coal mine fifty-two feet below the surface is on exhibition at the bank of Anaheim.

Kelly's Transom Adjuster and Lock.

Mr. James Kelly exhibits at the Fair a device for operating windows and transoms, which he recently patented through the Mining and Scientific Press Patent Agency. The device is intended for operating window sashes, transoms, etc., which are suspended so as to turn about an axis, and which may be situated out of convenient reach. Everybody knows how much trouble it is to open or close a transom sash, for instance, over the door. You always have to get a step-ladder or a chair to do it, and it will never stay in the position you want it. It persists in either remaining wide open or close shut.

Mr. Kelly's device is intended to remove this objectionable feature, and admit of the transom being opened or closed from below and in keeping it in any position desired.

The sash is journaled or hinged on a bar, to which is attached a short lever connecting with a long one, which reaches downward. This long rod is attached to a lever, the long end of which projects through a slot in the window or door frame. By moving the knob on the end of this lever up or down, the sash is swung in either direction, and by screwing the knob up a little on a movable plate the sash is held in any position. The device can be put inside or outside of the frame. If put inside, nothing is exposed but the knob and escutcheon. The arrangement is the best thing of the kind yet invented. By turning the knob a little, the transome sash is locked in any desired position. The knob may also be arranged so that by pulling the knob out and moving it, the window may he opened or closed, and by letting go the knob, a spring pulls the knob in and a pin in the outside escutcheon catches on one of the holes in the inside escutcheon, thus locking the sash in any position. Mr. Kelly may he addressed for further information at No. 1005 Natoma street, near Eleventh.

The Mines and the Courts.

Suit has been commenced in the United States Circuit Court by the Stedtfelt Furnace Company against the Tip Top Mining Company, for infringement of patent.

In the suit of B. F. Baker vs. the Pioneer Mining Company, to recover $100,000 damages for breach of contract, judgment was given, in the Twelfth District Court, in favor of the plaintiff.

It is said that a special meeting of the Board of Trustees of the Justice Mining Company has been held, to finally settle the dispute between the Justice and Alta mines, by ratifying the pending compromise. The terms of settlement are represented to be that Alta shall pay Justice $50,000 and give it the use of its shaft; and that in consideration thereof, Justice waives all ground covered by the famous dollar deed, and withdraws all suits.

In the appeal of the Occidental M. & M. Co., situated on the Brunswick lode, in Silver Star Mining District, Storey county, Nevada, from the adverse decision of the Commissioner in the case of the Sutro Tunnel Co., vs. the Occidental Co., Secretary Schurz has decided in favor of the former, affirming the decision of the General Land Office. When the Occidental Co. applied for a patent in 1875, the attorneys of the Sutro Tunnel Co. protested, on the ground that this lode was within 2,000 feet of the tunnel, or within the district to be drained, developed and improved by the tunnel; and in August, 1876, these attorneys filed a statement that this lode has been actually drained by the Sutro tunnel and rendered workable, testimony being taken at the local office. The Commissioner decided that while the evidence was not conclusive, still a *prima facie* case had been made out in favor of the tunnel company.

After reviewing the evidence in regard to the creation of the water flow in the Occidental tunnel, coincident with the extension of the Sutro tunnel, the secretary holds that the quoted testimony does not show conclusively that said mine has been drained, benefited or developed by said tunnel, hut it does show, *prima facie*, that said mine has heen drained, although the conclusion is reached only hy tracing the effects to their natural causes. As to the right claimed by the Sutro Tunnel Company, to construct a tunnel to the Brunswick lode on the grounds of discovery, the secretary decides adversely, because he holds that this can he done only to the lode discovered hy the tunnel, and the Brunswick was discovered earlier. In his decision, Williamson construed "develop," as used in the law, as one and the same thing with "discover." The secretary decides differently, and holds that under the clause in the law giving the right to construct a tunnel to the mines developed by the tunnel, a royalty can be claimed from the Brunswick lode; aud such a condition must he inserted in the patent for the mine to that effect. While this insertion will he made upon a *prima facie* showing by the Sutro Tunnel Company, the secretary lays down the doctrine unequivocally that benefit to the mine must be fully and conclusively shown in fact, before royalty can be claimed from any mine.

Meteorological Summary for August.—The report of the U. S. Signal Service officer, of San Francisco, for the month of August is summarized as follows: The mean hight of barometer for the month was 29.90; mean temperature, 58.2; mean humidity, 79.4; prevailing winds, southwest; highest barometer, 30.108; lowest, 29.732; highest temperature, 73°; lowest, 32°; monthly range, 21°; greatest velocity of wind 32 miles per hour; total number of miles traveled hy wind, 8,780; total rainfall, .00 inches. Rainfall in August during former years: 1871. .02 inches; 1872, .00 inches; 1873, .08 inches; 1874, .00 inches; 1875, .00 inchcs; 1876, .01 inchcs; 1877, .00 inches.

Academy of Sciences.—Monday evening, September 2d, the California Academy of Sciences held a regular meeting. Among the donations to the cahinet were some ores from the Black Warrior mine of Arizona, by G. A. Treadwell, and a specimen of a new auriferous mineral by Thomas Price. A number of books, periodicals, exchanges and some lithographic plates were also received for the library. S. B. Christy read a paper ou the ocean beach placer mines.

CORRESPONDENCE.

We admit, unendorsed, opinions of corres pondents.—EDS

Truckee and Vicinity.

EDITORS PRESS:—This town is situated in the easteru end of Nevada county, Californiа, aud near the westcrn line of the State of Nevada, on the Truckee river, 14 miles from its source, at the northern end of Lake Tahoe, about two miles from Donuer lake, and on the Ceutral Pacific railroad; altitude about 6,000 fcet. The town is a livcly little place, contains a population of about 2,000 inbabitants, polls nearly 500 votes, has enrolled 220 school children, good public school with three teachers, two churches, two hotels, a great number and variety of stores, livery stables and shops. The principal industry is the lumber and wood business. There are a great many saw-mills in tbe town and vicinity.

Truckee Lumber Company.

The saw-mill and sash and door and furnituro manufactories of this company are situated in the town of Truckee. The business is owncd and managed hy E. J. Breckell and W. H. Kruger. Capital invested, $60,000. They work about 200 men. Wages, $3 to $5 per day. The capacity of the mill is 50,000 feet of lumber per day. The timber is procured on the Truckee river, and floated down to the mill. Large quantities of sashes and doors, window-blinds, moldings and shingles are manufactured by this company, also furniture that, for elegance of finish and quality, is not surpassed by any manufactory on the coast. To guard against fire, the proprietors have erected an engine house and purchased a good fire engine with 2,000 feet of hose, constructed two water tanks, 30,000 gallons each, aud organized and uniformed their employees into a fire company. The upper story of the engine house is furnished np for a reading room for the benefit of the employees, in which they have placed a well-selected library. The bell in the dome is one of historic fame, being the old vigilance bell that struck terror to the hearts of the evil doers of San Francisco during the stirring times of '56.

Pacific Lumber and Wood Company.

This is an incorporated company, having its principal place of business in Truckee; President, J. D. Lord. The business is managed by the Superintendent and principal owner, Mr. F. Burckholter, who is also a banker in Truckee. The mill is located at Boca, 10 miles east of Truckee, on the Central Pacific railroad. The logs are delivered to the mill by a narrow-gauge railroad, extending into the timber four miles south of Boca. The mill and logging camp are connected by telephone with the principal office at Truckee.

Other Mills.

There are many other mills in tho vicinity. The Banner Mill and Lumber Company, eight miles distant, owned by Martin & Leach; also the Shaffer mill, the Ellen mill, the Richmond Brothers' mill and many others, all making daily large amounts of lumber. The principal market is the State of Nevada and Territory of Utah, the Comstock coming in for a very large share.

Lake Tahoe.

By invitation of J. F. Moody, proprietor of Moody's Hotel in Truckee, and one of the proprietors of Moody & Huntington's stage line, we took passage in one of their magnificent coaches at 7 o'clock in the morning for Lake Tahoe, distant 15 miles. The road runs along the banks of the Truckee river the whole distance, and is one of the most pleasant and inspiring drives on the Pacific coast. The scenery is grand; high rugged mountain forests of tall pines and symmetrical fir trees, the pure atmosphere, the limpid mountain river, transparent as glass, in which can be seen so plainly the speckled beauties that they look as though floating in mid air, which, together with the hundreds of other attractions, not the least of which is the smooth and evenly-graded road, makes the time to Tahoe City, two and a half hours, seem very short.

Tahoe City

Is at the head of the Truckee river and the outlet of the lake. The river is at that point about 50 feet wide, and has an average depth of five feet. The velocity of the water is said to be five feet per second, which would make the discharge from the lake per 24 hours about 23,400,000 gallons. There is a dam at the outlet that when the gates are closed the surface of the lake can be raised about four feet.

The Grand Central Hotel is located at Tahoe City, which is quite an imposing structure, and was full to overflowing with visitors and tourists, who seemed to be enjoying themselves greatly at this charming resort. The town is situated on a high bluff at the northern extremity of the lake, and commands an extensive view of one of the grandest pictures ever opened to the view of mortal man. The lake lies at an altitude of 6,218 feet above the level of the sea. It is 23 miles long and 15 miles wide. It is in the form of a parallelogram, lying northeast and southeast, partly in Nevada aud partly in California. At a distance of three miles from shore, its depth is from 1,000 to 1,200 feet. The greatest depth yet found is 1,800 feet. The water is so transparent that trout and other objects can be seen at the bottom where the depth is from 80 to 100 feet. Owing to the rarity of the atmosphere the water has little buoyancy. It is hard work to swim in the lake. Nothing is ever seen floating on the lake but boats or rafts of logs in transit. Stray logs, drift-wood, and even shingles soon sink. The bodies of persons drowned in the lake never rise or are never seen again.

Lake Taboe is the great sanitarium of the Pacific coast. Those suffering from catarrh, bronchitis, incipient consumption, and kindred diseases, will receive more benefit from a visit to this place than the whole *materia medica* can afford. It possesses climate, scenery, and means of health, giving pleasure to the careworn and debilitated far ahead of any other place of resort it has fallen our lot to visit. The overworked business man is bound to forget his cares while free. The scenery is too grand, the air too quieting and dreamy to allow business ties to absorb the attention.

The Steamer Niagara.

This splendid little propeller, the fastest passenger boat on the lake, is commanded by Capt. D. W. Avery, and is always in waiting to convey tourists around the lake upon the arrival of Moody & Huntington's stage from Truckee in the morning at 10 A. M. The excursion around the lake takes about six hours, during which time landings are made at McKenney's, Emerald Bay, Yank's, Rowland's, and Glenbrook. Pleasure seekers have only to place themselves in charge of Capt. Avery, when they may dismiss from their minds all care or uneasiness, and give their whole attention to the beautiful scenery of tbe lake and the grand surrounding mountains, as whatever their destination may be, he will carry them promptly to the point and in good time. While using his utmost endeavors to contribute to the comfort and pleasure of his guests, Capt. Avery never forgets to attend to business. W. G. A.

Truckee, August 20th, 1878.

The Coal-Gas Works of the Napa State Insane Asylum.

EDITORS PRESS:—Thinking that such information may prove interestiug to some of your readers, I send you a description of the Asylum gas works, recently erected by Mr. Smedberg.

Construction.

The works consists of:

a. Two settings of oue irou retort each; the retorts heing D shaped, 24″x13″ inside, and 7′ 6″ long over all.

b. An atmospheric coudenser of four-inch wrought iron gas-pipe.

c. A Pelouze and Audouin condenser, with uickel plated differential guage.

d. A cast-iron scrubber, containing a column of coke eight feet high.

e. Two cast-iron lime purifiers, with cast-iron covers, and nickel plated rotary release and test valves. Also a twin of rotary four-way valves, hy which either purifier may be worked aloue, or both be worked together in either sequence.

f. A gasbolder 18 feet diameter by 10 feet deep, having a storing capacity of 2,500 feet.

g. A glazed experimeutal meter for testing burners. The whole is as tight as could be wished, and does not create the slightest smell or annoyance of any kind.

II. Performance.

The works were laid out to supply 250 burners; but in point of fact an average of only 130 were lighted three hours per night iu June. The gas made during the month was 30,300 cubic feet, being an average of 1,010 cubic feet per nigbt, or 2 8-10 cubic feet per burner per hour.

The material retorted is a mixture of 80% of Australian "Sydney Wallsend" caking coals, and 20% of Australian "Hartley Shale," yielding 5 32-100 cubic feet per joint pouud, or 11,916 cubic feet per ton of 2,240 pounds.

It requires 20 pounds of unslaked Clipper Gap lime to purify 1,000 cubic feet; so that one barrel of say 240 pounds purifies 12,000 cubic feet of gas.

The labor required for gas-making is so slight that it is performed by the firemen who stoke the boilers for tbe engine, etc.; and no special hand is added to attend to the retorts and purifiers.

The quality of the gas, as might be inferred from such high percentage of Hartley Shale, is very fine, standing by Sugg's illumiuating power meter at the equivalent of 26 staudard photometric caudles. The burners give a stiff, white, smokeless flame, and the gas is so efficiently scrubbed that little ammouia can reach the gasholder.

While tar reaches the *inlet* of the Pelouze and Audouin Condenser, this beautiful machine throwing the tar-bubbles against opposed plates, (like an egg agaiust the wall) breaks them up and delivers all the tar to the tar well, while the gas passes on absolutely free from this troublesome impurity.

As the works are now using only one-half the coal that was expected, we do not get coke enough to heat the one retort which is at work; and we were therefore obliged to use seven cords of oak wood as supplementary fuel during June.

III. Cost of Lighting.

A.—EXPENSES OF GAS MANUFACTURED.

June, 1878, 30,000 cubic feet registered.

Coals.—4,560 lbs of Wallsend at $12.32 per ton of 2,240 lbs	$ 25.08
1,140 lbs. of shale, at $32 per ton of 2,240 lbs	16.28
Total for coals	$ 41.36
7 cords of oak, as extra fuel, at $8	$ 56.00
2½ barrels of lime, at $2	5.00
Estimated wear and tear, say 50 cents per day	15.00
Total	$117.36

Thus it will be seen that each burner cost us one cent per hour.

B.—WORKING AVERAGES.

Gas per pound of coal	5.32	cubic feet
Gas per long ton	11.926	" "
Gas per barrel of lime	12.120	" "
Gas per cord of extra fuel	4.328	" "

In conclusion it may be stated that the works are perfect in every mechanical detail; beside being compact, symmetrical and carefully finished in every part. We have not had the slightest hitch, stoppage or difficulty of any sort since the works were first lighted, four months since. With one man's additional labor, we could send out 5,000 cubic feet per day, with the same wear and tear, and have a surplusage of coke instead of buying wood for extra fuel, as at present. Respectfully,

T. M. MARTIN,
Engineer in Charge.

The foregoing statement meets with my approval in every particular.

E. T. WILKINS, M. D.,
Resident Physician.

Metallurgy of Silver.

The following extract serves to illustrate the advances that have been made in metallurgy as in every other industry. It is taken from the London *Jeweler:* The ancient method of extracting silver from its ores was exceedingly crude, requiring a period of several months in the operation. In the old Mexicau process the ore was ground to a fine powder in circular paved pits, called arrastras, hy means of large stones attached to a shaft drawn round by mules, resembling the manner in which clay is still mixed in some of our brickyards; water was added and the argentiferous mud was piled into heaps and left exposed for a considerable time to the action of the atmosphere. It was then mixed with common salt and copper pyrites, called magistral, by driving mules backward and forward over the mass. Mercury was added, which combined with the silver to form amalgam and the dross washed away. The excess of mercury was removed by squeezing the amalgam in canvas or chamois-skin bags. This method is said to have been invented in the year 1557, by a miner named Bartholomew De Medina.

Nearly all the modern improvements are mechauical modifications of detail, but the advantages of machiuery are so great that as much can now be accomplished in a few hours as formerly required several days. The usual method at present adopted is to roast the silver ores containing sulphur with from 10 to 12% of common salt. About 1,000 lbs. of ore constitute a charge. The heat volatilizes the sulphur, and the chlorine unites with the silver. After the ore has swelled into a spongy condition it is thoroughly sifted and placed in barrels holding 1,000 lbs. each; mercury is added and the barrels are revolved for about 20 hours. Modifications of this process are adopted in some cases to shorten the time; the mercury is sometimes delivered in a fine spray while the ore is kept hot. In order to separate the mercury the amalgam is dried, rolled into balls, and placed in hermetically-sealed retorts. The and mercury is driven over coudensed, and the silver is cast into hars (called pigs) for shipment.

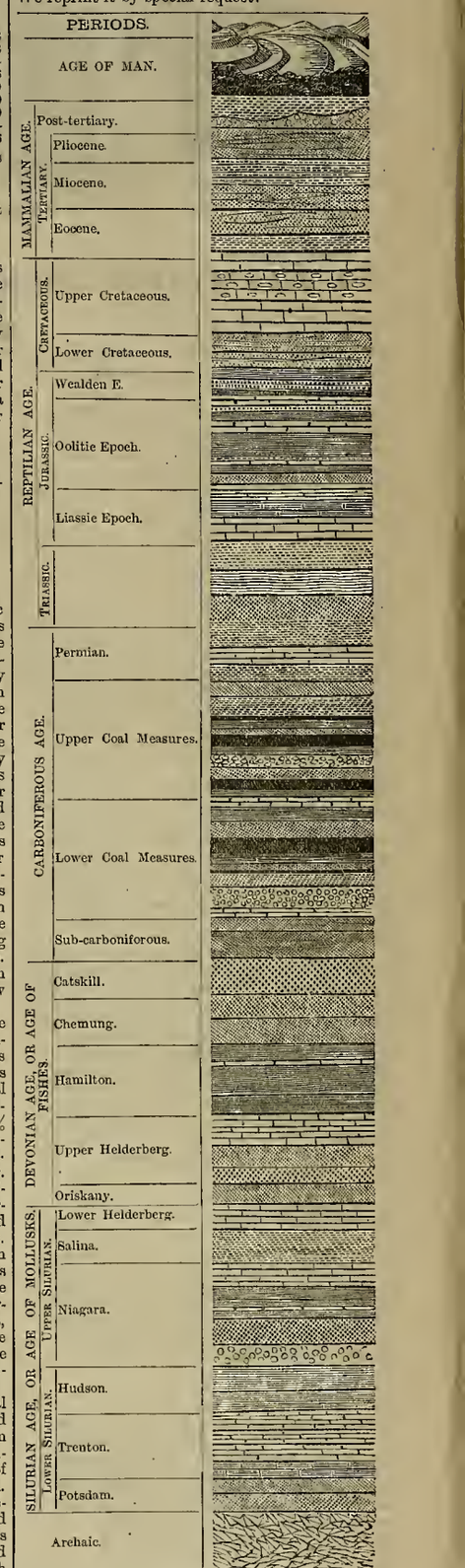
Efforts have been made to effect the removal of the silver without the aid of mercury, and several methods of solution and precipitation have been devised. Zieroofel's process is exceedingly ingenious. The mass, consisting of sulphurets of silver, copper and iron, is roasted. The sulpburet of silver also suhsequently becomes sulphate, and if the heat were continued would be reduced to the metallic state; as this is not desired the roastiug is discontinued and the silver is fouud as a soluble sulphate, which is then dissolved in hot water. The silver is precipitated by means of copper plates. The principal objectiou to this method of reduction is that the presence of certain impurities, such as antimony or arsenic, cause the formation of insoluble salts, which retain a portion of the silver.

Von Patera's process consists in converting the silver into a chloride, by roasting with salt. It is then dissolved iu a cold dilute solution of hyposulphate of soda. It is next precipitated in the form of sulphate, by the addition of polysulphide of sodium, and finally reduced to the metallic state by melting in a furnace while exposed to the atmosphere. All the processes of solution are comparatively modern, and possess advautages in several ways over the old amalgamation method.

FUNGUS ON SUNFISH.—Seth Green has lately beeu examiuing the perch and sunfish that have died in great numbers ou Lake George. He finds that the disease is a fungous growth on the gills, resembling pulmonary consumption, aud warns the people against eating the fish.

The Earth's Strata.

The adjoining diagram, showing the strata of the earth in their order, is taken from Dana. We reprint it by special request:



UNITING THE HUDSON AND EAST RIVERS.—The feasibility of the important project of uniting the Hudson and East rivers by means of a great ship canal is again attracting attention. The subject has been talked about at different periods for half a century, but nothing was ever accomplished till Gen. John Newton made surveys of different routes and submitted his report to the Government. Congress then voted to make an appropriation of $300,000 for the purpose of commencing the work. Gen. Newton states in his official report that the probable cost of making a navigable channel, with 15 feet of water, would be $2,777,571, and with 12 feet of water the cost would be $2,270,825. As soon as the right of way has been secured to the United States Government from owners of land along the Harlem river, and some other preliminary matters are arranged, it is expected that this great project will be commenced. That it would promote the commerce of New York there can be no question.

MECHANICAL PROGRESS.

Construction of Manholes in Steam Boilers.

Robert Brigg, in the *Journal of the Franklin Institute*, gives the following suggestions on the use of cast iron bonnet manhole rings on the cylindric portion of a boiler when a manhole is wanted on such a surface. First, within some reasonable limit of curvature, it can be affirmed that a bent manhole is just as good for service as a flat one. For shells of three and one-half feet in diameter and above, this is absolutely true. Double clips are always better than one, but with one clip it is practicable to make as good a joint as any steam engineer may desire with such bent manholes, and a rubber, or, what I prefer, a hemp-plait gasket filled with red and white lead, with a little litharge if in a hurry. Secondly, for all places, both curved and flat, a wrought iron manhole ring is better than a cast iron one. It is safer, easier to make up to the boiler, and when the difference of weight is considered, it is nearly, if not quite, as cheap as a cast iron ring piece. Care should be taken to make the wrought iron rings heavy enough. Most of the failures to use them have been occasioned by *saving* in material; but material enough to give strength to the boiler, where it has been weakened by the manhole, is ample for all purposes, and the dimensions to supply this strength are easily computed. Suppose the manhole to be 10×14, and imagine a shell 7-16 thick. The weak place of such a hole is the 14-inch way, if it is longitudinal to the cylinder. There have been removed from the shell $14 \times 7\text{-}16$ or $6\frac{1}{4}$ square inches of material, whence, for bare strength, only 3 7-16 square inches of iron should be found at each end of the manholo. $2\frac{1}{2} \times 1\frac{1}{4}$ give $3\frac{1}{4}$ square inches of section, and adding to the width $\frac{3}{4}$ for the rivet holes in the ring, becomes $3\frac{1}{4} \times 1\frac{1}{4}$. This dimension is the least that should be used in this case, and it will be found ample for the jointing of the manhole plate. Little deduction should be made in case the hole is made transverse to the shell. Here the curvature of the shell begins to tell on the strength of the ring, and in such case double clips should be used for the plate.

Wrought iron manhole rings should always be riveted to the inside of the boiler.

TESTING THE STRENGTH OF CEMENT.—At the Paris Exposition there is on exhibition a machine for testing cement. To the upper end of a suitable cast-iron framing is hinged a beut lever, one end of which carries a heavy counterbalance weight. The other (and shorter end) has suspended from it the frame in which the block to be tested is placed. The lower end of this frame is acted upon through a link by a toothed quadrant, which can be partly rotated by a handle driving the worm which engages it. By means of a segment at the back of the machine, and a pointer driven by a small stud on the bent lever, the maximum attained elevation of the counterbalance weight is shown, and therefore by suitable marks the strain sustained by the block is at once known. It will readily be seen that the pulling motion is extremely even and gradual, so that the block cannot get broken by jerks. The two bolts which untie the two halves of the frame in which the specimens are tested are left very slack, by which arangement the full test load can be applied, and at the same time the counterbalance weight can only drop a short distance when fracture takes place. The machine is simple and efficient, and a large number of manufacturers and users of cement have them daily employed at their works.

KEEPING ON THE SCALE.—The Royal Laboratory Department in the Royal Arsenal, Woolwich, have practically abolished the operation of giving a smooth surface to shot and shell by the use of the lathe. The method of casting these projectiles of exact size and smooth exterior was first carried out on account of the expense which would be saved by the abolition of turning, but a still greater advantage has been found in the superior hardness of the unturned shells, the one-tenth of an inch of the outer skin which it has been usual to turn off the Palliser projectiles being equal in strength to one-third of the interior surface. By reducing the thickness of the walls the shell is thus enabled to contain a much larger bursting charge without any diminution of penetrative power, and the whole mass proves to be more cohesive and serviceable in what may be regarded as its natural skin than after the material and chemical changes wrought in its constitution by the friction of the lathe.

A STEEL PROPELLER.—A Philadelphia exchange says: The new iron steamship *City of Columbus* left Chester yesterday for New York on its trial trip. The new vessel is equipped with the latest improvements in the shape of a propeller wheel. In the *Macon* an iron propeller was placed, and in the *Savannah* the wheel was made of brass, but in the *City of Columbus* the propeller is made of the finest steel. The *Savannah* was made to eclipse the *Macon* in point of speed, but is thought that the *Columbus* will beat them all. The vessel was finished throughout before leaving the dock, with the exception of the carpeting and furniture.

A Novel System of Brick Burning.

Quite a startling novelty in brick burning is reported from England and is said to be in successful operation. The kiln, in its construction, resembles a single tunnel, about 108 feet long, 8 feet wide, and 11 feet high to the crown of the arch. The bricks from the machines are carried on a belt to a strong iron wagon with a clay top, standing close to the machine, and when 5,000 have been set in position, it is taken to the inlet end of the kiln, which contains nine wagons, and as the load of green bricks is admitted at the inlet end, one is passed out at the other end ready for the purchaser. The fires operate from four small furnaces in each side of the kiln in the centre of the length, while those from the centre to the outlet end are cooling, and those from the centre to the inlet end where a small chimney stands, are getting treated, and which in their turn are subjected to the direct action of the furnaces; four to six hours complete the burning operation. It is surprising, considering the small structure, the quantity that can be passed through, 15,000 to 20,000 per twenty-four hours, which are burnt at a cost of only 3d. per 1,000, and the time occupied in the passage of the bricks through the stages of drying, burning, and cooling does not exceed three days. The iron wagons do not suffer from the heat, cold air being circulated freely under the clay bottom, but is excluded from penetrating above it. The kiln is quickly erected, costing about $2,500, including wagons and all appliances for working it. If used for temporary purposes three-fourths of its cost is readily portable; in working, wheeling on harrows is avoided. There are no stacks to build and plaster, and the waste of bricks that are used for that purpose avoided; the bricks only being handled once in a green state very much preserves the quality, and about 20 per cent. of the labor used in brick making is avoided; and small orders for special shaped bricks can be supplied in three days.

NEW PROCESS OF SHIPBUILDING.—A new mode of constructing iron or steel ships has been invented by Mr. J. Humphrys, general manager of the Barrow Shipbuilding Company in England. By his mode of construction, which is on the longitudinal system, whereby the maximum strength is obtained by the minimum weight, the dependence on skilled manual labour which is now so eminently characteristic of the present method of shipbuilding is altogether obviated, the fabric being most readily and simply constructed by the employment of channel sections of iron or steel, and the riveting effected by mechanical rivets, such as Tweddle's. The fabric is erected in permanent buildings specially designed for the purpose, whereby the present expensive system of frame, floor-plate bending, hand templating for the skin and other plating, shoeing and ribboning, hand riveting, etc., all of which are dependent on skilled manual labor, are all dispensed with, mechanical appliances and unskilled labor taking their place, the result being that a stronger, lighter, and less expensive fabric is produced, and a considerable saving in the time required for building is effected.

AMERICAN SUCCESS AT PARIS.—A dispatch from the Paris Exposition says: In the award of prizes at the Paris Exposition, the United States agricultural exhibit has received a diploma of honor and the United States educational exhibit a gold medal. Of the eleven objects of art offered by the Agricultural Society of France for exceptional merit in agricultural machinery in the recent field trials eight have been awarded to American inventions. Dr. Edward H. Knight, the American juror of Class No. 76, has been authorized to announce the awards. They are as follows: McCormick's binding reaper, Wood's binder, Osborne's binder, Johnston's harvester, Whitley's harvester, Deere's gang plow, Diedrick's hay press, the Chicago hay press. The above eight prizes are independent of the medals of the exhibition.

A NEW OIL WELL DEVICE.—An invention which is proposed to drill oil wells without a derrick; to pump the sand out without removing the drill; to test and pump the well, after it is completed, without removing the tubing, is said to be completed by two Pittsburghers. The *American Manufacturer* says: The drill is a hollow pipe and is studded with diamonds, which obviate the necessity of removing the same to sharpen the tools, as is the case with steel drills. It works with a rotary movement instead of the chopping motion of the drills now in use. The pipe being hollow, the sand pump runs inside of it, and when the well is completed the pipe is used for tubing, the oil being pumped through it. If the drill does all that the inventors expect of it, they have a good thing.

AMERICAN LOCKS ABROAD.—According to a Paris journal, the locks displayed in the American Department at the Exhibition are incomparably finer and more perfect in every way than anything of the kind ever before seen in Europe, at any rate in France.

HYDRAULIC RAILWAY IN PARIS.—A Girard hydraulic railway, the wheels sliding on the surface of a film of water on the rail surface, is being built in the Park of the Trocadero, Paris, and will convey visitors to the Exhibition. It will be 400 meters long.

SCIENTIFIC PROGRESS.

Prof. Haeckel on the Echinodermata.

Among the many distinguished corresponding members of the San Francisco Microscopical Society is Prof. Haeckel, the illustrious German biologist. At a recent meeting of the society, the subject of the lower forms of marine life was under discussion, and the society listened to a translation by Secretary Clark of a short paper on "The Alternate Generation of the Echinodermata," sent by Prof. Haeckel.

"The palingenetic development of the *Echinodermata*, ordinarily known as metamorphosis, which leads to important inferences as to their race history, is to be considered as a genuine alternation of generations, and especially for this reason, that the two succeeding generations are destroyed in order to make possible the change into one another by a single transformation.

"The first generation, the 'nurse,' or so-called larva, is a solitary, bilateral, limbless individual or 'person,' which consists of only one piece of antemera, and possesses the greatest resemblance to true worm larvæ. On the contrary, the second generation, the perfected echinoderm, has the ground plan of a symmetrical, five-sided pyramid, and consists of five antimera or parts; it forms a true stock or cormus, which is composed of five articulated, worm-like, bilateral persons. When this cormus originates within the nurse by budding, a multiplication of antimera occurs, whereby from one antimer five arise. This origin can be interpreted only as a non-sexual reproduction, not as a mere transformation.

"The true nature of these genuine alternate generations is clearly shown by those sea-stars in which the body remains free from the five, or more, independent arms, and the central disk, which barely unites the latter in the middle, exists almost as an independent body. These are *Ophidiaster*, *Chætaster*, *Brisinga*, etc. Particularly interesting in this relation are most species of the genus *Ophidiaster*, or *Linckia*, from which several specimens are exhibited. Here the single arm, which possesses the morphological value of an articulate worm, is freely detached from the disk, and every arm forms, by regeneration, both the central disk and the four remaining arms. The speaker showed, with numerous specimens of the four species of *Ophidiaster* selected, all the various stages of this reproducing process, and discussed the significance which these so-called comet forms of sea-stars possess for the morphological interpretation of the same.

"Therefore, we should take as the oldest stem form of the *Echinodermata* the asteroidea, from which, as diverging branches, have developed *Ophiuridea*, *Crinoidea* and *Echinoidea*. In the last the centralization of the whole cormus is carried farthest, and from them the *Holothuroidea* have arisen. Thus the *Holothuroidea* stand most distant from the original form of the *Echinodermata*—the *Asteroidea*.

DANGERS THAT BESET SUBMARINE CABLES.—Every one who has at all studied oceanic telegraphy perfectly, understands the dangers to which the shore ends of the communicating wires are exposed from the action of currents, the anchors of ships, etc. But the general idea prevailed that once the cable was laid in the gloomy depths of the ocean it was in safety. Such, however, is not the case, for the inhabitants of those regions seem to resent the intrusion. In many cases, owing to the inequalities of the bottom of the sea, the wires can not rest wholly on the bed, but in some places hang in festoons. Then they are liable to accidents from the larger denizens of the sea, among which we may particularly mention the sun-fish (*Orthagoriscus*). That peculiar but little known animal is nearly circular, of a brilliant silvery white, and at night emits a powerful phosphorescent light, whence its name probably arose. When swimming it turns round like a wheel, and moves with great rapidity. It grows to an enormous size, often attaining four feet in diameter, and some of them are said even to reach eight feet. Specimens have been caught weighing 500 pounds. It is found in all seas from the Arctic to the Antarctic Circle. Where the tail is in ordinary fishes, this curious creature has a sort of flattening in its circular shape from which bony spines project. Not long since, an interruption occurred in a cable, and on examination it was found that it had been penetrated by one of the caudal spines of the sun-fish. Even when the wire lies quiet at the bottom it is not safe; for a species of marine weevil attacks the gutta-percha and gradually destroys the conductivity. But the most curious instance of damage inflicted on a cable is that which lately befell the one from Portugal to Brazil. A fault having been found, the tests were applied and the precise spot indicated. The wire was fished up and was discovered to be broken. In one of the ends was entangled a large whale. The monster was covered with parasites, and, in attempting to free itself from its tormentors, had broken the cable, and then managed so to twist itself in the coils of one end that it was held fast a prisoner, and, not being able to rise to the surface for air, was drowned.

DEPTHS OF LAKES.—The Bavarian *Courier* publishes an interesting comparative statement of the depth of lakes. Among European lakes the Achensee, in the Tyrol, heads the list. At some points the depth of this lake amounts to 2,500 feet. The greatest depth of the lake of Constance is about 975 feet, that of the Chiemsee about 458 feet, and that of the Walchen and Konigssee, 611 feet. The measurements made about 1870 at the Dead Sea showed that at its deepest part its depth is 1,836 feet, but if we consider that the level of this lake is already 1,394 feet below the level of the Mediterranean, then we find that the total depression in the soil here amounts really to 3,230 feet. The lake of Tiberias is extremely shallow in comparison; on its eastern part the average depth is only 26 feet while on the western side it lies between 19 and 22 feet. In lake Baikal depths have been found which for a lake are utterly astonishing. In the upper part of the lake the depth is 10,800 feet, (about the hight of Mount Etna) but downward the bottom constantly descends, and near the opposite bank the depth amounts to 13,230 feet. The depth far exceeds that of the Mediterranean Sea, which at its greatest part measures only 7,800.

HOW GRAPES RIPEN.—According to *Comptes Rendus*, St Pierre and Magnien have arrived at the following conclusions in regard to the changes which grapes undergo while ripening. During the process they evolve carbonic acid in darkness as well as in light, when exposed to the air or placed in an indifferent gas. The amount of oxygen evolved in air is always in excess of the oxygen taken up; this has been remarked in the case of observations extending over a long space of time. Grapes can absorb or give off water according as they are placed in a moist or dry medium. As the change goes on the acids decrease in amount, while the quantity of sugar increases. The acids and the glucose are carried to the grapes by the sap. Here the acids are slowly consumed, while the sugar increases in point of concentration, and at a still later stage the sugar itself is consumed.

A DOUBLE EXPEDITION TO THE NORTH POLE.—From a communication recently received at the Navy Department, it appears that Mr. James Gordon Bennett contemplates a double expedition to the North Pole, one vessel going by way of Behring's Straits, and the other by way of Spitzbergen. He has been in consultation with Petermann, the great German geographer, and other Arctic experts abroad, and now proposes to fit his well known yacht, the *Dauntless*, for an additional Arctic expedition, putting in her an auxiliary engine and screw, and otherwise making her complete for an expedition by way of Spitzbergen. The *Jeannette* is on her way to San Francisco, and will pass through Behring's Straits early next year. Her owner will spend no less than one hundred and twenty thousand dollars on the *Jeannette* expedition.

ARTIFICIAL PRODUCTION OF CRYSTALS OF SILICA.—At one of the *seances* of the French Academy, M. Daubree presented a method of obtaining crystallized silica in the dry way. For this purpose the tungstate of soda is employed by M. Hautefeuille, who obtains at will the silica crystallized either in the form of tridymite or of quartz. It has been well known, from the researches of G. Rose, that the phosphates and the tungstates could be made to serve this purpose. But it has been demonstrated by M. Hautefeuille that the tungstate exercises a far more energetic action in this respect than the phosphate; so that at a very moderate temperature, it may be employed to produce a number of the more or less fusible silicates that occur in nature.

MOSANDRUM.—A dispatch from St. Louis says: In the sub-sections of the Association for the Advancement of Science, a paper by J. Lawrence Smith of Louisville, was read this afternoon announcing the discovery of the oxide of a new metallic element, which the professor intends to call "mosandrum." This is the first element ever discovered by an American. It is found in the mineral samarskite, from North Carolina, and resembles the metals of the cerinm group.

HYDROGEN.—E. Varenne and E. Hebre have found that for making pure hydrogen gas a solution of 10 parts of bichromate of potash and 5 parts of sulphuric acid in 100 parts of water acts as an absorbent of all gases which can be mixed with hydrogen produced from impure materials. By the use of this mixture hydrogen free from the compounds of arsenic, antimony, sulphur, carbon and silicon may be obtained.

NATURAL SCIENCE IN EDUCATION.—The motion of Sir John Lubbock, providing for the addition of elementary science to the subjects for which grants are made under the English education code, has been defeated. Dr. Lyon Playfair, who supported it, said they only wanted to give children the opportunity, at present denied them, of gaining elementary knowledge of common things.

A RECOVERED FUNGUS.—Rediscovery of a lost *Sphæria* is noticed by the bulletin of the Torrey Botanical club. This fungus, the *S. barbirostris*, was discovered by Dufour, in the department of Landes, France, over forty years ago. Since then no specimen has been found until lately, when Mr. J. B. Ellis rediscovered it on some maple bark at Vineland, New Jersey.

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

CALIFORNIA.

ALPINE.

OUR MINING PROSPECTS.—The dearth of mining news from this county has lately heen very noticeahle. It is encouraging to see the following in the Alpine *Chronicle* of Aug. 24th: Since the formation of this county a more favorahle opportunity for mining men to obtain valuahle mining property has never been presented than Alpine can offer at this period in her history. Is is not owing to the harrenness of our mountains that Alpine is not more favorahly known in mining circles, hut it is owing to the ignorance and had management of those who have attempted to develop some of the hest miniug property in the county, and the failure of the score of processes for working ores that have been tried here since '65, wheu the Rivot furnace was erected at Markleeville. We have had introduced here at this late day a process that has heen emineutly successful in reducing the most rehellious ores in Alpiue county, and at an insignificant expense per ton. Through this process the Advance company has heen enahled to make regular shipments of bullion to San Francisco for several weeks past. Now that we have a practical reduction process, there is encouragement for mining men to take hold of mines in Alpine and develop them. With a mill at the mine, to save the expense of transporting the orc, $10 ore would pay a profit to the mine owner and enahle him to develop his mine with its prodnct. There is scarcely a mining claim in Alpine couuty that would fail to produce $10 or $15 ore from the croppings. In all the mining districts of the county there is an ahundance of wood and water, thc latter sufficient to run hundreds of stamps, and mining enterprises can he managed here with a reasonahle outlay. The county will recuperate under the continued success of the new reduction process at the Advance mill, and those having interests here are already feeling encouraged, and steps are heing taken hy San Francisco parties to inangurate a mammoth mining enterprise in the Silver Mountain district early next spring, wheu other claims at Silver mountain will be started up. With our mines placed in charge of superintendents who thoroughly understand silver mining and are economical in their mauagement, we are confident that Alpine will soon fall in line as a hullion producing county. A large numher of our claims are now subject to relocation, and there are many valuable mining properties here that can he had on good terms hy parties wishing to develop them. Alpine has one hullion-producing mine, and a judicious outlay would soon give us a score of them.

HYDRAULIC MINING.—William H. Naileigh, Daniel L. Naileigh and William Pennison, of Virginia, have heen for the past two months engaged in preparing for hydraulic mining near Hangman's hridge, on the Carson river.

AMADOR.

CENTENNIAL.—*Ledger*, Aug. 31: A hody of extra quality ore was uncovered on Tuesday. There are 2,000 tons on the dump ready for milling. While the mill is heing erected, the lode will he explored 100 feet deeper. That the stock-holders have confidence in the mine is proved hy the fact that a deliuquent assessment list has never heen published in connection with the property.

MONTIRICHARD.—A force of 20 men is pushing work on the reservoir, and its completion is close at hand. The reservoir will cover an area of five acres, and will cost at least $2,500. This reservoir will prevent further interruptions at the mill. This mine is off the mother lode and the managers are cautious in developing it. In order to discover what they have ahead they will soon sink 100 feet further. The present stopes are not yet exhausted.

ITEMS.—The Oneida mine has, since its opening in 1869, produced $1,391,750. Its yield this year has been $123,386. The last Downs' clean-up aggregated $3,008, an average of ahout $40 per ton. It is estimated that enough rock is in sight to keep 10 stamps running for a year. Manon's creek mining claim at Sutter turns out a higger crop of lead than gold. The Talisman mill has been engaged to crush rock from the Tucker Hill claim of Sutter Creek. Teams are at present employed in hauling ore to the mill.

CALAVERAS.

CHILI GULCH.—*Chronicle*, Aug. 31st: Hoey & Silter's mine and mill are in full operation. The battery was set in motion Wednesday. The pay chute has heeu struck in the mine, levels run and breasts opened, and it is expected that gravel can be taken out fast enough in the future to keep the hattery in constant operation. The prospects of the mine are first rate. There is any amount of gravel to he had, and no lack of indication that it will pay well for mining and milling.

GARIBALDI.—This mine has heen sold to Kellogg and Garland. Kellogg is a San Francisco capitalist and minor. Garland is proprietor of the sulphuret works in Sutter Creek, and owner of large mining intcrests in Amador. The price for the mine was $4,000, cash down. The property was sold hy John Etchevery & Co., and is generally known as the "Butcher John mine." It is understood that work will be commenced immediately. The Good Hope hoisting works, and Garland's 18-stamp mill, are, it is reported, to he put upon the mine.

SCARCITY OF WATER.—W. W. Cook, of the Maison de Sante, has heen compelled to shut down, and several others must soon follow his example and wait for the rains. All the great tunnel mines will continue in operation, however. Duryea, Brown & Co., Hoey & Sliter, the Rough Diamond, Johnson, Querel & Co. and others will not even reduce their working force, the quautity of water requisite to keep the several mills in operation being comparatively small.

EL DORADO.

GOLD DEPOSITS.—*Mountain Democrat*, Aug. 31st: The late strike in the Gold Deposit mine is giving to the miuing interest of this section such an upward "lift" that in all probahility it will cause the opening of several mines which are well knowu to be rich but for lack of capital have for some years laid idle. This strike has not heen kept a secret, as too often has been the case in this place, hut all who have desired to do so have heen invited to examine the mine and the ore tbat has heen extracted. This is as it should he, and will do more good to the county than many secret strikes which the people had lost confidence in. This lode is a true fissure vein with well defined walls, and by miniug men is considered to have all the requirements of a good mine. The company is now running a tunnel along the side of the lode, and are grading the ground for the erection of boisting works, etc., which, it is said, they inteud to push to completion as soon as possible, when they will commence sinking.

FRESNO.

MINING RESOURCES.—*Expositor*, Aug. 29: The mining resonrces of this county have heen receiving considerahle attention of late, owing principally to the recent valnable discoverics made in the Sierras, on the north side of the San Joaquin. Prospectors are ranging all through the mountains, from the vicinity of Fine Gold Gulch to the Bodie mine, and scarcely a week passes without sevcral new and promising gold and silver-hearing quartz ledges heing discovered. The discovery of the apparently rich veius of silver-bearing ore, in the vicinity of what is know as "Pine City," has led to the discovery of another, and apparently richer series of mines near the head waters of the San Joaquin, in what is known as the "Lake District." Following up the discoveries, other ledges have heen found still further west in the vast slate helt that extends along the summit, east of the Palisades. A numher of rich veins of silver ore have recently heen discovered ahout 20 miles east of the Oro Fino mines. The newly discovered ledges are apparently a continuation of the hase metal veins found in Inyo and Mono counties. The discovery of these veins will cause a thorough search to he made through the mountain range for hidden mineral deposits.

MONO.

THE Mono *Press* is indefatigahle in collectiug reports from the mining claims. Similar energy displayed in some other counties might increase the numher of our dividend-payiug mines.

PACIFIC TUNNEL.—Bodie *Standard*, Aug. 28: C. W. Mills commenced work last week. The tunnel is now in over 200 feet and a good stratum is coming on the face. Thirty tons of ore on the dump will mill ahout $65 per ton. An air shaft, nearly 150 feet from the mouth of the tunnel, followed a good ledge for 60 feet, the full length of the shaft.

SOUTH BODIE.—The shaft is down 80 feet. A douhle compartment shaft, three and a half by seven feet, will be driven down, the timhering of which will be commenced at once. Three shifts will be put on and the work driven ahead as rapidly as possihle. Hoisting works will arrive for this claim inside of 20 days. The working capital is $20,000. Twenty feet from the surface there are several stringers, and in the hottom a very good stratum is coming in.

BENTON.—The Indian Queen mine, though located in Nevada, is properly one of the Benton mines. Since the company have taken hold of this mine, they have taken out over $300,000 worth of huilion, making over $500,000 worth of ore extracted in all. They have also erected a splendid four-stamp mill from the profits, and under Howell's supervision, two dividends of fifty cents per share, were declared. Enough machinery is now on hand to enlarge the mill to eight stamps, and should tbe mine continue to look as favorahle as it now does, the enlargement will soon be made. The company will then he ahle to produce twice as much hullion, and stockholders can look for numerous dividends. During a thirty-five day's run just made 166⅔ tons of ore was reduced to a milliug cost of $27½ per ton. The ore thus reduced (deducting 7¼ tons of custom ore), amounted to $23,235; average assay, $145.44 per ton, and amalgamated, 92½ per cent. The ore contaius about 35 per cent. lead, and ahout 10 per cent. other base metals. It is of a very refractory nature, thus makiug the working of it to a high perceutage, a very difficult task. Nearly thirty meu are employed in the mill and mine, and upon the whole, the Indian Queen mine is perfectly estahlished.

ORIENT.—This claim is nortb of the California and south of the Old Dan. The shaft is down 26 fect. A vein formation of 2½ feet of good payiug quartz was cut in the sbaft. Thc mine has been sold to San Francisco parties who will incorporate it, and commence operations at once.

MCCLINTON.—This week the shaft has been sunk 8 feet, making a total of 370 feet. The ledge of good milling ore in the hottom is 3½ feet wide.

SAND BANK.—This claim was sold Aug. 26th, hy Louis Lewis to San Francisco parties for $5,000 in coin, and 50,000 shares of stock. The shaft is down 135 feet, and a good ledge followed almost all the way from tbe top. Hoistiug works have heen ordered.

RED JACKET.—This shaft is down 40 feet. When down 30 feet, the south drift was started, and is now 7 or 8 feet. Very fine ledge matter was encountered in this drift. A good ledge is coming in the hottom of the shaft.

SILVER QUEEN.—Parties have taken hold of this mine, and will prosecute the work vigorously. The shaft was sunk 100 feet, and then drifting for the ledge commenced. The drift is now in 75 feet.

SILVER HILL TUNNEL.—This is a very recent location. The tunnel is in 70 feet, and in a short time three shafts will be put on. The locators are Thos. Steere and A. Bah.

GENERAL BATTERMAN.—This shaft was sunk 32 feet some months since and during the past week was resumed, and it is now down 40 feet.

CALIFORNIA.—This mine was sold a few days since hy Louis Lewis to Cliuton & Gurnie, of San Francisco. The shaft is down 103 feet.

BERTIE MAY.—Have heen timhering the shaft during the past week. It is down 40 feet and sinking will he resumed in a few days.

POORMAN.—The owners commenced work ou this claim, and the shaft has beeu sunk only a very short distance.

MONO & CROSS.—This claim is on Silver hill. It has a ledge four to six feet wide. It is ahout eight feet between the walls and the formation is soft porphyry, mixed with clay and quartz. On each of the walls there is nearly a foot of clay. It is thought to he a true fissure vein.

NEVADA.

NEW ENGLAND MINE.—*Herald*, Aug. 31: This mine is a new euterprise, and the work of paospecting has just commenced. On thc New Englaud proper uothiug is known of the lode to a greater depth than 150 feet. There is every reason to helieve that south of thc perpendicular shaft, where the first hoisting works were constructed, there is a pay chute equal to anything yet developed. The work now being done is confined to the 450 level, and ahove it a great deal of fine ore has heen taken out. The size of the ledge increases and the quality of the rock seems to improve very much in the 450 level. On this level a tunnel has heen run we should say over 100 feet, and an "upraise" made for air, and for the purpose of stoping. The "upraise" has heen run a distance of 80 feet from the tunnel through a body of ore from two to five feet thick, and of as good a quality as any taken out. A winze was started from the 350 level to connect with the "upraise," aud in this the same body of ore is found. It is estimated that there is now enough ore in sight to keep the mill running six months. With a force of five men on a shift there is sufficient ore now heing taken out to keep a 20-stamp mill running all the time. The new crushing mill is doing good work and gives entire satisfaction. It is a 10-stamp mill, witb all the latest improvements. The appliances for saving sulphurets are very complete, and are showing fine results.

THE SMITH MINE.—*Transcript*, Aug. 31: Sinking is to he commenced iu the Smith mine, at the Half-Mile House, in a few days. A large force of men are to he employed, and the work pushed ahead as rapidly as possihle. The indications of a rich claim there are indisputahle. What little rock has heen taken out already is found to be very rich, and the ledge is said to be an extensive one.

MEADOW LAKE.—Grass Valley *Union*, Sept. 1: The stuhhorn Meadow Lake ore have at last succumhed. Willard's new roasting process in connection with Gleason's method of amalgamation, have ohtained 92⅞ of the gold from the ores. The Truckee Smelting Works will be at once removed to Meadow Lake.

ITEMS.—New diggings of gold-hearing gravel have heeu hrought to notice recently in the vicinity of Round mountain, ahove Nevada City, and are attracting considerahle attention. It is supposed to be a hranch of the Blue Tent lead. A party of 32 persons have located 640 acres, named their company the Atlanta and intend to start work soon. The San Francisco Copper mining company, at Spenceville, is now shipping 30 tons of pure copper per month, and during the coming fall will increase their shipments to 50 tons per montb. Messrs. Edmunds & Co. have just completed the working of three tons of sulphurets from the New York Hill mine, at their works on the Union Hill road, which yielded $1,070, or $356 per ton. The Pioneer Reduction Works, of Gold Flat, are tunneling for water. Hoisting machinery for the Moore's Flat Gold mining company has heen ordered at the Nevada foundry. A fine ledge, five feet thick, is in sight in the Hudson incline. The Manzainta mine is to be resurrected.

PLACER.

QUIET TIMES.—*Dutch Flat Forum*, Aug. 29: Matters in mining circles are quiet at present. The hydraulic mines are all idle with exception of the Lekamp mine, where the usual number of men are still at work. The other companies will commence fitting for the next season in a month or six weeks. At Lowell Hill the various tunnels are being pushed steadily ahead, with good indications of soon developing something of value. Several new claims have heen located on Bear river during the past six months. On some of them work has heen commenced, and is heing vigorously prosecuted. Reports from Little York say that the gravel is improving in quality, and hig returns may he looked for next season. At Gold Run everything is quiet waiting the return of water. The indications are very favorable for the next season.

PLUMAS

GOPHER HILL.—*National*, Aug. 31st: The Plumas Ditch Co. have had a good season's run of water, and their pipes have heen running in the Metcalf and Haycock claims on Gopher Hill, for some months. Within the past few weeks they have cleaned up, and the result so far, amounts to the neat little sum of $28,000. Some hedrock is yet to be worked over, and it is thought that at least $3,000 more will he taken out hefore the season's work is over. The company have a vast amount of ground yet to work, and the ditch commands a section of mining country which is almost inexhaustihle.

SHASTA.

FURNACEVILLE.—Reading *Independent*, Aug. 29: W. C. Boylan, Superintendent of the Tehama M. Co.'s miue, better known as the Donkey mine, gives the following facts: They have now on the dumps at least 1,200 tons, which will assay on the average $40 per ton, and may mill $25 to $30. The ore is not as spotted as in the other mines, but earries a more uniform grade. The ledge where they are now at work is 14 feet wide, hut may not average this clear through. The company are now taking steps toward the early construction of a mill.

COPPER CITY.—Good reports come from all the mines, the Extra, Potter, Northern Light, Pittshurg and Wiuthrop. The ledges are turning out to he true fissure veins. As they sink deeper they grow more clearly defined and yield richer ore. The Extra company have shipped over $3,000 in silver hricks ahove 900 fine and a numher of tons of cement copper. The Potter ledge is eight feet wide and gives assays as high as $40 per ton gold and silver (no copper). The Pittshurg has hut just commenced. The arrangements at the Winthrop are said to he most systematic. Superintendent Springer will have things so convenient that one man will he able to convey 50 tons per day from the miue to the mill. French capitalists have heen examining the region with a view to finding a location that will justify the erection of large reduction works.

SIERRA.

ITEMS.—Nevada City *Transcript*, Sept. 1: Thanks to the energy of Col. L. E. Cram and Wm. Hanley, the Golden Star Gravel M. Co. have developed a very rich mine. They wait for water at present. The Masonic mine, under the management of Chas. Rice, is said to he paying well. Wm. Mansen is developing the Pliocene with all possible speed.

SAN BENITO.

QUICKSILVER.—Gilroy *Advocate*, Aug. 31: A ledge of quicksilver has heen lately discovered within three miles of the Stantonville camp. It is ahout 18 inches wide and assays as high as 20% and 25%. It has heen named "The Mariposa."

NEVADA

NEVADA ITEMS.—The lately incorporated Jersey M. Co. have commenced operations in Jersey district. The indehtedness of the Mayflower mine has heen settled, and the mine will he started. The Pioche West Extension machinery is being taken dowu to he shipped to Andy Fife, Long Valley. The owners of the Great Unknown location, are sinking with three shifts, night and day toward the ledge. The mines in Lake district, ahout four miles west of Ward, are to have a 20-stamp mill. Operations are soon to he commenced among the copper ledges in the old Howard district. Tom Andrews has discovered, thirty miles southeast of Cherry Creek, a mountain of ore assaying from $45.50 to $2,000 ton. The other day, Harrison in Vizau's old claim near Osceola, washed out $300 in dust and nnggets. It is said that the work of putting up copper smelting furnaces at Rohinson will he commenced immediately. A. H. Ruse has struck a fine ledge near the Blue Jacket mill, Bull Run country. All along the quartzite helt, which is easily traced from Ruhy Hill to Secret Cauyon, prospecting is reported lively. At the Cherry Creek mill, Tom Andrews' fabulous ore assayed no higher than $98.82. Two important strikes have lately heen made in the leading mines of Ruhy Hill. The Richmond was first to the front with an important development, and now comes well authenticated rumors of a splendid find on the 1200-foot level of the Eureka Consolidated. If true, and we can hardly douht it, this is the deepest point at which ore has heen found in this district. It is douhly important from this fact, that it attends largely to assure the future of Eureka. It is thought that the Leopard chute has heen struck in the Hussey. The negotiations of some Virginia City capitalists for the purchase of the Mountain Bride mine in Paradise mountains, fell through on account of a dispute in regard to the ownership of part of the grounds. Reports from the Railroad district mines are good.

WASHOE DISTRICT.

CON. VIRGINIA.—Gold Hill *News*, Sept. 4: Daily yield of ore 200 tons, which is heing crushed as fast as it is extracted. Repairing the consolidated shaft is making steady prog-

ress at the rate of five feet per day. Sinking the C & C shaft is progressing at the rate of two feet per day. It is now down 17 feet below the 2050 station. The rock in the bottom is still hard blasting and the flow of water apparently stronger than ever. The situation in the mine is virtually unchanged for the week.

CALIFORNIA.—Daily yield, 250 tons of ore, keeping the Battery mill steadily running. The ore stopes going northeast on the 1750 level still continue to show well. The joint Ophir winze on the north line of the mine has reached the 2000 level, at which point a joint station is being cut out preparatory to drifting southward to connect with the C & C shaft. The flow of water at the bottom of this winze will be driven through the diamond drill hole by means of a donkey pump, to the Ophir south drift on the 2000 level and will then be taken to the surface by the Ophir pumps. The repairs to the Con. Virginia shaft are making steady progress, the heat still being intense. The rate of progress is about five feet per day. Sinking the C & C shaft is going steadily forward, the bottom being in hard blasting rock and the flow of water still very strong. Whenever any accident or delay occurs to the pumps, it always requires an extra strong exertion to keep the water from flooding the shaft.

YELLOW JACKET.—Sinking the new shaft is making the best of progress. It is now down 1,740 feet, the sinking averaging four feet per day. The drift south on the 2400 level is in 231 feet, the face in favorable vein matter and perfectly dry.

CON. IMPERIAL.—The west crosscut on the 2400 level is still advancing in favorable vein matter, carrying quartz and some ore.

UNION CON.—The chamber for the joint winze on the Mexican line below the 1600 level is completed, and the sinking of a winze was commenced last evening. The north drift on the same level is being pushed energetically ahead, the face in clay and porphyry. It is now in 626 feet. Retimbering the crushed portions of this drift is making good progress.

WARD.—Sinking the main shaft is being pushed ahead with all the speed possible, the bottom in good blasting ground and the flow of water giving but little trouble. It is the intention to push the shaft downward with all the speed possible, so as to complete a connection with the south drift on the 1800 level of the Julia mine.

UTAH.—Sinking the main incline below the 1150 level is progressing at the rapid rate of four and one-half feet per day, the bottom in good working ground. The northeast drift on the 1150 level is being steadily advanced, the face in soft, easy working ground. A large air receiver has been put in at the 1150 station.

GOULD & CURRY.—The east crosscut from the foot of the joint Savage winze on the 1900 level is making good progress, the face in blasting ground. Repairing the main south drift on the 1900 level is making good progress. Sinking the main incline is making slow progress on account of the great heat.

VERMONT CON.—Sinking the shaft is progressing at the rate of three and one-half feet per day, the bottom still being in vein porphyry mixed with streaks and bunches of quartz and clay.

HALE & NORCROSS.—The pumps continue to show a steady gain on the flow of water, but have not yet reached the 2100 level. The pumps run steadily at the rate of six and one-half strokes per minute.

NORTH CON. VIRGINIA.—Sinking the shaft is making the best of progress, the bottom still in very hard blasting rock. The plans and specifications have been submitted and the contract let for the manufacture and erection of splendid new hoisting works. The works will be erected over the old ones so as not to impede the sinking of the shaft. The new hoisting machinery will be the most perfect and powerful on the lode.

OPHIR.—The south winze below the 1900 level has reached the 2000 level, at which point a station is being opened preparatory to drifting. Sinking the main incline is being driven vigorously downward, the bottom in good blasting ground and the flow of water giving no trouble whatever. A pump tank is being put in at the 2100 station.

BELCHER.—The repairs to the pumping machinery are completed and the pumps working splendidly. Sinking the main incline has been resumed and is making good progress. A crosscut has been started east from the bottom of the winze on the 2160 level to prospect the ore vein at that point. A drift south from the same point has also been started to connect with the south winze for prospecting and ventilating purposes. The south drift on the 2360 level is in 227 feet, at which point a crosscut east has been started. A crosscut is also being run directly opposite the air shaft.

BULLION.—Sinking the main incline is making the usual excellent rate of progress, the bottom still in splendid quartz affording low assays of both gold and silver. The east crosscut on the 1700 level is rapidly advancing, the face still in porphyry carrying streaks of quartz. The face of the west drift on the 2000 level is in soft porphyry carrying streaks of quartz and clay. The seepage of water is still light.

BEST & BELCHER.—The north drift from the Gould & Curry on the 1900 level has been again started up and is making good progress, the face in hard blasting rock. This drift is now in 205 feet north of the Gould & Curry line. The east drift on the 1900 level from the bottom of the joint Con. Virginia winze is also making good progress, the face in porphyry carrying streaks of favorable-looking quartz. It is now in 93 feet.

TROJAN.—The south drift on the fourth station level is being driven vigorously forward, the face still in quartz of a good character. Several crosscuts have been run on this level, all of which show quartz and some good ore. The drifts on the third and second stations are showing well. The new air connection on the third level greatly benefits the air circulation in that portion of the mine.

SAVAGE.—The pumps are still slowly gaining on the flow of water, but have not yet been able to reach the 2100 level. Preparations are being made to sink a winze below the 2000 level to the 2100 and 2200 levels. Otherwise no change to report.

SUTRO TUNNEL.—The face of the tunnel is now in a distance of 20,500 feet, at which point the tunnel has been temporarily stopped on account of the necessity of using the air pipes and drilling machinery for driving the south branch of the tunnel running to connect with the Julia shaft, which is now well under way and is being pushed ahead with great vigor.

OVERMAN.—The south drift from the bottom of the winze on the 1600 level is making fair progress, the face partly in hard and partly in soft rock, which requires careful timbering. The east and west drifts on the same level running to meet each other are both making good progress, the face of each being in good blasting ground.

LADY WASHINGTON CON.—The north drift on the 1300 level continues to advance, running parallel with the ore vein, the face in porphyry and clay mixed. The prospects are excellent when crosscutting the ore vein shall have been decided upon.

SIERRA NEVADA.—This mine has been not only the topic of conversation in every circle, but the center of expectation as well. On Saturday evening, last, a drift was started at a point 100 feet below the 2100 level. This drift had to be started in the bottom or underside of the winze, so that several feet of the drift amounts to nothing more than open cut. Soon after commencing the drift, the poor ore in the bottom was penetrated, and that which was richer began to show itself. By the time the drift was in 10 feet the entire face was in rich ore; at the distance of 13 feet, three average assays of the face and sides gave the following yield: No. 1, gold $115.12, silver, $341.10, total $434.92. No. 2, gold, $211.04, silver, $399.80, total $510.84. No. 3, gold $131.10, silver $242, total $373.15. Later in the day an average of five assays from the sides and face gave $610. Early this morning the drift was again visited by a large number of mining men and experts, all of whom took samples. Some of the richest specimens assayed high into the thousands, while a fair average of the assays of the ore, rich and poor, in the face of the drift, ranged from $300 to $500 per ton. The preparations for the permanent working and development of the new bonanza are being forwarded with all the dispatch possible, and a road is already being opened to the Sacramento mill, situated just above the hoisting works, for the purpose of giving the ore a milling test at the earliest day possible. The best experts that we have on the Comstock, now begin to look upon the development of a new bonanza in this mine as an almost foregone conclusion. Sinking the new upright working shaft below the 1700 level is being pushed ahead with all the speed possible.

LEVIATHAN.—The north drift on the 750 level is being pushed ahead with all the vigor possible, the face in the clay and black dyke lying next to the ore vein. The face of the drift shows frequent streaks of the quartz of a very lively healthy character. The south drift on the same level is also making good headway, skirting the west edge of the ledge, the streaks of quartz wherever cut showing splendidly. The hoisting capacity of the main incline machinery has been largely increased.

MEXICAN.—Sinking the joint Union Con. winze below the 1600 level was commenced last evening and is making good progress. The joint Ophir east crosscut on the south line of the mine on the 1600 level is making good progress, the face in hard blasting porphyry.

CHOLLAR COMBINATION SHAFT.—The broken machinery reported last week has been replaced with new, which will be in better condition for service in a day or two more than ever before. The north drift running to connect with the Sutro tunnel is advancing at the rate of five feet per day, the face being in ground which requires constant timbering. It is now in a distance of 195 feet, and will have 170 feet yet to run to connect with the tunnel. The water has risen over 200 feet in the shaft, but gives no trouble.

SILVER HILL.—The greater portion of the past week has been consumed in making some necessary changes to the machinery. These are now about completed and work will be resumed in all parts of the mine at once.

ORIGINAL KEYSTONE.—A drift has been started in the prospecting shaft on the north end of the claim to cut and prospect the ledge. The foundations for the new hoisting engine and other machinery are making the best of progress, and will soon be ready for the reception of the machinery. A large force of workmen are employed on the new hoisting works building, which is being pressed forward to completion as fast as is consistent with the durability and efficiency of the works.

ALTA.—The shaft has reached the 1550 level, at which point a station has been opened and a drift started to cut the ledge. A large portion of the ore vein on the 1150, 1250, 1350 and 1450 levels will be ready for crosscutting in a very short time.

JUSTICE.—Sinking the double winze below the 1300 level is making the best of progress, the bottom still in a fine character of quartz and ore. The south crosscuts on the 1100 level, near the Silver Hill line, are showing an improvement in both the character and quantity of the ore encountered.

CROWN POINT.—The east crosscuts on the 500 level are each still advancing in favorable vein matter. The north drift on the 2300 level is being pushed steadily forward, following the west side of the ore vein. The surveys were completed and two east crosscuts started this morning on the 2300 level. These drifts will be pushed ahead with all the vigor possible, and others started as soon as the north drift on that level reaches the Kentuck line.

EUREKA DISTRICT.

CUM GRANO?—Eureka *Sentinel*, Aug. 25: The steady progress of Eureka district in the development and yield of its mining properties, is a gratifying indication of its permanence, and demonstrates that the future is full of promise. There has been so little boasting in connection with the development of its resources that it is only within the last two years that the outside world has become acquainted with its importance, and at the present time, localities which do not possess one-tenth of the merit of the base range, are given prominence in the Eastern and San Francisco journals, while this district is almost unnoticed; and this in the face of the fact that Eureka district is contributing over a million dollars per month in gold and silver to the money centers, and the aggregated yield for the past ten years is considerably more than fifty million dollars in precious metals. It is amusing to see the San Francisco papers, and particularly those devoted to the mining industry, give prominence to official letters and voluminous reports from mines located on the Comstock, in which a pound of ore has never been discovered and is never likely to be discovered, without even a notice of this district. Good mines are possibly as well off without notoriety, but the richest lodes have needed capital to develop them, and while half a dozen properties in this district are yielding largely, there are miles of virgin ground and hundreds of claims that only need the impulse of capital to take rank with the best. Ore is found all over Prospect mountain; on Adam's hill, along the great lode from Ruby hill to the Hoosac mountain at Silverado, Spring valley, Secret canyon and other contiguous places. Let one-hundredth part of as much capital as has been sunk in holes in Storey county, be expended in this district, and there is no section that would give as speedy or as handsome returns.

MOUNT ROSE DISTRICT.

QUARTZ MILL WANTED.—Winnemucca *Silver State*, Aug. 27: Ore is being sent here from various mines and stored in the freight houses, as there is no place where they can get it crushed at present this side of San Francisco. The Auburn mill at Reno is not doing custom work, as the lessees, Messrs. Jones & Kinkead, have sufficient ore of their own to run it to its full capacity until their lease expires. The White & Shiloh works at Galena are said to be shut down, and the title to the Humboldt reduction works here has not yet been decided by the Supreme Court. This unfortunate state of affairs retards the development of the Paradise mines, whose owners are principally poor men who cannot incur the expense of extracting ore to let it lay on the dumps for months. If some arrangement could be made between the persons who claim the reduction works whereby they could be run, it would greatly benefit this community, as mine owners could realize from their ores and be enabled to give employment to a great many men at fair wages.

IDAHO TERRITORY.

ALTURAS.

VARIOUS MINES.—*World*, Aug. 23: The mines on Queen's river about 10 miles from Altanta, are looking splendid, and as depth is obtained everything shows permanency. The ledges widen in depth and the ore grows richer. One gold bearing ledge and two silver ledges have been found, and several that carry both gold and silver. The machinery for the hoisting works of the Buffalo mine is on the road between Rocky Bar and Atlanta. The Buffalo mill is making a run on 500 tons of ore from the Monarch mine. The Monarch mill is also running on ore from the same mine.

BONAPARTE.—*Statesman*, Aug. 29: Prof. H M. Winn has succeeded in organizing in the East a company to mine the Bonaparte claim. The capital stock is $2,500,000, with a large paid-up working capital, a sufficient amount of which is placed in Winn's hands to start his work in good shape. As fast as needed, more money will be forthcoming.

IDAHO ITEMS.—The Potosi mine continues to yield well. The ledge at the present point of operation is two feet wide and liberally streaked with mineral, showing heavy sulphurets all through. Some of the rock shows as high as 50% mineral. There is a force of nearly 50 men at work in and around the Black Jack. The Gold Hill shaft is down 250 feet and the tunnel to tap the ledge has been started. Mr. J. F. Harvey has built an arastra on Willow creek to work rock. The mine which was discovered last spring in Deer gulch, Boise county, near the Idaho City road, is being developed as rapidly as possible.

News in Brief.

A Chinese envoy is about to be despatched to Russia.

A chamber of commerce has been established in Tokio.

SWARMS of crickets are reported in San Buena Ventura.

SAN Francisco gave about $2,000 for the yellow-fever sufferers.

MONTANA grain prospects are good, grasshoppers notwithstanding.

THE fishing season on the Columbia has been ordinarily successful.

THE President has appointed Mr. Henry Dithmar, Consul to Breslau, Prussia.

AUG. 29th 96 bankruptcy petitions were filed in Chicago; Aug 30th, 165 more.

AUG. 28th, 50 petitions in bankruptcy were filed in New York and Brooklyn.

SOMEBODY is manufacturing bogus Mexican dollars in Lead City, Black Hills.

THE wool crop of Douglas county, Oregon, this year is put at 1,500,000 pounds.

CARELESSNESS among horsemen is allowing glanders to spread in San Francisco.

GERMANS are coming to America to examine our system of manufactured tobacco.

THE Japanese government has checked the attempt to secure emigrants for Peru.

IN Chicago, August 27th, there were fifty-two petitions in bankruptcy, mostly small.

THE National Agricultural Congress began its annual session at New Haven, Aug. 27th.

A MEETING of citizens at Yuba City has been called to form an anti-debris organization.

AT the State Fair, which opens September 16th, $50,000 in premiums will be distributed.

THE Bank Commissioners report the Clay St. Bank of San Francisco in a healthy condition.

THE first Japanese domestic loan has, foreign predictions notwithstanding, proved a success.

ENGINEERS are considering the proposed branch road of the Virginia and Truckee to Bodie.

THROUGH regular sources Chicago had to Aug. 30th, received for the yellow fever fund, $20,902.

THE Imperial Bank of Germany has raised its rate of discount to 5%, and for short loans to 6%.

PROSPECTORS in Como district are making sure their titles to claims. They still have confidence.

AN influential party in the Indian office is said to favor the annexation of Afghanistan to England.

THE Thomas grant, in Tehama county, has been sold to Fernell & Sons of Colusa county, for $432,000.

UP to August 27th, San Diego has shipped this season 318 barrels, 5,607 cases of honey to San Francisco.

IT is said that the well-known Hite mine of Mariposa has been sold to New York parties for $1,000,000.

THE French harvest: very good, two departments; good, twelve; fair, twenty-three; poor, forty-six; bad, seven.

W. W. CORCORAN, of Washington, has given the University of Virginia $50,000 to endow a new Chair of Natural History.

THE Treasury has issued a call for redemption of $5,000,000 of 5-20 bonds of 1865, $2,500,000, coupon, $2,500,000, registered.

RUSSIA has, near the Caspian Sea, an oil well that sends out 10,000 gallons a day, in a solid stream seventy-five feet high.

THE machinery, except the hoisting works for the new works of the Ontario mine, is to be made by a Virginia City foundry.

ON Aug. 28th the *Great Republic* carried over the Columbia river bar the largest and most valuable cargo ever shipped from Oregon.

THE condition of the oat crop, as shown by August returns to the Agricultural Department, is represented by 100; average of July, 101.

AUGUST 31st the Anti-debris association subscribed $170,000, assessable to an extent not exceeding 3% for the purposes of the society.

BULGARIANS maltreated Jews and Turks. Russians interfered. Consequence, a fight in which Russians and Bosnians were killed. Reform!

THE Tokio *Times* has advocated a commercial alliance with the United States which shall free the trade between the two countries from tariff charges.

THE European delegates to the Monetary Congress thank the United States for bringing about a change of opinion on important monetary questions.

THE effort of a Philadelphia coal company to introduce their anthracite into the non-coal producing countries of southern Europe, promises to meet with success.

ON August 28th, a paper by Prof. Hilgard of the University of California, on the relations of science to agriculture, was read before the National Agricultural Congress.

COLONEL HOGG of Oregon, has just returned from Europe, thinks that the Indian troubles and the cry of glutted labor market, will probably ender immigration small the coming year.

THE S. F. Copper M. Co. at Spenceville, Nevada county, is now shipping 30 tons of pure copper per month, and during the coming fall will increase their shipments to 50 tons per month.

CATTLE in large numbers are dying of murrain in Tulare and Fresno counties. Large numbers are also dying in Fresno of a disease not heretofore met with in this country. The hair rises up on the back, becomes greasy in appearance, the animal ceases to eat, and dies in a few days.

The Engineer.

Railroad Surveying.

A writer in the *Manufacturer and Builder* has an appreciative word for the railroad surveyor. Perhaps no class of men are subject to greater hardships aud privations than civil engineers who have to make the first surveys for a new railroad, especially when the line runs through a mountainous and unexplored country; as is the case in that region of our continent known as the far West. Matters grow worse further north, in the British territory. In the heart of the mountains there is hardly a day without rain, except when it snows. At night the surveyors often lie down in the open air, and consider themselves very lucky when their blankets are dry. In the early morning they rise to a breakfast of pork and beans and the luxury of a cup of tea. While their relations at home are enjoying a sweet hour of sleep in a comfortable bed before rising, the engineers are off into the dark, silent wood or clambering up precipices, always wet from the mist, or on the rocky banks of a roaring river, coming back at night to camp tired out and hungry, but still satisfied when they have made progress in their interesting work. And this goes on from day to day and from week to week, working, eating, sleeping. Books are scarce, as they are too bulky to carry; newspapers are never seen, and so they hear no news, except when fragments of them, from three to six months old, reach them in the shape of wrapping-paper. The monotony of this mode of life is only from time to time broken by rheumatism, sore feet and hands, and, if the campaign is long and fresh vegetable food not to be had, scurvy makes its appearance, until at last the arrival of a pack train with fresh provisions is a happy event, long remembered.

In addition to all the discomforts referred to, there are dangers to life inseparable from such kind of work—fires in the forest, risk of starvation by the giving out of supplies and the non-arrival of pack trains, danger of drowning while crossing lakes or rivers in frail craft, falling over precipices, etc.

A Prismoidal Road in South Africa.

A system of one rail railway is already in use for military purposes in Transvaal, South Africa, apparently with success. This one rail road is thus described: The cost of construction is comparatively slight; it can be put up without loss of time in grading, and having no gauge, it can be readily adapted to the sharpest curves. The posts have a constant hight of seven feet, three of which must always be above ground. This leaves a four foot margin for such inequalities as cannot be overcome by a grade of one in ten. The stability of the structure is assured partly by sinking into the ground (440 holes in a mile) and partly by anchor footings. These holes are of varying depth, and really do duty as cuttings. The structure may be either of wood or iron; but wood is preferred for military purposes, since omissions or damages are more easily repaired.

The upper rail is formed of a stout oaken beam on edge, breaking joint on the posts. An iron deck beam may be used in lieu, but its use might delay the construction, in being bent to regular curves, which the pioneer does not effect. The lower or grip rail, which forms a continuous chain, as it were, for the grip engine to pull at, is in oak, notched to hold firmly to the posts and struts. These deep notches, occurring with regularity at every four feet, admit of ready but not too facile bending on curves, the maximum being fixed at 100 feet radius, or about two inches per bay. Saw cuts at every eight inches are for the same purpose. The breaking strength of the structure is twenty tons, its weight about eighty tons per mile complete.

The mode of erection is very simple, and is the same whether iron or wood is employed in the construction.

Sacramento Drainage Commission.—A dispatch from Dixon, Solano county, says: The Commissioners of the Sacramento drainage district, comprising W. F. Knox, R. S. Carey and M. Eghert, with their secretary, Chris. Green, made a personal inspection of the lower end of the proposed canal line. The Commissioners were accompanied by Gov. Irwin, Gen. B. F. Alexander, Col. Mendell, chief engineer of the survey; Col. J. W. Smith, assistant engineer Pierson, and W. H. Mills, of Sacramento. The party left Elmira at 10 o'clock today and drove to Denverton, where the mouth of the proposed canal is located. After an examination on the ground of the field notes, the party followed the line of the canal to a point near Maine Prairie. The entire party reached here at half-past six this evening, and will leave in carriages to-morrow morning to inspect the mouth of Putah creek; thence they will drive to Knight's landing, returning to Sacramento by boat.

A Novel Tramway.—An improved tramway invented by Mr. H. P. Hevner, is at work on the premises of Messrs. Roehling, at Trenton, N. J. It differs from other tramways in having the load moved on a suspended track which is composed of five-eighths inch diameter round steel rods, the pulling being done by a small wire rope. The power required is very small, a six horse-power engine transporting 190 tons of material per hour with ease. The arrangements for turning off at any angle, and returning, are very perfect, and are so arranged that it is almost impossible for anything to become misplaced. Several of the tramways are to be built for use on sugar plantations, also to transport nitrate from the mountains about ninety miles back from the coast of Peru.—*Coal and Trade Journal.*

Brooklyn Bridge.—It having been announced that work on portions of the bridge was suspended and hundreds of men thrown out of work, it was thought by some that the delay was to be for an indefinite time. The trouble was occasioned by influences brought to bear upon the New York Board of Apportionment to prevent Comptroller Kelly from issuing bonds to secure the money to pay that city's proportion of the cost of the bridge. This question, says the *American Manufacturer*, is now finally settled by the decided opinion of the counsel for the city, W. C. Whitney, Esq., who concludes an elaborate statement of the case as follows: "I am therefore firm of the opinion that your honorable board is without jurisdiction in the matter; that under the law of 1875 and the ordinance of May 8th, 1876, the right of the bridge trustees to receive the money called for is perfect, and that without further action it is the duty of the Comptroller to issue the bonds and pay the money to the amount of the requisition of the trustees to the extent of $2,666,666.66, under the act of 1875." This question being settled, the work must go on.

A Minnesota Narrow Gauge.—The *Railway Age* says: That narrow gauge roads may prove desirable and profitable feeders to the existing main lines is indicated by the action of the Chicago, Milwaukee and St. Paul company in leasing the Minnesota Midland, a road of three feet gauge just completed from Wahasha, Minn., on the former line, northwesterly through a fine agricultural region to Zumbrota, some forty miles. This road, which was built, we believe, at a cost of less than $7,000 per mile, is undoubtedly equal to all the traffic that it will ever have, while in building it on the narrow gauge its projectors avoided the mistake that has beset so many minor western roads of building on a much larger and more expensive scale than was required, inspired by visions of trunk lines and enormous through business which were never realized. Under the powerful protection of the leasing company the Minnesota Midland, whose existence thus far has been a series of doubtful struggles, is certain to do a valuable and successful work in developing the region which has heretofore been destitute of rail facilities.

The Study of Light.—In closing an elementary treatise on light, the author, Prof. Mayer, writes thus beautifully of his theme: "We have seen how light moves through air, water and other transparent substances; we have learned something of the manner in which it may be reflected and refracted; and we have examined a few of the more simple facts about colors. Yet we have not by any means learned all that is known about light, nor have we exhausted half the capabilities of our apparatus. We have studied reflection from plane surfaces; all the wonderful effects produced by reflection from curved mirrors remain for further study. We have examined only one or two of the different kinds of lenses; and in the beautiful science of colors we have, as it were, only opened the gate into a strange and marvelous country. You may go on for a year and make experiments every day, and even then not reach the end. You have seen that it is not difficult to make experiments; and, should you take up other books on light and make new experiments, you would find much that would be of the greatest value and interest. Should you learn nothing else, you will see for yourself with what skill, wisdom and goodness, all those beneficent laws have been arranged. These things came not by chance, or of themselves. They all point to a great and wise Creator, who has given the light a pathway, and filled it with bewildering and perpetual beauty. It is the light that paints the flowers, tints the clouds and decks the sky in blue. Everything selects its own particular color out of the solar spectrum, and shines with all the beauty and glory of the light. No man hath counted all the glories of light, nor hath any man yet traced all its paths. It brings us strange messages from distant suns; it makes all nature beautiful."

Our Paris Mineral Exhibit.—The cases at the exposition exhibit a great variety of useful ores and minerals, such as copper, antimony, lead, manganese, iron, borax and borax minerals, asphaltum, coal oils, salt, gypsum, coal, natrium, platinum, marbles, building stones, etc. All these varieties are represented by beautiful, large specimens, carefully classed and ticketed. A regular pilgrimage of men of science takes place daily, for the purpose of inspecting the cases containing these gems. Next to the more rare samples of native gold may be seen numerous specimens of silver ore, and they again are followed by elegant and rare minerals, including a case with silicified wood in many beautiful varieties. Next to these cases is found a pyramid of the richest ores, from what is known far and wide as the Bonanza mines. Also, silver of considerable magnitude from the mines on the Comstock ledge. In another series of cases may be seen a mixed collection of very rich ores from Arizona, Oregon and Washington Territory.—*Anglo American Times.*

The Atlantic and Pacific Forests.—No. 2.

[By Prof. Asa Gray.]

From the Gulf of Mexico to the Gulf of St. Lawrence the amount of rain decreases moderately and rather regularly from south to north; but, as less is needed in cold climate, there is enough to nourish forest throughout. On the Pacific coast, from the Gulf of California to Puget sound, the southerly third has almost no rain at all; the middle portion less than our Atlantic least; the northern third has about our Atlantic average.

Then, New England has about the same amount of rainfall in winter and in summer; Florida and Alabama about one-half more in the three summer than in the three winter months, a fairly equable distribution. But on the Pacific coast there is no summer rain at all, except in the northern portion, and there little. And the winter rain, of 44 inches on the northern border, diminishes to less than one-half before reaching the Bay of San Francisco; dwindles to 12, 10 and eight inches on the southern coast, and to four inches before we reach the United States boundary below San Diego.

Taking the whole year together and confining ourselves to the Coast, the average rainfall for the year, from Puget sound to the border of California, is from 80 inches at the north to 70 at the south, *i. e.*, 70 on the northern edge of California; thence it diminishes rapidly to 36, 20 (about San Francisco), 12, and at San Diego to eight inches.

The two rainiest regions of the United States are the Pacific coast north of latitude 45, and the northeastern coast and borders of the Gulf of Mexico. But when one is rainy the other is comparatively rainless. For while this Pacific rainy region has only from 12 to two inches of its rain in the summer months, Florida, out of its 40 to 60, has 20 to 26 in summer, and only six to 10 of it in the winter months.

Again, the diminution of rainfall as we proceed inland from the Atlantic and Gulf shores, is gradual. The expanse that is or was forest-clad is very broad, and we wonder only that it did not extend farther west than it does.

On the other side of the continent, at the north, the district so favored with winter rain is but a narrow strip, between the ocean and the Cascade mountains. East of the latter the amount abruptly declines; for the year, from 80 inches to 16; for the winter months from 44 and 40 to eight and four inches; for the summer months, from 12 and four to two and one.

So we can understand why the Cascade mountains abruptly separate dense and tall forest on the west from treelessness on the east. We may conjecture also why this North Pacific forest is so magnificent in its development.

Equally, in the rapid decrease of rainfall southward, in its corresponding restriction to one season, in the continuation of the Cascade mountains as the Sierra Nevada, cutting off access of rain to the interior, in the unbroken stretch of coast ranges near the sea, and the consequent small and precarious rainfall in the great interior valley of California, we see reasons why the California forest is mainly attenuated southward into two lines, into two files of a narrow but lordly procession, advancing southward along the coast ranges, and along the western flank of the Sierra Nevada, leaving the long valley between comparatively bare of trees.

By the limited and precarious rainfall of California, we may account for the limitations of its forest. But how shall we account for the fact that this district of comparatively little rain produces the largest trees in the world? Not only produces, alone of all the world, those two peculiar big trees which excite our special wonder—their extraordinary growth might be some idiosyncrasy of a race—but also produces pines and fir tree, whose brethren we know, and whose capabilities we can estimate, upon a scale only less gigantic. Evidently there is something here wonderfully favorable to the development of trees, especially of coniferous trees; and it is not easy to determine what it can be.

Nor, indeed, does the rainfall of the coast of Oregon, great as it is, fully account for the extraordinary development of its forest, for the rain is nearly all the winter, very little in the summer. Yet here is more timber to the acre than in any other part of North America, or perhaps in any other part of the world. The trees are never so enormous in girth as some of the Californian, but are of equal hight, at least on the average, 300 feet being common, and they stand almost within arms' length of each other.

The explanation of all this may mainly be found in the great climatic differences between the Pacific and the Atlantic sides of the continent, and the explanation of these differences is found in the difference in the winds and the great ocean currents.

The winds are from the ocean to the land all the year round, from northwesterly in summer, southwesterly in winter. And the great Pacific Gulf stream sweeps toward and along the coast, instead of bearing away from it, as on our Atlantic side.

The winters are mild and short, and are to a great extent a season of growth, instead of suspension of growth as with us. So there is a far longer season available to tree vegetation than with us, during all of which trees may either grow or accumulate the materials for growth. On our side of the continent and in this latitude, trees see the whole autumn in getting ready for a six-months' winter, which is completely lost time.

Finally, as concerns the west coast, the lack of summer rain is made up by the moisture-laden ocean winds, which regularly every summer afternoon wrap the coast ranges of mountains, which these forests affect, with mist and fog. The redwood, one of the two California big trees—the handsomest and far the most abundant and useful—is restricted to these coast ranges, bathed with soft showers fresh from the ocean all winter, and with fogs and moist ocean air all summer. It is nowhere found beyond the reach of these fogs. South of Monterey, where this summer condensation lessens, and winter rains become precarious, the redwoods disappear and the general forest becomes restricted to favorable stations on mountain sides and summits. . . . . The whole coast is bordered by a line of mountains, which condense the moisture of the sea breezes upon their cool slopes and summits. These winds, continuing eastward, descend dry into the valleys, and warming as they descend, take up moisture instead of dropping any. These valleys, when broad, are sparsely wooded or woodless, except at the north, where summer rain is not very rare.

Beyond stretches the Sierra Nevada, all rainless in summer, except local hailstorms and snow-falls on its higher crests and peaks. Yet its flanks are forest-clad; and, between the levels of 3,000 and 9,000 feet, they bear an ample growth of the largest coniferous trees known. In favored spots of this forest—and only there—are found those groves of the giant *Sequoia*, near kin of the redwood of the coast ranges, whose trunks are from 50 to 90 feet in circumference, and hight from 200 to 325 feet. And in reaching these wondrous trees you ride through miles of sugar pines, yellow pines, spruces and firs, of such magnificence in girt and hight, that the big trees, when reached—astonishing as they are—seem not out of keeping with their surroundings.

[To be Continued.]

The Wastes of Parasites.

In his lecture on the "Wastes and Burdens of Society," recently delivered in this city by Rev. Henry Ward Beecher, the following paragraph occurred. The next waste that I shall mention is the waste which comes from parasites. I understand the parasite to be an animal which was organized to get its living without working for it. There is a great abundance of them throughout nature. Men have their parasites, and communities have whole hordes of them, for I hold that, setting aside those who are reduced by misfortune, all the men in a community that live without returning an equivalent to society for their livelihood are parasites—every man that lives on other people's industry, on other people's economy, on other people's productiveness, is a parasite. He sucks for a living; he don't work for it. The whole criminal classes are simply parasites; they produce nothing and consume a great deal. The whole class of vicious men, as they are scattered broadcast over the whole community, are parasites. They do not add to the public wealth; they draw it out, and live without gaining a living. The whole multitudinous mass of lazy men are parasites. They earn nothing, produce nothing, use up a good deal, and they are, from top to bottom of society, all criminals, and all vicious men, and all lazy men—parasites on society. It ought to make society ashamed to see what vast hordes there are permitted to nibble, and suck, and consume, but do nothing for a living. I hold it to be a duty to comb out the parasites, and to free the community from the waste and destruction which they make without any restoration or equivalent return. Among the parasites enumerated by Mr. Beecher were the gambling-house keeper, the keeper of lust houses and the saloon keeper, and as a preacher of the gospel—his business, as people will say to him—he held it to be his duty, in addition to his duty as a citizen, to protest against the abuses thus fastened upon society.

Texas and Pacific.—The annual meeting of the stock-holders of this railway company was held at the office of the company in Philadelphia on the 13th inst. Following is a synopsis of the operations of the company for the year ending May 31st, 1878, as shown by the report of the directors to the stock-holders. The number of miles of road operated was 444, as follows: From Shreveport, La., to Fort Worth, Tex., 219; from Marshall, via Texarkana, to Sherman, 225 total length of main track and sidings, 483 miles. The receipts for the year ending May 31st, 1878, were as follows: Gross earnings, $3,331,310.35; working expenses, $1,448,439.92; net earnings, $882,870.97. Out of this has been paid the interest on the first and consolidated mortgage bonds, taxes, insurance, and betterment expenditures. Resolutions were adopted expressing a high degree of satisfaction with the report, congratulating the stockholders upon past results and the prospects for the future, and thanking the president and vice-presidents of the company for their earnest efforts during the past year, to call public attention to the great advantages which can be secured to the government and the country by the final completion of the Texas and Pacific railway to the Pacific ocean, thus furnishing one of the grandest avenues for the developments of southern and southwestern trade, and so adding largely to the business interests of the entire country.

Utilization of Blast-Furnace Slag.

Although the propositions to utilize blast-furnace slag have been very numerous, comparatively little has been done to introduce it, owing, no doubt, to the circumstance of a different method of handling being necessary, as compared with the materials for which it has been proposed as a substitute. This objection will be to a great extent removed by the invention of Mr. J. S. Wethered, of New York, who proposes to use it as a road-making material, but after it has been compressed into suitable blocks with other ingredients to form a hard concrete. He claims that the improved concrete may comprise any preferred ingredients in any proportions, so long as furnace slag, limestone or other calcareous substance and asphalte are employed. An excellent concrete, for example, may be made of 80 parts of furnace slag or limestone suitably crushed or granulated, and 20 parts of asphalte tempered with mineral oil. The proportion of the oil to the asphalte will depend upon the richness of the latter, but in general it should be from 8 to 10%. In order that the furnace slag, limestone or other calcareous matter and asphalte may combine completely, and the latter be absorbed by the former to the fullest extent practicable, it is necessary to heat the calcareous matter to a high degree after it has been suitably crushed or granulated, and before it is mixed with the heated asphalte; and the said invention partly consists in so heating the calcareous matter. The degree of heat should be more than enough to merely effect the drying of the material. It should be sufficient not only to drive off the moisture and carbonic acid which the material contains, but to open the pores and so expand the material as to enable the heated asphalte to readily permeate the substance, and become thoroughly incorporated with it. For heating the calcareous matter an oven of common construction, or an ore roasting furnace, may be employed.

After the crushed furnace slag, limestone, or other calcareous material has been heated, as described, it is, while in its highly heated state, to be mixed with the heated asphalte, and with the other ingredients which are to compose the concrete in any suitable apparatus used for mixing concretes. A horizontal cylinder of iron mounted in bearings, and made to revolve around a shaft furnished with radially projecting arms for mixing the mass, will furnish a simple and effective apparatus for the purpose, and it will be found advantageous to apply heat to said revolving cylinder while the process of tumbling and mixing the material is going on. The concrete having been so prepared is now in proper condition to be spread as a side walk pavement and rolled smooth.

For paving road beds it is necessary that the concrete material prepared in the same way should be condensed under heavy pressure, while in a mold, into the form of blocks. This operation should be preformed while the concrete is still hot, as thereby the block is rendered more homogeneous, and the particles composing it more thoroughly compact. When, however, the block in a highly heated condition is expelled from the mold by the discharging plunger of the compressing machine, it often happens that it will crumble, and to avoid this injury time must be allowed for the mass to become set before it is removed. The delay interferes with the economy of the manufacture, and, therefore, this part of the said improved process consists in subjecting the heated block, after it has been molded and compressed, to the chilling effect of cold water applied to its surface. This treatment is best performed at the instant that the block is raised out of the mold, or as soon as possible after it has been deposited upon the endless apron or conveyer for removing it from the machine. The water may, however, be applied to the block while it still remains in the mold, or the mold itself may be chilled by means of a circulating stream of cold water. The effect of this chilling process is to harden the exterior surface of the molded block.

Compressed blocks, the material of which has been prepared, and which blocks have been molded as above described, are not only valuable for paving road beds, but possess great utility as an artificial material for the construction of submarine or exposed sea walls, or for other building purposes. Experiments, too, have shown that compressed bricks of this character can be used for the walls of fortifications with great advantage in comparison with natural stone. They are enabled from their great density to sustain without any greater injury than indentation to a limited extent the impact of heavy projectiles, while their peculiar toughness and slight elasticity prevent injury from splintering or fracturing.—*Mining Journal.*

Pennsylvania Railroads.—The annual report of the secretary of internal affairs of Pennsylvania contains the following information in regard to the railroads of that State for the year 1877: The comparative statements of 161 railroads show that only $257,577,357 capital stock was paid in 1877, against $486,419,097 in 1876, and their funded and floating debts were reduced from $448,324,000 to $301,805,083. Thirty-two declared no dividends, while there were only sixteen which failed to do so in 1876. The number of passengers carried was 19,878,311, against 51,829,822 for the previous year. Their tonnage fell off from 79,382,012 to 46,582,083 tons, while their expenses were reduced from $75,723,845 to $33,953,155, and their receipts from $125,739,841 to $42,078,109.

Useful Information.

Photographing at Night.

Many attempts have been made to produce photographs by artificial light. Practically these efforts were successful; but, artistically considered, the resulting pictures were very unsatisfactory, and could even be called decidedly bad, by reason of the defective illumination, which caused only white and black to appear and a total absence of middle tints, which are the charm and essential virtue of every good picture. They were scarcely as good as the very first attempts to make photographs of the human face by Prof. John W. Draper, of New York, in 1839, and looked as if the sitter had been placed in direct sunlight. As portraits they were so objectionable that nobody liked or wanted them. The *Manufacturer and Builder* says that Mr. Henry Van der Weyde, now residing in London, England, corrected this by inventing a method to so manage the electric or other lights used as to equal the day effects and produce an artistic picture, a problem the solution of which does not fall in the direct line of pursuit of the ordinary photographer, but exactly in the line of pursuit of the portrait painter, in which art Mr. Van der Weyde has earned a great reputation. The pictures thus taken by diffusing the light on the half shaded parts, so as to bring out the semitones, are fully equal and generally even surpass those produced on the brightest days in London. The artificial light is easier to manage than the sunlight, being always under control, if the photographer only knows how to apply it. It is not surprising then that this process has become quite popular in London, especially among those who attend operas, theaters, balls, concerts or dinner parties, when, in going or coming, people are dressed in their best and can more conveniently sit for their pictures than during the bright hours of the day, which are rarely convenient for persons who have to attend to business, and even for people of leisure who indulge in late hours and late risings.

Hight of Colorado Peaks

In a recent volume of the geological and geographical surveys prepared for the government by Lieutenant Wheeler's expedition, the following are given as the points in Colorado exceeding 13,000 feet in hight: Altar Peak, 13,254; Antoro Peak, 13,497; Argentine Pass, 13,286; Canby Peak, 13,356; Del Norte Peak, 13,084; Dunn's Peak, 13,502; Engineer Peak, 13,076; Evans Mountain, 14,321; Glacier Peak, 14,243; Gray's Peak (north) 14,380; (south) 14,411; Half-Moon Creek Peak (south of) 13,552; Handie's Peak, 14,149; Divide between Henson and Cebolla Creeks, 13,003; Hunchback Peak (Oso) 13,755; Hunt's Peak, 14,055; Mount Harvard, 14,152; Hurricane Peak, 13,565; La Plata Peak, 13, 316; Mount Lincoln, 14,375; Macomb's Peak, 13,154; McClellan's Peak, 13,842; Mears Peak, 13,008; Meigs Peak, 13,393; Mesquite Pass, 13,308; Pass Peak, 13,092; Red Cloud Peak, 14,093; Red Mountain, 13,333; Rosalie Peak, 14,236; Simpson's, 14,056; Spanish Peak (west) 13,718; Stewart's Peak, 14,032; Trinchera Peak, 13,681; Uncompahgre Peak, 14,408; Yellow Peak, 13,618. Long's Peak, Pike's Peak, Mount Yale, and some others of the highest summits in Colorado, are omitted. Mount Whitney, or Fisherman's Peak, in the California Sierra, is set down as 14,448 feet high—the most elevated point named in the table.

Labor Statistics.—The facts which have been compiled by the Massachusetts Bureau of Statistics to show the condition of labor in that State, furnish, says the N. Y. *Tribune*, a good answer to its demagogues, domestic and imported. The Bureau found 21,000 laborers out of employment on the 1st of June, of whom nearly two-thirds were unskilled laborers. This number, it is believed, would have been greatly reduced if the enumeration had been made at a busier manufacturing season, though there is compensation in the fact that it was made when many persons had temporary employment on farms. Admitting this figure to be larger than it is well to have it, the report still declares that there have been fewer demands for charitable relief, throughout the State, as shown by indisputable evidence, than for several years back; and the general testimony of officials is that many of those who are without work would not take it if they could get it. Taking this result as a basis, the whole number of persons out of employment in the United States is estimated at 570,000, or less than 6% of the aggregate of persons occupied in what are called productive industries. This is a formidable showing, and yet it is scarcely one-sixth the size of the figure that the tramp statesmen have been imposing upon their audiences.

Incense.—Druggists are sometimes called upon to compound incense for church use. The London *Chemist and Druggist* gives the following recipe obtained from a Catholic convent. Benzoin and storax, of each 4 ounces; laudanum and myrrh, of each six ounces; cascarilla, 3 ounces; oil of cinnamon, 8 minims; oil of lavender and bergamot, of each 20 minims; oil of cloves, 10 minims. Mix and pass through a coarse sieve. Another recipe is: Olibanum, 7 parts; benzoin, 2 parts; cascarilla, 1 part.

American Paper Stock in Paris.—American paper makers, says the *Call*, have been in remarkably good luck at the Paris Exposition. The grand prize, a gold medal, was borne off by a Massachusetts firm, for his ledger paper. Four other gold medals were taken by as many different paper manufacturers. Four silver medals were awarded to other firms. Nine bronze medals were given, and nine certificates of merit awarded. The different articles for which these prizes were bestowed, comprised ledger paper, fine writing paper, fine card paper, leather board paper, leathered paper, visiting cards, bond paper, press boards, blotting paper, paste board, envelopes, carpet lining paper, printing paper, papeteries, safety paper for checks, rope paper, paper bags, letter slips, boxes, thin tissue paper, binders' board, blotting and bank note paper. The compliment of these awards is all the more valuable from the fact that one of the jurymen was the leading paper manufacturer of France. The correspondent who communicates the news here recited, writes as follows, "In consequence of this exhibit and of the persistent efforts making by the manufacturers and their agents abroad, the export of American paper continues to grow monthly. It has risen from $491,000 in 1871, and $856,000 in 1876–77, to over $1,000,000 in 1877–78. The fall of gold within the last two years would probably have cut off this promising export in its early youth, it is stated, had it not been for a corresponding reduction in the cost of paper, brought about by American science and enterprise. The use of wood pulp in this country, as an ingredient in paper, has assumed such proportions, that it has caused a fall in the price of rags, and this enables American paper to hold its own abroad, assisted as the fall of price is by the constant exhibition of samples in the leading markets, and agitation by the agents.

Good Health.

The Lessons of the Yellow Fever Scourge.

The terrible spread of the yellow fever scourge through our Southern cities, says the Utica *Herald*, is undoubtedly due in every instance to the neglect of the most ordinary sanitary precautions. The Southern cities are far behind those of the North in drainage. The condition of New Orleans and Memphis, when the yellow fever broke out in their streets, is said to have been filthy almost beyond belief. In the decimated town of Grenada, a correspondent writes that shortly before the outbreak of the epidemic, the main sewer leading through the town to the river caved in, and in order to repair the damage the sewer was uncovered for a long distance. It was found to be filled with the carcasses of dead animals, and the hot sun pouring upon them, the air was soon filled with stench and contagion. The penalty of that criminal carelessness is a terrible one. That the disease can originate from decomposition is not, we believe, clearly established; but there is no doubt that the common effect of the gases arising from the refuse left by imperfect drains is to so debilitate the human system as to create a predisposition to receive contagion, or to succumb to minor diseases which are not contagious. It is this predisposition which makes epidemics, and defies human skill.

There is no good reason to expect that the Southern scourge will spread to Northern cities. It will in fact stop, wherever it reaches a locality in which proper care has kept the population free from this predisposition; a debilitating climate also has its effect, and in both respects, the North is better off than the South. But it does not follow, on these accounts, that we can safely neglect the precautions which have been neglected with such fatal consequences in the Southern cities. Now is a good time to discover, both as to municipal and private drainage, whether it is in all respects what it should be. Private drains are especially liable, from long use, to become defective, and property owners are almost universally careless about constant inspection. A danger lurks here which is not confined to cities and villages, but extends to the farms. The pure and healthy air of the county is often poisoned by stagnant and neglected drains under the very nostrils of the thoughtless household. It is often years before the development of fatal disease; but it is sure to come in time. The same causes which are dealing out death in Grenada have brought the grim shadow into many a Northern household; and very often the dead have been buried and the source of the disease left unsuspected and untouched.

Feeding Infants.—The subject of the feeding of infants was discussed at the annual meeting of the State Medical Society of New Jersey, and the *Medical Record* sums up the results as follows: "The mother's milk is generally conceded to be the best for the infant. But, even when this is abundant, it may be disadvantageous for the individual living on it, and a substitute be necessary. Country practitioners recommend cow's milk as the best substitute, while many in cities and towns speak highly of condensed milk. Of the preparations so various and so highly commended by those who put them on the market, the Imperial Granum seems to hold the first place in the estimation of medical observers. All agree in condemning the use of nursing tubes as unclean, even with the best of care."

Ventilating Sewers.

The Board of Health of San Francisco have begun again to bore holes in the covers of sewer openings. While we do not profess to know all there is involved in the practice, we may cite the testimony against the practice of ventilating sewers. Mr. Henry E. Knapp, a civil engineer of New York City, read a paper recently before the polytechnic branch of the American Institute, in which he attacked the theory of ventilating sewers and drains. He said that the conclusion seemed almost unanimous among engineers that the poisonous and mephitic vapors should be allowed to escape into the atmosphere so that the sewers should be purified, thus to contaminate the atmosphere and transpose the pure air into the sewers where it is not needed, and from the sewers bring the poisonous gases where they will act detrimentally to animal life. The prevaleuce of this theory, which Mr. Knapp declared to be an egregious error, he attributed to the writings of Robert Rawlingson, K. C. B., a personal friend of the Prince of Wales, who, after the illness of the latter by typhoid fever, devoted much attention to the subject, and spread his views by means of the press.

The first objection Mr. Knapp urged against the theory was that the liberated gases are heavier than atmospheric air, and if liberated from the sewers would hug the surface of the earth, so that invigorating air could not be had inside the city. It would be as sensible to ventilate graves. The sewers, like corpses, ought to be buried, mainly because the earth is the best absorbent of the products of the decay of animal and vegetable substances.

The proper way to deal with sewers, he conteuded, was to give them plenty of water, which carries the matter contained in them to the sea, impedes decomposition as long as the solid matter is sufficiently immersed, and is a powerful absorbent of sewer gases, especially the ammoniacal, which it takes up to the extent of about one-third its weight, or some four hundred times its own bulk. If this be done, and proper traps are constructed, no evil results will follow.

A Cottage Water Filter.—Those who cannot afford to buy a filter may easily make one. Stuff a piece of sponge in the hole of a flower pot, place above this a layer of pebbles, then a layer of coarse sand, and above this a layer of pounded charcoal three or four inches in depth. Another layer of pebbles should be placed above the charcoal to prevent it from being stirred up when the water is poured in. The contents of the flower pot should be occasionally renewed. But by a small addition to this a cottage filter may be made which, for practical use, is quite equal to the most expensive filter of corresponding size. It consists of two flower pots, one above the other, the lower one fitted with a sponge and filtering layers above described, and the upper one with a sponge only. The upper pot should be the largest, and if the lower one is strong the upper one may stand on it, or a piece of wood with a hole to receive the upper pot may rest on the brim of the lower one. The two pots thus arranged are placed on a three-legged stool with a hole in it, through which the projecting part of the lower sponge passes, and the water drops into a jug placed below. The upper pot serves as a reservoir, and sponge stops the coarser impurities, and thus the filtering layers of the lower one may be used for two or three years without being renewed, if the upper sponge be occasionally cleaned. Care must be taken to wedge in the upper sponge tightly enough to prevent the water passing through the upper pot more rapidly than it can filter through the lower one. —*Leisure Hour.*

Errors in Diet.—*Science for All* says there is no doubt that a goodly proportion of the "thousand ills that flesh is heir to" might successfully be guarded against by a wider dispersion amongst us of physiological knowledge and a more general acquaintance with the chemistry of the human body so far as it relates to the appropriation and assimilation of food. How is it that the average duration of life is little more than half the orthodox three score years and ten? Look around, and mark the general neglect of sanitary laws, and the answer is plain. Impure air, intemperance and dissipation produce a long catalogue of disorders; but errors in diet are as effectual in shortening life as any of these causes, and are, perhaps, of more common occurrence. Intemperance and dissipation are not gentlemanly vices, but errors in diet are highly respectable, and sanctioned by the usages of the most fashionable society. Rich soups, highly-seasoned dishes and hot condiments are swallowed in defiance of the simplest dietetic laws, while the poor stomach, constructed for simple fare in moderate quantities, is distended with a huge conglomerate of fish, fowl, flesh and pastry, which the gastric juice cannot permeate, and the digestion of which can only be effected by a disastrous expenditure of vital force. In youth and early manhood the elasticity of our constitution is such that a considerable amount of abuse can be borne without much apparent injury or loss of tone; but sooner or later there will come a revolution; the ill-used organs will rebel, and terrible will be the revenge they will take for the long-continued slavery and hardship to which they have been subjected.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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SAN FRANCISCO:
Saturday Morning, Sept. 7, 1878.

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The Week.

Reports from mining districts are, as a whole, very cheerful. The Sutro Tunnel has already made itself felt on the Comstock, not only in the capacity in which it is benefiting the Julia, hut also in its power to revive old abandoned mines. We have in view at present the Senator mine. A few months ago this mine was sold for debt. The purchasers have formed a company, and will prospect the mine through the great tunnel.

But it is not necessary to go so far as the Comstock to find enterprising activity in mining circles. Nor when we pass the Comstock and go further eastward, do we leave all the wide-awake mines hehind. All through Nevada, Idaho, Montsna, Utah, Colorado and Arizona, determined prospectors seem to increase in numher, and, which is hetter, in their track are following a little less reluctantly, we think, thsn they did a short time ago, the all-powerful capitalists.

On this side the Sierras, Mono county is not the only mining district, though it occupies so large a position of our attention. Nevada county has nothing hut hopeful news from old mines and from lately opened claims. In Shasta county the prospects of the copper mines are looking up. French capitalists, whether residents of France or not, is not stated, contemplate the erection of a smelting works in some favorable part of the copper region. The Mono excitement will redound to the advantage of Fresno county. The Quartz Mountain Gold mining company, lately incorporated, will work in the latter county.

Why is It?

"Considering the vast extent of mountain ranges extending for many miles northeast and southwest from Austin, why is it that there is so little prospecting done? Yes, why? In hoth directions, in times past, good prospects were found, and yet the vast extent of country mentioned has remained dormant, left vacant seemingly for future generations. Men now and then with a little money on hand get out of work, and in place of turning their time to profitahle account to themselves, hy looking over the mountains for a mine of their own, will hang around towns and waste their savings for that which hrings no return, hopelessly so, waiting for "something to turn up." A prospecting tour in looking for mining property costs hut little, if any more than to remain idle in town. If miners when out of employment would adopt this proposition more frequently, they would he the gainers and the country at large greatly benefited hy the development of more mining property. Who knows hut there may he another Califoruia and Consolidated Virginia honanza within 10 miles of Austin, awaiting an owner? If so, it is certain to remain in its native formation unless unearthed by human skill and device. There is doubtless many times more gold and silver in the Toiyahe range of mountains than would pay off the national deht, and yet men are frequently heard growling about the dull times, when the very ssme men could enrich themselves hy suddenly waking up and pushing their muscle and exercising their judgment."

We clip the above from the Austin, Nevada, *Reveille*, and think it worthy of republication. If all the newspapers of the Pacific coast would only consent to drop politics for a while, cease to rehash the details of all the disgusting and horrihle occurrences they can scrape together, relieve the puhlic from a wearisome and unending parade of stale clippings, and, instead, spend their time in studying the real needs of their districts, they might contribute some little to the material and moral advancement of their country. As it is, some of them hear the weary appearance of worn out pauders, and it is refreshing to hear a voice like the ahove exhortiug, though faintly, to wisdom.

Too many men are allowing their "muscle" aud "judgment" alike to grow rusty, and are dependent for a living upon the exercise of the faculties of others. Idleuess is hy no means confined to impecunious individuals. Men with capital look ahout the country seeking an investment. With the help of friends they decide that "*the* occupation of the Pacific coast is mining." Straightway they put their capital into some old and renowucd mining stock, resting satisfied that their duty as citizens has been done. They feel that they are advancing the interests of their country. Some of this capital goes immediately into the pockets of the stock hrokers. The remsinder is employed by men scsrcely known hy the owner, in further "developing" that old and respectahle mine. Meanwhile the capitalist does little else than watch with feverish excitement the rise and fall in the stock market. If he is a youug man the chances are that he will fall into had habits. Yet all the time he feels that he himself through his capital is helping to develop the resources of the land.

Suppose we take a parallel: A certain Frenchman has saved up a little money. He inqnires of his frieuds how he shall iuvest it. His friends tell him that the industry *par excellence* of his district is wine producing. Of that busiuess he knows nothing. He cannot run even a small vineyard. So he settles down resolved to drink per diem as many glasses of wine as his system can stand. "Thus," he says, "I will stimulate the business of the retail dealers, and through them encourage the culture of the vine."

A stimulated productiou is hy no means a sign of prosperity. We thought the stimulated manufactures after our war were an indication of prosperity. The Germans had the same idea after they had marched to Paris, eight years ago. How great our mistake, how hollow that prosperity, hoth we and Germany are heginning now to realize. A country is more prosperous the greater the numher of men that are finding individual and direct employment. The more independent that employment the hetter, even though it he less promising.

Why, then, will young men consent to "hang around towns and waste their savings for that which hrings no return." Wake up a little energy? Do your own prospecting; handle your own pick aud spade; conduct your own mine. Try to farm even if you can only raise enough potatoes to harter a little for your own more varied liviug. One thiug is sure, so long as you waste your time, you cannot earn one honest penny. And so long as you hsve not an honest penny, it will he an injury to the community if you succeed in hegging a single penny's worth of credit. On the other hand, a penny's worth of peuny, will surely hring a penny's worth of credit. And there are scores of men who have so much capital that they cannot possihly employ it all themselves, who, so soon as you estahlish a reliahle credit, will he willing to lend you unlimited amounts with which to carry on your enterprise.

THE Reed quicksilver mine, Yolo county, has closed. Seventy or eighty men are thrown ont of employment.

Anti-Debris Association.

A correspondent of the *Record Union* at Yuba City writes as follows: An invitation having previonsly heen given to the citizens of Yuha and Sutter counties, a large and enthusiastic meetiug was held at the Court-house in Yuha City at 1 o'clock P. M., Saturday, August 24th. The purpose of the meeting was to consider the hest means to be adopted wherehy the impending destruction of the agricultural interests hy hydraulic mining may he averted, and to better unite all onr farmers in one common cause in their demsnds for protection.

The meeting was called to order by J. H. Keyes. George Oleyer was elected chairman and B. F. Watson, secretary. The Chair stated the objects of the meeting to he as already set forth, and urged determined and united action hy all the agriculturists, in order to get an early and final decision hy our Courts of last resort, settling forever the rights of the miners, whether they can use the rivers and farms as dumps for their debris.

Mr. Keyes addressed the meeting, setting forth in forcihle language the great need of a more thorough organization of the farmers of the whole Sacramento valley, and at Sacramento, Marysville, and other cities and towns that are threatened with destruction. He submitted a plan for organization, which was well received.

Hon. C. P. Berry then took the floor, and addressed the meeting at considerahle length on the same subject, showing the great uecessity of a closer union of the great agricultural and commercial interests of this State; that without this union we would surely all he covered hy this lava of mud and sand. The speaker showed how thoroughly the hydraulic miners were united, that their organization extended the entire length of the State, that when one mine or company is attacked in the Courts the expense of litigation is horne by all of them in proportion to their value. That the capital arrayed against us is immense, reaching into the millions. And to successfully combat this great comhination, it is absolutely necessary to unite aud organize the agriculturists, to the end that this question or conflict may he determined on its merits.

S. R. Chandler, Jonas Marcuse, J. D. Wilber, Dr. Durst of Wheatland, S. D. Wood and J. M. C. Jasper of Yuha county, S. E. Wilson, Eli Davis, Thomas Brophy of Sutter, and others successively addressed the meeting, and with one accord all agreed with the first speakers.

A motion was then made and seconded that we form ourselves iuto an organization, to he called "The Anti-Debris Association of the Sacramento Valley." After considerable discussion, the motion was enthusiastically adopted without a dissenting voice. After this vote articles of agreement were considered hy which this society shall he governed. After adopting one or two, and evening coming on, it was found impossihle to finish the lahors of the meeting. Whereupou the meeting adjourned to meet next Saturday, August 31st, at 10 o'clock A. M., at the same place, to complete the organization.

At the meeting ou August 31st, articles of agreement were adopted, hinding the memhers to prosecute to final adjudication in the court of last resort any case now pending or that may hereafter he instituted for the purpose of determining the right of miners to use channels of rivers and their trihutaries as places of deposit for debris, thereby destroying large hodies of valley land, etc. The agreement also provides that memhers shall sign with an amount and agree to stand an assessment not exceediug three per cent. on said amount, for the purpose named. An assessahle valuation of ahout $170,000 was suhscribed at the meeting. The following named were elected Directors: James H. Keyes, B. F. Walton, C. P. Berry, S. E. Wilson and H. Ellmer. George Oleyer was elected Treasurer. The Directors organized hy eleeting Keyes president and Walton secretary. The meeting adjourned until Septemher 14th, at 1 o'clock.

PUBLIC LAND MATTERS.—Advices from Washington hy telegraph, announce that Secretary Schurz has reaffirmed his decision made last July, that the lands granted to railways, and not disposed of within three years after the completion of the roads, have become again Government property, and are subject to pre-emption, etc., like other Government lands. It is propable that the railroads will now take the issue to the Supreme Court. It is telegraphed that Secretary Schurz is ahout to issue a circular relating to trespasses upon Government timher lands.

DEATH OF GOVERNOR HAIGHT.—Ex-Governor H. H. Haight died in this city Septemher 2d, of disease of the heart. Aside from his discharge of the guhernatorial trust, he has heen prominent in this State for a numher of years, and has won the esteem of hoth his political friends and opponents. His death is generally regretted. He was a memher-elect of the coming Constitutional Convention.

THE iron-masters of West Scotland have agreed to notify their employes of a reduction of 10% in their wages.

DURING August the San Francisco mint coined 1,905,000 pieces; value, $5,609,000.

WHAT AND HOW?

In this column are printed all sensible inquiries relating to subjects connected with mining or relating to any matters of general scientific interest; also the answers to them as dictated by individual experience, or as furnished by correspondents.

Miners' Inch.

EDITORS PRESS:—(1) Will you state in the PRESS the numher of gallons of water discharged per minute or hour hy the "miner's inch?" (2) What velocity is a "six-inch" pressure equivalent to?—SHASTA.

(1) In round numbers the miners' inch is equivalent to a discharge of 95 cubic feet per hour; one cuhic foot is seven and a half gallons. A miner's inch would equal a discharge of 712.5 gallons per honr. For as full a discussion of the miner's inch as has ever, perhaps, heen puhlished, we direct you to the MINING AND SCIENTIFIC PRESS, Volume XXXV, No. 19, puhlished Novemher 10th, 1877. It is in the fifth article of a series on "Hydraulic Mining in California," hy Aug. J. Bowie, Jr., M. E. It can he seen from that how indefinite a term "miner's inch" is, and how arhitrarily its exact meaning is altered in different localities.

(2) This second question is very indefinite, as the velocity due to a six-inch head varies greatly with particular conditions. Calculating it in the most general way, the theoretical velocity acquired hy water in falling six inches, is 19.6 iuches per second.

Ione Clay.

EDITORS PRESS:—I send you two samples. I would like to know what they are and their value, if they have any. No 1, I think, is graphite or plumhago. The other is perhaps overlying coal clay. Please answer soon and ohlige.—D. H. W., miner and prospector, Ioue City, Amador Co., Sept. 1st, 1878.

Both of these specimens are simply clay, one of a much fiuer texture than the other. The finer clay, if it occurs in large quantities, may he of some use to hrickmskers and potters. J. S. Phillips found in it alumina, magnesia, silica, irou, and perhaps a little lime. We have not heen ahle yet to consult with brickmakers on the suhject. We will show them the samples at the earliest opportunity.

Infringement of Patent Suits.

Thomas Powell of Stockton, has filed a hill in equity in the U. S. Circuit Court, against Josiah K. Garrett of the same place, snd William Tierney of San Joaquin county, to recover damages for infringement on plaintiff's patent for improvements in derricks, and to enjoin further infringements of the same.

The Stetefelt Furnace company have filed a bill of complaint in the same Court against the Tip Top silver mining company, for an accounting for infringing plaintiff's patent "improved process of chlorodizing silver ore hy means of dropping a mixture of pulverized ore and salt through a vertical or nearly vertical shaft, through which the products of comhustion are ascending," and for a perpetual injunction.

John S. Winters of Davisville, Yolo county, has also filed a bill against Donald Crane, Henry David White, and Charles Gray White of Woodland, Yolo county, to recover damages for infringement of plaintiff's patent for improvements in wagon derricks, and to restrain the defendants from further infringing the same.

In the same Court, Andretta Goodwin and Charles G. Emery, tobacconists of New York, have filed a hill against J. Morris of this city, for an accounting and to enjoin the defendant from infringing plaintiff's trademark. Plaintiffs are msnufacturers of cigarettes, and their trademark is "Old Judge Cigarettes, Patented March 5th, 1878." The defendant is also a cigarette manufacturer, and he uses a trademark printed in the same form as that of the plaintiffs, using almost a counterpart cut, and the readingmatter is "Old George, warranted, June, 1878." It is alleged that the so-called imitation cigarettes manufactured hy the defendant, are put up in the same manner as those manufactured hy the plaintiffs, and that the defendant is guily of infringing their trademsrk.

BULLION SHIPMENTS.—Northern Bell, Aug. 26th, $4,129.24, 28th, $3,943.35, 31st, $4,963.28; Raymond & Ely, Aug. 24th, $11,987, 31st, $4,168.79; Tyho Con., Aug. 26th, $5,473.13, total to date, $56,523.03, 31st, $4,411.35, totsl for August, $60,934.38; Manhattan, Aug. 30th, $12,700; Leopard, Aug 30th, $3,400; California, Aug. 31st, $42,135, total to date, $158,848.94; Con. Virginia, Aug. 31st, $28,771.27, total to date, $152,506.39; Bodie, 31st, $25,000; Christy 30th, $5,653; McCrackin, 31st, $9,632.40; Extra, 31st, $2,822; Hackherry, 31st, $6,853.09; Alexander, Sept. 2d, $4,977.66; Moore's Flat, Aug. 26th, $12,000, Aug. 28th, $14,000; Black Jack, Silver City, Idaho, $7,787.08; Monarch, Atlanta, $7,475; Standard, Sept. 2d, 20,955.31.

NEW YORK sends over $100,000 to the yellow fever snfferers.

The Globe Gaslight Company of California.

Among the prominent features of the Fair, illustrating recent improvements introduced in our community, is the display of the "Globe Gaslight Company of California" of Shaler's self-generating gas carbnretters for private and public buildings, and also the Globe gas burner for streets and private grounds.

The system under which this company operates, is known as tho Shaler invention, properly secured hy letters patent, and comprises not only the appropriate mechanical contrivances, but a chemical process acting in conjunction therewith. Tho use of liquid hydrocarbon and especially petroleum and its products as a basc for the production of illuminating gas is no now thing ; but it is claimed that the system under consideration is superior to those heretofore in use. The common air, bronght by whatever means in contact, with gasoline or auy of the more volatile products of petroleum, becomes immediately impregnated with those lighter qualities, thus forming a new compound, highly combustiblo and possessed of great heating and illuminating power. In other words, acrated, or air gas, so called, is simply air charged to a certain degree with the lighter vapors of potroleum or any other hydrocarbon liquid. There is nothing new or mysterious in all this ; but tho manner of producing, treating and using this element, so as to render its nse at once safe and ecouomical, has been the study of many for a number of years.

Three different methods or machines have heretofore been invented and used in obtaiuing this illuminating gas from petroleum and its products: 1st—machines where steam or dry heat is used to generate the gas; 2d—machines in which a continuous columu of air is driven over the oil, all in ouo vessel; 3d—machiues where the fluid reservoir and carhureter are separated. The first of these is always more or less dangerous, and the others objectionable on account of their complicated or costly mechanism.

The Shaler system offers a perfectly automatic gas making carhureter, which, wheu one or all the burners are lighted, demands and obtains its own power without any machinery. The carbureters are self-acting in making the gas, and also in serving it out or shutting it off, without regard to the number of burners. The whole system is comprised in a single carbureter, which is made to act in the two-fold capacity of generator and reservoir. Being provided with means of repleuishment and two ordinary stop-cocks, one to regulate admission of air, and the other the flow of gas through the reservoir pipe, the thing is complete. There are no air-pumps, weights or pulleys, no power, machinery or skilled workmen nccessary. The engraving on this page shows one of the carbureters. It is a square tank, substantially made of galvanized iron, with a flat hottom and cone-shaped top. In the centre of the top is an opening, guarded by a stop-cock, for the purpose of admitting air. In the end of the tank, above the centre, is an opening, where the gas passes out into the supply pipes. The interior of the carhureter is divided in chambers, and amply supplied with cotton wicking, to hold naptha or gasoline by the power of capillary attraction, so that as the air passes through the carbnreter it becomes saturated with naptha or gasoline. The stop-cock being opened at the top of the carbureter—which has previously been charged with naptha—the cock at the end where the supply pipe is attached is opened, when the air inside the carbureter, which has become impregnated with naptha, and therehy increased in weight, is, by its specific gravity, drawn down and carried away, wherever the pipe may lead, to supply light. The demand will regulate the supply, for as the carbureted air is consumed, more comes to supply the place. This, in effect, is the whole apparatus, which may be attached to the ordinary gas pipes in the house.

By this plan there is no danger of explosion, as there are no tanks filled with combustible liquid or gas, the latter being generated only just as fast as may be required for use, while not a drop of gasoline is anywhere held in fluid shape. All the liquid is held in complete absorption hy the cotton wicking, so that even if the apparatus should be thrown down from its position, or smashed to pieces, there is no accumulation of gas or inflammable liquid to come in contact with fire and cause danger to life and property.

This apparatus produces a gas of 18 candle power, at a cost of $1.50 per 1,000 cubic feet. The material needs only to be replenished in common sized carbureters at intervals of from seven to ten days, according to size of carbureter and number of hurners used. The material used is cheap and easily procured, and there is little more trouble in caring for the apparatus than in looking out for a kerosene lamp.

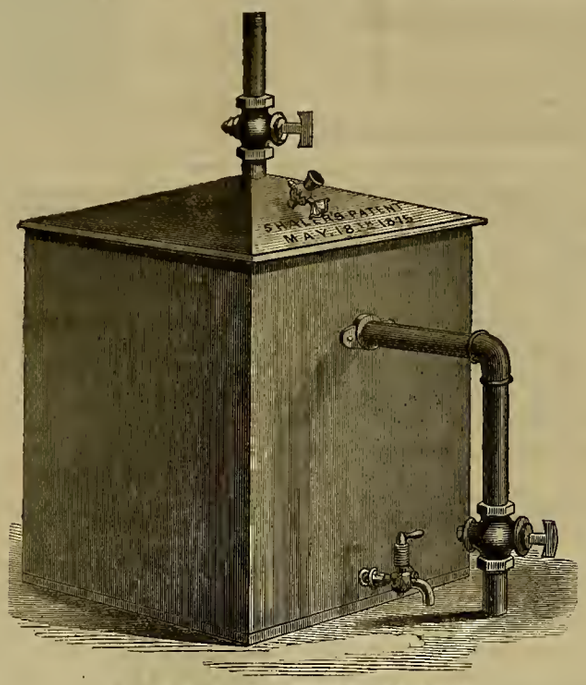
Judging from the illumination produced at the Pavilion, the light is equal if not superior to coal gas. There is great steadiness of flame, because of the light and uniform pressure. For country residences, factories, and even small villages, the apparatus is peculiar adapted, its limited cost bringing it within the reach of many heretofore debarred from the luxury of gas light. A portable carbureter is made also, which is intended to light a single burner on a stand, rubber tubing being used for connection.

The company also make a peculiar patent safety can for carrying, handling and storing purposes. It is on the principlo of the Humphrey Davy lamps; that is, a wiro gauze is arranged at the top opening and spout of the can so that no fire can be communicated to the contents of the can, which is also the can in the carbureter. Tho company also display the

Globe Gas Burner for Street Lighting.

This is a miniature gas machine of itself, but differs from all others in several important particulars. It has no wicking of any kind, and superheats the gas in a peculiar manner, the flame being successfully regulated. It has also a water trap, which prevents any water of condensation entering the burner, this being especially useful in cold countries. It is suited to any climate, and will burn successfully in the coldest or most boisterous weather, furnishing a clear gas light.

The engraving shows the method of construction. Each light has its own receiver attached to the lantern, which contains the



GLOBE GAS COMPANY'S CARBURETER.

fluid, thus doing away with all service pipes and mains, and the duration of the light can be graduated to any given number hours, going out itself at the time desired. The receiver needs to be replenished at specific intervals, and no further care is required. The material used is redistilled Globe naptha, one pint of which will give at least five hours of beautiful light. For parks and private grouuds this is a perfect and ecouomical light. It is in use in a number of Eastern cities, and was last year adopted by the cities of Napa and San Jose on this coast, where it is in successful operatiou. It is also used in the State's Prison yard at San Quentin. The utility of this hurner and system for the purposes indicated will readily be recognized by all.

Globe Gas Street Lamp.

Repeated thorough tests have been made with this apparatus to determine its safety under trying conditions, such as changing the contents while the gas was hurning; lighting a can at the mouth and putting it out with the open hand; lighting the can and dropping it, etc. The company here, the office of which is at 515 Market street, is now introducing the apparatus extensively on this coast. The President is Mr. Israel W. Knox, and the Secretary Mr. J. B. Meeks.

The clearances at the San Francisco Clearance House for the week ending August 31st, amounted to $19,466,018, against $17,120,760 the previous week, and $11,856,100 for the corresponding week in 1877.

Eastern capitalists have invested about $30,000 in old Oregon mining claims, and will take up some new ones besides.

The Improved Revolving Lawn Sprinkler.

We illustrate herewith the "Perfection Revolving Lawn and Garden Sprinkler and Fountain," lately patented and just introduced on this coast by Dunbam, Carrigan & Co., of this city. This little device is the most convenient of the lawn sprinklers yet brought before the public. The engraving shows the full size for a three-fourth garden hose, which is the size in common use. The hose is screwed into the socket on the side of the sprinkler (no nozzle being used) and the pin is pushed into the sod. The water is then turned on from the faucet, and the top of the sprinkler begins to revolve, one of the holes in the top being bored at an angle so that this motion is imparted. The water running from the other holes is spread in drops in a circle, the diameter of which is 25 feet. If a smaller space only is to be watered, the width of the watered circle is reduced by lessening the flow of water at the faucet. The writer has tried one of these sprinklers and found it the best of any similar device he has used. The sprinklers are made of pewter, but the journals are of brass so that they are durable and strong. Being sold for $1.25, and doing as much as any sprinkler made, they are being very rapidly introduced for use in gardens and

The "Perfection" Lawn Sprinkler.

lawns. Being low on the ground they have the appearance of a miniature fountain when at work.

Rich diggings have been discovered in "Horsefly" county, Carihoo. Chinese miners are making from $40 to $86 to the hand, daily.

T. G. Bilty of Greenwood, El Dorado county, recently sold a gravel mine to some Eastern capitalists for $50,000.

A New Elevator Hoist.

In the machinery department at the Fair, Messrs. Hawkins & Cantrell exhibit one of their improved elevator hoists, invented by William Hawkins, one of the firm. The machine comprises a new combination of mechanical principles and is very simple, the only wonder being, as in many other cases, that some one has not thought of the application before. In brief it consists in the employment of a screw shaft having a nut or cross head, which is caused to travel from end to end by rotation of the shaft. This nut is connected by suitable wire ropes with drums or pulleys for multiplying the motion given by the screw and to connect with the elevator drum. The elevator cage, guides, rope, pulleys, etc., are not essentially different from those employed in other hoists, and may be used equally well with this device. The screw shaft is horizontal, with journals turning in boxes at each end, the rear end being fitted with suitable thrust bearings. The threads in the screw shaft are cut of a pitch sufficient to move a traveling cross head or nut at the proper rate of speed. The traveling cross head has a guide or guides, and the ropes from the drum are attached by bolts to the cross head, which has a brass nutbushing, so that as the screw shaft is rotated the traveling cross head is drawn outward, the drum and pulley rotated and the cage elevated; when the nut is moved inward the cage is lowered. The screw may be driven in any manner desirable, by belt connection or directly by small engines.

Several of these machines are now at work in this city, one having been put on the Baldwin Hotel lately. At the fair the hoist is run by a belt and operates a small elevator, simply to show its operation. By the use of this device the load will stop anywhere without being held by the engine. It is absolutely noiseless, there not being a gear wheel in the machine, so that it is in this respect alone superior to elevator hoists generally. The usual arrangements for stopping and reversing can he used, but the stoppage or start is accomplished without any jar or suddenness, which is usually an objectionable feature in elevators.

The amount of hoist is of course regulated by the length of screw, but the whole device does not take up very much room. For sidewalk hoists this device can be made effective to be worked by hand and will occupy very little room.

Of course, with this screw device the load can be stopped at any point, an important feature with sidewalk hoists as no brake need be applied.

A Simple Appliance of an Old Principle.

It has seldom been our lot to observe so simple an appliance of an old principle in mechanics as that shown by Mr. James Mendenhall, at the Mechanics' Fair Pavilion. It is a self-shutting gate that cannot "sag," and at the same time one that is so simple that it cannot get out of order, unless it is put together with tow strings and wooden pegs, and the running-gear laid loose on the ground. The principle is that of the inclined plane or wedge, and when the gate is opened it is simply slid back on an inclined plane, a four-foot gate raising about three inches. The frame work exteuds up high enough, so that the front of the gate hangs on a sheave running on a plane parallel to that upon which the heel of the gate runs in a similar manner. The sheaves may run on iron or wood, or a gate that is but little used can run on hard wood with no sheave, provided the runways were kept well oiled and a little elbow grease applied.

This is one of those inventions where the actual practical article operates even better than a model, for it is evident to any one that the heavier the gate the less the incline would have to be to insure its closing itself. The sagging of the gate is entirely prevented by the fact that it rests upon two opposite corners, and really has as little inducement to settle, as it would were it set solid upon the ground. Another good feature is the fact that it is so constructed that the sheaves are entirely protected from the weather, and consequently unaffected by it.

The double self-opening gate by the same inventor is but little more complicated, a working model of which is shown in connection with the small gate above mentioned. The gate is double, opening right and left, upon inclined planes, and a single upright lever, worked by a cord from either side the fence, is the means of operating the gates. The lever connects with cords passing over two pulleys each, and a person desiring to pass through has only to drive up to the gate, pull the cord and pass on, the gates opening, and closing after him as soon as he relaxes his hold on the cord.

The advantage this gate has over others, lies in the inclined plane for closing it, and the fact that the one lever operates it from either side. The invention was patented through the Mining and Scientific Press Patent Agency, July 2d, 1878, and Mr. Mendenhall desires to sell territory to agents. He can be addressed through the medium of Dewey & Co., 202 Sansome street, San Francisco.

Hardee, Florida's scientist, advances the theory that yellow fever can he destroyed by atmospheric concussion, caused by explosion of gunpowder.

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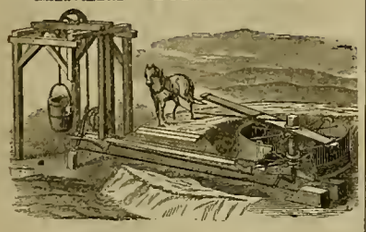

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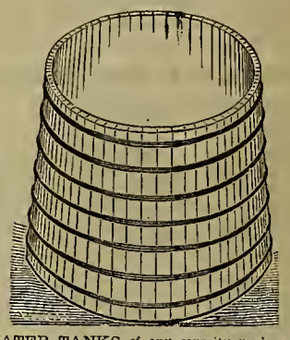

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San Francisco Cordage Company.

Established 1856.

We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes; Tarred Manila Rope; Hay Rope; Whale Line, etc., etc

TUBBS & CO.,
611 and 613 Front Street, San Francisco.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending Aug. 15.		Week Ending Aug. 22.		Week Ending Aug. 29.		Week Ending Sept. 5.	
Alpha	14½	10¾	16	13½	17¼	13¾	16½	13
Alta	12	8½	15	9½	18½	13¾	24	17¾
Andes	80c	40c	90c	60c	80c	65c	85c	75c
Alps								
Argenta	70c	45c	70c	40c	1.15	60c	2.35	1½
Baltimore Con								
Belcher	9¾	4½	11¾	9	15	10¾	15¾	13
Belmont	1.80	75c	3	1.30	2.60	2	3½	2¾
Best & Belcher	20	14½	20¼	17¾	28	18	25¾	20
Bullion	9¼	5	13	9¼	12¾	10¾	11¾	7⅞
Bechtel	1.90	1.60	3.10	2.05	2.2	1.10	2	1.30
Bodie	46	17	48	23¾	52	37¼	49¾	33
Benton	6¾	3.10	5½	3¾	5.90	4.90	7¾	4¾
Caledonia	3¾	2.10	4	3	5½	3¼	4.95	3¼
California	12¾	9¾	11¾	10¾	14¾	11¾	13	12
Challenge	2.15	1¼	2.10	1¼	1.30	1¼	2	1.40
Chollar-Potosi	38¾	29	33	33	40	36	40	34
Confidence	6¾	4¾	7	5¼	12¾	5¾	1.07	
Con Imperial	1¼	85c	1¼	85c	1.40	1	1.20	1
Con Virginia	10¾	8¼	10¾	9¼	13	9¼	13	11¼
Crown Point	11¾	8	10¾	8¾	11	9	13	9¼
Dayton	50c	30c	50c	40c	45c	40c	55c	45c
DeFrees	25c	15c	30c	15c	30c	15c	30c	25c
Day	1	45c	90c	60c	90c	75c	95c	80c
Eureka Con	48¾	42¼	45	36¾	43	36¾	41	40
Exchequer	6	4	6¾	5	6¾	5¼	5¾	4¾
Endowment	1¾	90c	2	1	1.35	50c	75c	50c
Gen Thomas								
Grand Prize	6¾	3¾	5¾	3¾	6	5¼	6¾	5¾
Gila	55c	50c	55c	40c	50c	35c	45c	40c
Golden Chariot	50	25	60c	25c	50c	45c	45c	40c
Gould & Curry	11¾	7	11¾	9¼	14	9¼	12¾	9¾
Hale & Norcross	8	7¼	9¾	8¼	11	9¼	10¾	9¾
Hussey	90c	45c	80c	60c	1	65c	1	75c
Julia	13¾	8¾	17	13¼	17	9¼	11	5¾
Justice	7¼	5¼	9¾	6¾	9¾	7¾	10¼	7¾
Jackson	5	3½	5¾	4¼	6¾	5¼	6¾	4¾
Joe Scatcs								
K Co								
Kentuck	6¾	4¾	6	4¼	6¼	5¼	7	5
Kossuth	30c	10c	25c	20c	25c	20c	40c	20c
Lady Wash	12	8¼	14¼	11¼	13¼	12¾	17¼	15
Leopard	1¾	95c	2.70	1.20	2¾	2	2	1.60
Leviathan	75c	60c	95c	60c	75c	55c	85c	70c
Leeds	1	50c	1	80c	1	90c	1	75c
Modoc	35c	25c	80c	25c	70c	50c	70c	60c
Manhattan	8¼	5¾	9¾	5¾	7	6¾	7	6
Meadow Valley	1	25c	40c	25c	50c	40c	50c	35c
Mexican	26¾	13¼	24¾	20	31	22¼	47	24
North Con Virginia	4¼	1¾	4¾	3	4¾	3	4¾	3¾
New York	1.70	1	2.35	1.20	1¾	1¼	3	1.90
Northern Belle	11¾	9¼	11	9	10¾	10	11	9¼
New Coso	45c	40c	40c	40c	50c	30c	50c	35c
Navajo	65c	45c	95c	65c	1.10	80c	1.30	1
Occidental	1.65	1	1.70	1	1½	1	1.05	40c
Ophir	48	41	46¾	41	50	43	54¼	41
Overman	18	11¾	18	13¾	21¾	15¼	21	16
Panther	20c		30c	15c	45c	35c	45c	20c
Raymond & Ely	4½	2.85	5	3	3½	2½	4	3½
Rock Island								35c
Savage	14	11¾	14½	12	14½	12½	15	12½
Seg Belcher	30	25	35	31	40	35	39¾	32
Sierra Nevada	31½	11¾	41½	25	81	40	105	48¼
Silver Hill	1.65	1.90	4	1.45	4	3¼	4	2½
Succor	2¼	1.10	2¼	1.15	2¼	1.80	2¼	1¼
Solid Silver	4.40	4	5	3½	6¼	5	9	7
Star	1.95	1	1¼	80c	2	1	1¼	85c
Trojan	85c	45c	3.55	50c	85c	65c	1¼	50c
Union Con	28¾	9	30	24½	47	27	87	39
Utah	16¾	11¼	18	15	39	19¾	39	20
Wells-Fargo	20c	15c	95c	15c	75c	45c	1	50c
Woodville	85c	45c	85c	50c	90c	80c	75c	50c
Yellow Jacket	16	10¼	16	13	28	14¾	23	17¾

Sales at S. F. Stock Exchange.

Friday A.M., August 30.

1630 Alta.....18@19
965 Alpha.....16@16¼
420 Best & Belcher.....24@23
3760 Bullion.....11@11¼
2505 Belcher.....13¼@14
1285 Jack Virginia.....12¾@13
1305 California.....13@12¾
430 Chollar.....40@39¾
1410 Crown Point.....10¾@10¾
1660 Confidence.....8@10
6745 Con Imperial..1.15@1.20
1845 Caledonia.....4.70@4.95
1255 Exchequer.....5¾@5¼
250 Gould & Curry.....12¾@12¾
730 Hale & Nor.....10¼@10¾
1080 Justice.....9¼@9¾
2195 Julia.....11@10¾
625 Kentuck.....5¼@6
2470 Lady Bryan.....3@3¼
630 Overman.....19@21
1425 Ophir.....46@48
1975 Sierra Nevada.....70c@63
320 Savage.....13¼@14
720 Succor.....2¼@2
2250 Silver Hill.....4@3.95
40 Seg Belcher.....39¼
1265 Union Con.....40¼@39
530 Utah.....35¼@35
5570 Yellow Jacket.....22¼
AFTERNOON SESSION.
5000 Argenta.....1½@2¼
820 Aurora T.....2½@3
715 Andes.....85@90c
1570 Benton.....5¼@5¾
1840 Bechtel.....1¾@1.85
875 Bodie.....2@2
1200 Belmont.....2½@3
50 Bulwer.....10@9
1045 Boyle.....2¼@2
1320 Black Hawk.....2@1.90
2850 Bayridere.....3
2195 Booker.....1¼@1
50 Con Washoe.....2
1275 Challenge.....1.80@2
650 Champion.....2@1¾
100 Concordia.....3
870 DeFrees.....90@85
1150 Day.....80@90c
200 Endowment.....75@70c
200 Eureka Con.....40¼@40
670 Grand Prize.....5½@6
250 Gila.....45@40c
1060 Occidental.....1.50
200 Golden Chariot.....45c
565 Hillside.....4½@4¾
1330 Hussey.....90c@1
1000 Highbridge.....2@1.80
3395 Independent.....2¼@2¼
470 Jacket.....4@3.95
1550 Kossuth.....40@25c
370 Leopard.....2
675 Leeds.....95c@1
100 Lady Wash.....1
1300 Leviathan.....70c
2370 Lee.....1@90c
400 Mauhattan.....6¼@6
40 May Belle.....1½@1
300 Meadow Valley.....50@40c
1435 McClinton.....1¼@1
5 M White.....8
1750 Modoc.....65c@70c
300 New Coso.....50c
145 Northern Belle.....9¾@9¼
790 Navajo.....1¼@1.20
1880 New York.....2@1.50
415 North Cou Vir.....4@3¾
100 Oriental.....1
50 Phenix.....2¼
3100 Panther.....45@40c
100 Prospect.....40c
4335 Phil Sheridan.....3@2.65
140 Ray'd & Ely.....3¼
100 Rye Patch.....1
1190 Rock Island.....10c
130 Rough & Ready.....2
100 Silver King.....1
1225 Silver Prize.....20@1.90
799 Summit.....4½@4
555 Scorpion.....6@6¼
1100 Star.....1.10@1
423 S Bodie.....90@1
1700 S Standard.....1¼@1
1170 St Louis.....75c@50c
325 Bodie.....33@37
370 Bulwer.....9@12
700 Bechtel.....1.60@2
1395 Belvidere.....2¼@2
1725 Booker.....1¼@1¾
1400 Belmont.....3.10@3
450 Belle Isle.....35c
545 Benton.....7@7¼
1480 Boyle.....3¼@3½
910 Black Hawk.....2@1¾
20 Comanche.....50c
453 Champion.....2@1.85
200 Concordia.....50c
50 Challenge.....1.90
170 Day.....90c
100 Dayton.....40c
25 Eureka Con.....40¾
1320 Endowment.....60@55c
570 Grand Prize.....6@6¼
550 Gila.....40@45c
1120 Goodshaw.....1.10@1¼
100 Golden Chariot.....40c
1850 Hussey.....85@75c
140 Hillside.....40¼
900 Highbridge.....1.90@2.10
990 Independent..2.40@2.30
630 Jackson.....5@4¾
430 Kossuth.....30@20c
125 Leeds.....75c
10 Leopard.....1.60
500 Lady Wash.....16¾@17½
550 Leviathan.....70@75c
2650 Lee.....1¼@1.40
400 Morning Star.....3@6¾
1300 Modoc.....2¼@2¾
100 Mides.....2½@2¾
3645 New York.....2¼@3
1160 Navajo.....1.20@1
100 Oriental.....50c
200 Panther.....1.60
3135 Phil Sheridan.....2¼@2¾
50 Prospect.....40c
45 Raymond & Ely.....4
400 Rock Island.....20c
85 Scorpion.....8@10
80 Solid Silver.....7
250 Sumnit.....4
1150 S Bodie.....1¼@1
715 S Standard.....1¼@1
1950 Silver Hill.....4@3.90
550 St Louis.....60@65c
1265 Ward.....2@1.80

Tuesday A.M., Sept. 3.

315 Alpha.....15¾@16
1000 Alta.....22½@21
655 Best & Belcher.....24@25¼
3605 Belcher.....15@14¾
1675 Bulwou.....10@9¾
625 California.....12¾@12¾
655 Con Virginia.....13¼@13
3850 Con Imperial..1.15@1.10
270 Confidence.....9¾@8¾
2630 Crown Point.....10¼@11
765 Caledonia.....4@4.10
165 Chollar.....38@37
500 Daney.....40
765 Exchequer.....5¼@5
1550 Gould & Curry.....11¾@12
565 Hale & Nor.....10@10¼
2490 Justice.....9¼@6
3935 Julia.....5¾@6
1230 Kentuck.....6¼@5¾
495 Lady Bryan.....3@3¼
4780 Mexican.....32@34¼
1140 Ophir.....42@43½
235 Overman.....19@17¾
2590 Sierra Nevada.....87@83
1935 Savage.....14@13¾
10 Seg Belcher.....32
1845 Succor.....2¼@2¾
6195 Union Con.....53@56
610 Utah.....35@37
740 Yellow Jacket.....21¼@22
AFTERNOON SESSION.
370 Aurora T.....4½
2170 Argenta.....2¼@2.20
850 Andes.....75@80c
1800 Belmont.....2.80@3¼
300 Belle Isle.....35c
1050 Bechtel.....2@1¾
180 Bulwer.....10@8
545 Black Hawk.....1@1.15
1675 Boyle.....2@1¾
1650 Benton.....6@4¼
500 Belcher.....11@1.90
325 Champion.....2@1¾
1475 Concordia.....50@45c
650 Dayton.....50c
1120 DeFrees.....30@28¾
1310 Day.....85@95c
70 Eureka Con.....41
1955 Endowmeut.....60@55c
50 Gila.....40c
200 Golden Terra.....4
200 Grand Prize.....11@10¾
500 Golden Chariot.....40@45c
980 Grand Prize.....6¼
325 Highbridge.....1@1.90
720 Hussey.....80c@1
450 Hillside.....4¼@5
385 Independent..2.40@2.30
200 Jackson.....5
605 Kossuth.....25@20c
1500 Lady Wash.....17¾
100 Leopard.....1.80
1400 Leeds.....1
1650 Lee.....1¼@1.15

SALES OF LAST WEEK AND THIS COMPARED.

Thurs'd'y A.M., Aug. 29.		Thurs'day A.M., Sept. 5.	
1165 Alta	17¾@18¾	180 Alpha	14¾@14¾
1567 Alpha	16¼@17¼	1485 Alta	23@24
936 Best & Belcher	25@27	700 B & B	24@23¾
2355 Bullion	11¼@10¾	1905 Bullion	8@8¾
1980 Belcher	15@14¾	1400 Belcher	14¼@13¾
40595 Con Imperial	1.40@1.20	415 Chollar	37@34¾
805 California	14¼@13¾	1785 Con Virginia	12¼@12¾
2405 Con Virginia	13¼@12¾	805 California	12¼@12¾
715 Confidence	12¼@9¾	1000 Caledonia	4@3.60
690 Chollar	40@37½	1000 Crown Point	10¼@10¾
1340 Crown Point	11¼@10¾	1245 Con Imperial	1.30@1.10
110 Daney	60c	335 Confidence	8@8¾
1485 Exchequer	6¼@5¾	1330 Exchequer	5¾@4.80
2700 Gould & Curry	14¼@12¾	1175 Gould & Curry	12¾@12¾
1790 Hale & Nor	11¼@10¾	1270 Hale & Nor	10¼@9¾
3560 Julia	10¼@9¾	2600 Julia	9¾@9¾
1895 Justice	9¼@8¾	2235 Julia	7¾@6¾
970 Kentuck	6¼@6	375 Kentuck	6¼@7
1845 L Bryan	4@3¾	2070 Lady Bryan	3¾@3
1645 Mexican	36¾@34	2525 Mexican	47@44
1720 Ophir	50c@48	600 Overman	12¾@16
1625 Overman	20¼@19¾	1650 Ophir	44½@43
100 Succor	2¼	275 Succor	1¼@1¾
1000 Sierra Nevada	31@27¾	1035 Savage	14¼@13¾
1080 Savage	14¼@14	1225 Sierra Nevada	101@99
35 Seg Belcher	40	80 Seg Belcher	35@32
1835 Union Con	47@43¾	1230 Union Con	37@36¾
640 Utah	39@35	180 Utah	38@39
3290 Yellow Jacket	28@25	1680 Yellow Jacket	25@22
AFTERNOON SESSION.		AFTERNOON SESSION.	
3100 Argenta	1¼@1.20	675 Aurora T	2¼@3
250 Aurora Tunnel	4¼@3¾	2400 Argenta	2¼@2.30
1850 Andes	85@80c	1000 Andes	80@85c
1630 Belmont	3@2¾	580 Bulwer	11@12
1850 Benton	5¾@6	1690 Belmont	3¾@3¼
2600 Bechtel	1¼@2	1100 Belvidere	2½
970 Black Hawk	2@2.05	420 Black Hawk	2@1.90
230 Bodie	50c@50	630 Bodie	37@36
1950 Booker	2@1.90	375 Bechtel	1¾@1¾
1565 Belvidere	2@3	865 Benton	11@13
1135 Boyle	2¼@2¾	1385 Booker	1¼@1.60
600 Bulwer	12¼@13	600 Crcsus	1¼@5c
1195 Caledonia	4¼@4¼	1040 Challenge	1½@1¾
100 Coso Con	60c	350 Champion	2

MINING SHAREHOLDERS' DIRECTORY.

Compited every Thursday from Advertisements in Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS—STOCKS ON THE LISTS OF THE BOARDS.

Company.	Location.	No.	Amt.	Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business
Alps S M Co	Nevada	13	1 00	May 21	Aug 14	Sept 10	O D Squire	331 Montgomery st
Alta S M Co	Washoe	12	1 00	July 18	Aug 22	Sept 10	W H Watson	302 Montgomery st
Belcher S M Co	Washoe	15	1 00	July 17	Aug 20	Sept 10	Jno Crockett	419 California st
Bullion M Co	Washoe	7	1 50	Aug 12	Sept 16	Oct 7	J Gruss	418 California st
Bechtel G M Co	California	2	50	Aug 14	Sept 19	Oct 10	W H Lent	309 Montgomery st
Belmont M Co	Washoe	18	40	July 29	Sept 2	Sept 24	J W Pew	310 Pine st
Bodie M Co	Nevada	1	15	Aug 1	Sept 4	Sept 23	Wm H Watson	302 Montgomery st
DeFrees M & M Co	Nevada	7	10	Aug 5	Sept 6	Sept 23	Thos E Atkinson	310 Pine st
El Dorado South Con M Co	Nevada	13	25	July 27	Aug 30	Sept 23	C A Sankey	331 Montgomery st
El Dorado W & D G M Co	California	18	2 00	Aug 15	Sept 16	Oct 4	Thos Price	524 Sacramento st
Endowment M Co	Nevada	1	50	Aug 23	Sept 30	Oct 21	R H Brown	327 Pine st
Gila Con M Co	Arizona	2	03	Aug 8	Sept 28	Oct 15	P B Pettigrew	419 California st
Gila S M Co	Nevada	2	25	Aug 27	Oct 3	Oct 24	Wm W Parrish	328 Montgomery st
Hale & Norcross S M Co	Washoe	59	1 00	Aug 13	Sept 18	Oct 9	J F Lightner	58 Nevada Block
Justice M Co	Washoe	26	1 50	Aug 13	Sept 18	Oct 9	R E Kelly	419 California st
Kentuck M Co	Washoe	13	1 00	Aug 7	Sept 9	Sept 30	J W Pew	310 Pine st
McCracken Con M Co	Arizona	1	50	July 10	Aug 24	Sept 28	H Aug Whiting	211 Sansome st
Modoc Con M Co	California	5	50	July 17	Aug 26	Sept 16	J W Pew	310 Pine st
Martin White M Co	Nevada	3	1 00	July 23	Sept 3	Sept 23	J J Scoville	309 Montgomery st
Mint G & S M Co	Washoe	22	20	Aug 8	Sept 11	Oct 2	D A Jennings	401 California st
New York M Co	Nevada	16	30	Aug 1	Sept 3	Sept 24	D L Thomas	419 California st
Northern King M & M Co	Arizona	3	10	Aug 17	Sept 21	Oct 9	G F Glover	318 Pine st
N Con Virginia M Co	Washoe	13	1 00	Aug 13	Sept 16	Oct 4	W M Helman	309 California st
Prospect G & S M Co	Washoe	6	25	July 18	Aug 20	Sept 10	Warner Craig	320 Sansome st
Raymond & Ely M Co	Nevada	8	1 00	Aug 1	Sept 12	Oct 8	J W Pew	310 Pine st
Silver Hill M Co	Washoe	3	50	July 18	Aug 22	Sept 12	W E Dean	419 California st
South Standard M Co	California	2	25	July 23	Aug 27	Sept 17	C A Sankey	331 Montgomery st
Sierra Nevada M Co	Washoe	55	1 00	July 31	Sept 4	Sept 25	W W Stetson	309 Montgomery st
Succor M & M Co	Washoe	19	50	Aug 12	Sept 16	Oct 5	W H Watson	302 Mongomery st
Tiptop M Co	Arizona	3	50	July 15	Aug 21	Sept 18	D F Worstall	327 Pine st
Wells, Fargo & Co	Nevada	10	10	July 22	Aug 23	Sept 9	W M Helman	309 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Aurora T & M Co	Bodie	1	15	Aug 12	Sept 20	Oct 10	A Baird	304 California st
Almaden Quicksilver M Co	California	1	25	July 30	Aug 31	Sept 21	W J Forde	207 Sansome st
Benton M Co	Nevada	1	35	Aug 1	Sept 2	Sept 24	Wm H Watson	302 Montgomery st
Colorado River C & G M Co	Arizona	2	25	Aug 5	Sept 9	Sept 30	P B Whiting	211 Sansome st
California W Co	California	20	16	Aug 13	Sept 24	Oct 15	G P Thurston	315 California st
Cal & Arizona M Co	Arizona	3	05	Aug 26	Sept 30	Oct 18	T E Jewell	507 Montgomery st
Equitable T & M Co	Utah	18	05	Aug 29	Oct 3	Oct 22	C S Healy	45 Merchant's Ex
Echo G & S M Co	Nevada	1	02	Aug 21	Sept 26	Oct 18	T C Winchell	302 Montgomery st
Gover M & M Co	California	37	50	Aug 9	Sept 23	Oct 21	W O Wilson	402 Front st
California 7 Co	California	7	75	July 15	Aug 17	Sept 9	J B Russell	432 Montgomery st
Kern M & S Co	Nevada	1	25	June 24	July 29	Sept 19	Chas K Clark	1111 Leidesdorff st
Mono G M Co	California	1	50	Aug 28	Oct 21	Oct 23	W H Lent	309 Montgomery st
McElroy G M Co	California	2	10	July 23	Aug 28	Sept 17	Lewis Lillie	519 Montgomery st
Mariposa Land & M Co	California	1¼	1 00	July 10	Aug 12	Sept 9	Leander Leavitt	309 Montgomery st
McClellan Con G & S M Co	Nevada	2	25	Aug 5	Sept 23	Oct 13	Otto Metchke	328 Montgomery st
Newton H & D M Co	California	1	08	July 21	Sept 2	Sept 30	G W Cummings	330 Sansome st
Navada Gravel M Co	California	3	05	Sept 4	Oct 7	Oct 25	J Pentecost	511 California st
Oak Grove M Co	Arizona	1	05	Aug 6	Sept 10	Sept 30	R D Bogart	16 Leidesdorff st
Richer M Co	California	1	50	Aug 28	Sept 30	Oct 22	W H Lent	309 Montgomery st
Real Del Monte M Co	Nevada	3	1 00	July 18	Aug 26	Sept 16	A Baird	304 California st
Summit M Co	California	4	05	July 17	Aug 19	Sept 10	J W Clark	318 Pine st
Tiger M Co	Arizona	1	50	July 16	Aug 26	Sept 20	W H Lent	309 Montgomery st
Telegraph C & S M Co	California		03	July 17	Aug 19	Sept 9	I T Milliken	528 California st

MEETINGS TO BE HELD.

Name of Company.	Location.	Secretary.	Office in S. F.	Meeting.	Date
Alexander M Co	Nevada	A B Cooper	Safe Deposit Building	Annual	Sept 9
Bechtel G M Co	California	W H Leut	309 Montgomery st	Annual	Sept 16
Eureka M & S Co	Nevada	A C Ryce	308 California st	Annual	Sept 30
Grand Prize M Co	Nevada	R H Brown	S. F. Stock Exchange	Aunual	Sept 17
Northern Belle M & M Co		W Willis	29 Nevada Block	Annual	Sept 9
South Standard	California	C A Sankey	331 Montgomery st	Annual	Sept 12
Silver King South M Co	Arizona	A Judson	320 Sansome st	Special	Sept 9
Scorpion S M Co	Arizona	G R Spinney	310 Pine st	Special	Sept 30

LATEST DIVIDENDS—WITHIN THREE MONTHS

Name of Company.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Bodie G M Co	California	W M Lent	309 Montgomery st	5 00	Aug 31
Bodie G M Co	Nevada	Wm M Lent	309 Montgomery st	3 00	Aug 14
California M Co	Washoe	O F Gordon	Nevada Block	1 00	Aug 15
California Mining M Co	Washoe	A W Havens	Nevada Block	1 00	June 15
Eureka Con M Co	Nevada	W W Traylor	37 Nevada Block	3 00	†Aug 20
Excelsior W & M Co	California	Geo P Thurston	315 California st	50	July 15
Excelsior W & M Co		Geo P Thurston	315 California st		Aug 15
Eureka Con M Co	Nev	W W Traylor	309 Montgomery st	3 00	July 20
Empire M Co	California	David A Jennings	401 California st	25	June 15
Independence M Co	Nevada	J H Brown		25	July 30
Independence M Co	Nevada	R H Brown	327 Pine st	25	Aug 20
McMillen S M Co	Arizona	A C McMcans	Safe Deposit Bldg	5	June 20
Napa Con M Co	California	W W Parrish	Safe Deposit Building	10	Aug 15
Silver King M Co	Arizona	W H Boothe	320 California st	50	Sept 10
Standard G M Co	Cal	W Willis	309 Montgomery st	1 00	Aug 12

300 Concordia	50c	200 Concordia	40c	350 Atlantic	65c
220 Champion	1¼	300 DeFrees	35@40c	300 Bechtel	1.60
50 Con Washoe	2	590 Day	90@85c	40 Bodie	41
2190 Challenge	2¼@2	210 Eureka Cou	40¼@40¾	460 Bullion	8@8¾
400 DeFrees	20@30c	1640 Endowment	60@70c	600 Benton	6¼
800 Day	80@65c	395 Grand Prize	6¼@6¾	20 Black Hawk	1¾
430 Eureka Con	40@41	1000 Golden Terra	4¼	10 California	1.12½
200 Endowment	70@75c	600 Golden Chariot	50c	130 Caledonia	3¼@3
250 Grand Prize	5¾@6	1775 Goodshaw	1.10@1.15	100 Crown Point	10¾
850 Gila	40@45c	960 Hussey	85@75c	350 Goodsh	1¼@1.05
2020 Goodshaw	1.15	1350 Hillside	4¼@4¼	110 Gould & Curry	12@12¼
140 Golden Terra	4	400 Highbridge	1¼@1.60	250 Golden Chariot	45c
1400 Golden Chariot	50c	1250 Independent	2¼@2.40	100 Hale & Nor	10
100 Homestake	1.20	1135 Jackson	6¼@7	100 Independent	2¼
2310 Hussey	80c@1	250 Leopard	2@1.80	1380 Julia	8@8¾
220 Hillside	4@4¼	5665 Lady Wash	5¼@6	40 Justice	9¼
450 Highbridge	1¾@1.60	200 Leeds	1	120 Kentuck	7@6¾
15 Hamburg	21	200 Lee	1.10@1¼	100 Kossuth	20c
3425 Independent	2.30@2.40	1100 Modoc	60c	100 Leopard	2
310 Jackson	5¼@5¾	200 Manhattan	6¼	140 Lee	60c
3350 Kossuth	25@35c	520 Manhattan	6¼@6¾	140 Mexican	38¾@38¾
2000 Lee	85@90c	160 Meadow Valley	50c	350 Modoc	60c
1650 Leopard	2@2.40	1020 Morning Star	6@6¾	10 Yellow Jacket	22
250 Leeds	1	600 McClinton	1.10@1¼		
340 Lady Wash	15@16¾	10 Northern Belle	9¾		
570 Leviathan	75c	1605 New York	2¼@2¾		
325 Mides	2¼	1360 N Con Vir	5¼@5¾		
20 Martin White	8	1350 Navajo	1.10@1¼		
1140 Modoc	70@65c	805 Oriental	1¼@1¼		
440 Manhattan	6¼@6¾	60 Occidental	1		
60 Meadow Valley	40c	4465 Phil Sheridan	3¼@3¾		
1550 Morning Star	6@6¾	50 Prospect	35c		
2210 McClinton	1.20@1¼	1000 Peytona	2		
335 N Con Virginia	4@3.80	90 Raymond & Ely	3¾		
535 Northern Belle	9@9¼	800 Richer	4¼		
2185 Navajo	1@1¼	350 Rock Island	40@50c		
100 New Coso	50c	100 Rough & Ready	2		
2390 New York	2@1¾	1240 Solid Silver	7@8¾		
100 North Carson	15c	700 St Louis	70@75c		
150 Oriental	1.40@1¼	500 Star	75@80c		
270 Occidental	1@1.15	575 South Standard	75c		
1370 Phil Sheridan	2¼@2.60	905 S Bodie	70@75c		
100 Prospect	35c	775 Silver Hill	2.20@2¼		
500 Panther	35c	350 Summit	3¾@4		
85 Raymond & Ely	3¼	1000 Scorpion	10		
1100 Rough & Ready	2@2¼	375 Santiago	90c		
670 Solid Silver	7	430 Silver Prize	20c		
100 Summit	4@3	600 Tiptop	1¼@1.40		
2330 Silver Prize	20@15c	1140 Trojan	60@50c		
760 Scorpion	5@6	885 Tioga Con	2¼@2¾		
3600 Silver Hill	3¾@4	640 Vermont	8@8¼		
230 Star	1¼	1315 Ward	1.70@1.90		
2425 S Standard	1@1¼	2650 Wells-Fargo	50@65c		
400 St Louis	80c	680 Woodville	65@50c		
2605 Tioga	2¼@2¾				
745 Tiptop	1.35@1.40				
550 Trojan	60@65c				
330 Vermont Con	6¾@6¾				
6350 Wells-Fargo	95c@1.10				
2650 Ward	2.30@3				
700 Woodville	75c				

Pacific Board—Latest Sales.

Wed'sday A.M., Sept. 4.			
240 Alpha	14¾	780 Julia	7¼@7½
440 Alta	22@22¼	795 Justice	9¼@9¾
265 Best & Belcher	23@23¾	275 Kentuck	6¾@6¾
170 Bullion	8@8¾	230 Ophir	45¾@44¾
165 Belcher	15¾@15	40 Overman	17
315 California	12¾	400 Savage	14¼@14¾
315 Crown Point	10¾@11	1215 Sierra Nevada	93@92
1480 Con Imperial	1.10@1¼	150 Silver Hill	3¾
60 Con Virginia	11¾	1270 Union Con	37@37¼
20 Chollar	38	60 Utah	34@33¾
190 Caledonia	3¾@3¾	250 Yellow Jacket	22¾@22
50 Exchequer	5	AFTERNOON SESSION.	
315 Gould & Curry	12¼@11¾	10 Alpha	14¾
180 Hale & Nor	10	205 Alta	22@22¼

California Board—Latest Sales.

Wed'sday A.M., Sept. 4.			
80 Alta	22¼@22¾	70 Alpha	15@15¼
200 Alexander	7¼@7¾	450 Atlantic	75@70c
100 Andes	85c	50 Best & Belcher	21¼@21¾
70 Bullion	8	80 Belcher	14¼@14¾
160 Bechtel	1.85@1.90	80 Bullion	8¾@8¾
80 Best & Belcher	24¼@24	50 Bechtel	1.85@1.90
50 California	12¾	90 Con Virginia	12@11¾
70 Con Virginia	12¼@12	700 Con Imperial	1.15@1.20
30 Con Imperial	1.17½@1.15	40 Crown Point	10¾@10¼
65 Crown Point	11@11¼	1600 Coso Con	40@52½
100 Endowment	80c	100 Dayton	40c
80

Mining Share Market.

This week, the first of the now month, seems to anger a repetition of the activity that characterized the 30 days just passed. During last month the rise in some stocks amounted to 100%, 200%, 600% and even 900%. For instance, Sierra Nevada, on July 27th, was $8.12½, and on August 29th, $85, an advance of $76.87½. Bodie advanced in the same time from $11 to $50. There were of course several declines, but none that were very startling. One of these was at the close of the month, in fact, on tho very last day, August 31st. On Friday last, Ophir was $48; on Saturday, $41.50; Mexican went from $32.50 to $24.50; Justice, from $9.25 to $7.87½; Julia from $10.25 to $8.50; Union Con., from $41 to $30.50; Sierra Nevada, from $65.50 to $48.50. As is usual, sympathy exerted itself, and the whole Comstock shared in some measure tho decline.

But at the opening of a now week and a new month the decline changed into a riso. Ophir on Tuesday had risen to $43.25, Mexican had reached $35, Justice $9.50. Julia fell lower Monday, but revived again Tuesday. Union Con. reached $66, and Sierra Nevada had made a jump to $98.50.

This rise may have grown out of the reports of the experts who visited the mines on Friday. If so, it was long in coming. And as a general thing the visits appear to have led to little outside enlightenment, although an impression seems to have existed that the examiners could make favorable reports if they wished. However that may bo, no doubt the ball was started up hill by Bonnemort's report on Monday that there was good ore in the 2100-foot level of Sierra Nevada. Tuesday the excitement was in no wise allayed by the rumor that the average Sierra Nevada assay was between $300 and $400 per ton. It has been thought by many that a new Bonanza era is commenced, and Sierra Nevada is at present the attractive point for those who watch and wait.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch from Washington, D. C.

FOR THE WEEK ENDING AUGUST 20TH, 1878.

RATCHET WRENCHES—Thos. Clement Hammond, Sacramento, Cal.

GRIPPERS FOR WIRE ROPE RAILWAYS.—Johan Hansen, S. F.

PROCESS FOR WELDING COPPER—R. P. Williams and L. Worsham, Alameda, Cal.

MINING RIFFLES—Chas. O. Bagley, S. F.

RAILWAY RAIL JOINTS—Samuel E. Hilliard, Reno, Nev.

BLIND-WIRING MACHINES—Carl Hinz, S. F.

BERRY BOXES—Roswell E. Morey and Thomas H McDonald, S. F.

HARNESS SADDLES—John Patten, Tomales, Cal.

METALLIC WHEELBARROWS—John Upstone, S. F.

STEAM PUMPS—Philip Van Tassel and Martin Paup, Port Madison, W. T.

WASHING MACHINES—Toliver A. Wilson, S. F.

DEVICE FOR DRIVING NAILS UNDER WATER—William Stack, Oakland, Cal.

TRADE-MARKS—California Cigar Box Co., S. F., cigars

Woodward's Gardens were never more attractive than at present. Besides three lions already mentioned, six monster living alligators, several iguanas and a boa-constrictor have just been added. New stars are constantly engaged for the Pavilion exercises. Rates of admission as usual.

UNION READING ROOMS, FIRST STREET, SAN JOSE. WELCOME TO ALL!—Having lately been removed to the old hall of the City Zouaves, this institution is located in a pleasant and spacious apartment. The latest and best periodicals of the day are found on its tables, free to all. Also many choice volumes upon its shelves. Good music is provided for every Wednesday evening's social. Admission [to these entertainments, 25 cents—to pay expenses.

Signal Service Meteorological Report.

Week Ending September 3, 1878.

HIGHEST AND LOWEST BAROMETER.

Aug 28	Aug 29	Aug 30	Aug 31	Sept 1	Sept 2	Sept 3
30.06	30.03	20.00	29.95	30.02	30.04	29.95
30.00	20.91	29.81	29.85	29.07	29.05	20.85

MAXIMUM AND MINIMUM THERMOMETER.

65	65	73	65	62	64	75
56	55	56	55	54	56	55

MEAN DAILY HUMIDITY.

77	83	75	83	82	81	06

PREVAILING WIND.

SW	SW	SW	SW	SW	SW	SW

WIND—MILES TRAVELED.

263	204	210	335	290	245	238

STATE OF WEATHER.

Cloudy	Fair.	Clear.	Fair.	Cloudy	Fair.	Clear.

RAINFALL IN TWENTY-FOUR HOURS.

Total rain during the season, from July 1, 1878, .01 in.

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by SUTRO & Co.]

SAN FRANCISCO, September 4, 3 P. M.

LEGAL TENDERS in S. F., 11 A.M., 99¾@99.90. SILVER, 1⅞@2. GOLD in New York, 100⅝.

GOLD BARS, 890@910. SILVER BARS, 8@15 ₱ cent. discount.

EXCHANGE on New York, ¼%; on London bankers, 49@49¼. Commercial, 50; Paris, five francs ₱ dollar; Mexican dollars, 91@93.

LONDON Consols, 94 11-16; Bonds, 108¼.

QUICKSILVER in S. F., by the flask, ₱ lb, 43@45c.

[Communicated.]

The Pacific Mineral Land Company.

A company will shortly be incorporated, under the above name, in this city with a large capital stock, for the purpose of acquiring and working mineral land on the Pacific coast of the United States and adjoining countries. The company will mine coal, iron, silver, gold and other minerals, sink petroleum wells, make coke and establish iron manufactories, build railroads where necessary, own and run steamers, and seek in every profitable manner to develop the resources of this coast.

A gentleman of life-long practical experience in the coal and petroleum regions of the East will devote his services to the company as President. A special feature will be made of coal, the safest and most lasting of all the minerals. Arrangements have already been made for the acquisition of valuable and accessible coal fields on the northern part of the coast, work on which will be commenced without delay. It is intended before New Year's to lay down coal of the best quality in San Francisco at lower price than has yet been done. The company will arrange for the immediate construction of large and powerful steamers suited for carrying coal, merchandise and passengers, thus ensuring the shipping of their coal at a small expense.

A sufficient working capital for all purposes will render further calls on the stockholders unnecessary, and no assessment will be levied on the stock. Every facility will at all times be offered for full examination of the company's affairs by individual shareholders. Gentlemen well and honorably known both here and in the East are interested in the undertaking, and their names are a guarantee that the affairs of the company will be conducted in a perfectly fair and honorable manner. A large amount of stock has already been applied for in this country and in Europe.

This will be the strongest company ever organized on this coast, and offers unequaled inducements for the safe and profitable investment of capital, the stability and sure rise in value of real estate being here combined with the profits of mining and manufacturing, whilst the variety of operations to be carried on reduces the risk to a minimum.

Further particulars will be announced in these columns in the course of a few weeks.

METALS.

[WHOLESALE.

WEDNESDAY M., September 4, 1878.

IRON.—			
American Pig, ton		28 00 @	30 00
Scotch Pig, ton		28 00 @	30 00
White Pig, ton		28 00 @	—
Oregon Pig, ton		— @	—
Refined Bar		2½@	3
Horse Shoes, keg		5 00 @	—
Nail Rod		—@	7
Norway, Oval		—@	7
COPPER.—			
Sheathing, lb		34 @	35
Sheathing, Yellow		21 @	
Sheathing, Old Yellow		12 @	
Composition Nails		24 @	—
Composition Bolts		24 @	—
STEEL.—			
English Cast, lb		13 @	14
Anderson & Woods, ordinary sizes		15 @	—
Drill		15 @	—
Flat Bar		14 @	19
Plow Steel		8½@	12½
TIN PLATES.—			
10x14 I C Obarcoal	7 50	@ 8	50
Banca Tin		23 @	24
Australian		17 @	17½
ZINC.—			
Sheet		9 @	—
Zinc, Sheet 7x3 ft, 7 to 10, lb		9 @	10
7x3 ft, 11 to 14		10 @	—
8x4 ft, 8 to 10		11 @	—
8x4 ft, 11 to 10		11 @	—
NAILS.—			
Assorted sizes	3 15	@3	25

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

The California Fruit Growing Association.

—Location of principal place of business, San Francisco, California. Location of property, El Dorado County, California.

Notice is hereby given, that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 9) of three (3) dollars per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, No. 641 Sacramento street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 30th day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Monday, the 21st day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco, Cal.

Gover Mining & Milling Company.—Location of principal place of business, San Francisco, California. Location of works, Amador County, near Drytown, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the ninth day of August, 1878, an assessment (No. 37,) of fifty cents per share was levied upon the capital stock of the corporation, payable immediately in gold coin or legal currency of the United States, to the Secretary, at the office of the Company, Room 8, No. 402 Front Street, San Francisco, Cal.

Any stock upon which said assessment shall remain unpaid, on Monday, September 23rd, 1878, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, October 21st, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

W. O. WILSON, Sec'y.

Office, Room 8, No. 402 Front Street, San Francisco, Cal

Keystone Quartz Mining Company.—Principal place of business, San Francisco, California. Location of works, Sierra County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 30th day of August, 1878, an assessment of fifty (50c.) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary at the office of the Company, northwest corner Pine and Sansome streets, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the eighth day of October, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the twenty-eighth day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

LOUIS VESARIA, Sec'y.

Office, northwest corner Pine and Sansome streets, San Francisco, California

Mariposa Land and Mining Company of California.—Location of principal place of business, San Francisco, California. Location of works, Mariposa County, California.

Notice.—There is delinquent upon the following described stock, on account of assessment (No. 14) levied on the tenth day of July, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

COMMON STOCK.

Names.	No. Certificate.	No. Shares.	Amount.
Ambleman, Edgar M	1629	100	$100 00
Ambleman, Edgar M	1631	100	100 00
Brumagim, J H	1115	100	100 00
Brumagim, J H	1120	100	100 00
Brumagim, J H	1351	100	100 00
Brumagim, J H	1352	100	100 00
Brumagim, J H	1356	100	100 00
Brumagim, J H	1370	100	100 00
Brumagim, J H	1376	100	100 00
Brumagim, J H	1382	100	100 00
Brumagim, J H	1383	100	100 00
Brumagim, J H	1387	100	100 00
Brumagim, J H	1388	100	100 00
Brumagim, J H	1300	100	100 00
Brumagim, J H	1391	100	100 00
Brumagim, J H	1302	100	100 00
Brumagim, J H	1303	100	100 00
Brumagim, J H	1394	100	100 00
Brumagim, J H	1395	100	100 00
Brumagim, J H	1396	100	100 00
Brumagim, J H	1397	100	100 00
Brumagim, J H	1398	100	100 00
Brumagim, J H	1399	100	100 00
Bogert, Jas C	1683	100	100 00
Bogert, Jas C	1684	100	100 00
Bogert, Jas C	1685	100	100 00
Brumagim, J H	1189	100	100 00
Brumagim, Fred P	1101	100	100 00
Brumagim, Fred P	1195	100	100 00
Brumagim, Fred P	1270	100	100 00
Brumagim, Fred P	1274	100	100 00
Brumagim, Fred P	1280	100	100 00
Brumagim, Fred P	1301	100	100 00
Brumagim, Fred P	1302	100	100 00
Brumagim, Fred P	1306	100	100 00
Brumagim, Fred P	1307	100	100 00
Brumagim, Fred P	1309	100	100 00
Brumagim, Fred P	1311	100	100 00
Browne, George	1697	100	100 00
Browne, George	1698	100	100 00
Browne, George	1820	100	100 00
Browne, George	A 57	50	50 00
Birmingham, D Walton	1432	100	100 00
Birmingham, D Walton	1433	50	50 00
Birmingham, D Walton	1435	100	100 00
Birmingham, D Walton	1436	100	100 00
Birmingham, D Walton	1437	100	100 00
Birmingham, D Walton	1439	100	100 00
Birmingham, D Walton	1441	100	100 00
Birmingham, D Walton	1480	100	100 00
Birmingham, D Walton	1486	100	100 00
Birmingham, D Walton	1487	100	100 00
Birmingham, D Walton	A 47	50	50 00
Birmingham, D Walton	1762	100	100 00
Bernheimer, I & S	1601	100	100 00
Boody & Co, D A	A 25	50	50 00
Boody & Co, D A	1722	100	100 00
Brown, D	1240	100	100 00
Badger, Geo K	1723	100	100 00
Colbren, W T	473	100	100 00
Colbren, W T	474	100	100 00
Duesenbury, Caroline E	1219	100	100 00
Duffy, James J	1816	100	100 00
Dusenbury, E	A 53	50	50 00
Elston, W A	1586	100	100 00
Engler, Ad	1610	100	100 00
Fay, Fredk J	470	100	100 00
Glendenning, Davis & Amory	291	100	100 00
Harriott & Noyes	1102	100	100 00
Harriott & Noyes	1103	100	100 00
Harriott & Noyes	1104	100	100 00
Harriott & Noyes	1251	100	100 00
Hedges, Allen	1800	100	100 00
Hedges, Allen	1801	100	100 00
Hedges, Allen	1804	100	100 00
Hedges, Allen	1811	100	100 00
Hedges, Allen	1812	100	100 00
Hyman, Henry	1613	100	100 00
Hyman, Henry	1614	100	100 00
Henry, T L	1673	100	100 00
James, W H H	1166	100	100 00
Kent, Edward	1582	100	100 00
Kennedy, Hutchinson & Co	1640	100	100 00
Kennedy, Hutchinson & Co	1641	100	100 00
Kennedy, Geo H	1157	100	100 00
Kennedy, Geo H	1158	100	100 00
Monroe, E J	A 40	15	15 00
Monroe, E J	A 50	50	50 00
Maas, Frederick M	1637	100	100 00
McEwan, Wm	A 45	50	50 00
Morris, J C	A 54	35	35 00
Morris, J C	A 55	15	15 00
Noice, Edward H	A 37	10	10 00
Oppenheim Bros	1642	100	100 00
Oppenheim Bros	1748	100	100 00
Oppenheim Bros	1865	100	100 00
Post, Joel B	1264	100	100 00
Post, Joel B	1265	100	100 00
Post, W B	1708	100	100 00
Post, W B	1711	100	100 00
Post, W B	A 40	50	50 00
Parker, John W	1821	100	100 00
Rodwell, C M	115	100	100 00
Rathborne, R Wm	240	100	100 00
Rathborne, R Wm	314	100	100 00
Seyd, Alexander	1742	100	100 00
Strong, H H	1823	100	100 00
Townsend, W B	A 27	50	50 00
Townsend, W B	1623	100	100 00
Townsend, W B	1624	100	100 00
Townsend, W B	A 28	50	50 00
Panderhoof, H B	1599	100	100 00
Panderhoof, H B	1600	100	100 00
Panderhoof, H B	1694	100	100 00
Waldran, Albert	1667	100	100 00
Williams, B C	1720	100	100 00
Williams, Samuel F	1747	100	100 00
Brumagim, J H	unissued	200	200 00
Weed, Ed H	unissued	100	100 00
Towar & Learned	unissued	100	100 00
White, Morris & Co	unissued	100	100 00
Joslyn, Bach & Co	unissued	100	100 00

PREFERRED STOCK.

Bogart, James C	A107	35	35 00
Bogart, James C	1446	100	100 00
Baldwin, J C	A 13	10	10 00
Bernheimer, I & S	1350	100	100 00
Bernheimer, I & S	1351	100	100 00
Bernheimer, I & S	1352	100	100 00
Bernheimer, I & S	1353	100	100 00
Bernheimer, I & S	A 74	37	37 00
Bernheimer, I & S	A 75	50	50 00
Bernheimer, I & S	A 76	50	50 00
Brumagim, J H	1308	100	100 00
Brumagim, J H	1314	100	100 00
Brumagim, J H	1315	100	100 00
Brumagim, J H	1317	100	100 00
Brumagim, Mark	1305	100	100 00
Brumagim, Fred P	1184	100	100 00
Brumagim, Fred P	1185	100	100 00
Brumagim, Fred P	1276	100	100 00

Names.	No. Certificate.	No. Shares.	Amount.
Browne, George	A 63	20	20 00
Birmingham, D Walton	1329	100	100 00
Birmingham, D Walton	1339	100	100 00
Birmingham, D Walton	1344	100	100 00
Birmingham, D Walton	1356	100	100 00
Birmingham, D Walton	1470	100	100 00
Butterworth, Theron	1437	100	100 00
Butterworth, Theron	1438	100	100 00
Cutting & Co, R L Jr	1376	100	100 00
Cutting & Co, R L Jr	1382	100	100 00
Davidson, W S	1307	100	100 00
Doubleday, M	1457	100	100 00
Egbert, W W	A 61	47	47 00
Francis, H M, Atty	A 127	50	50 00
Homans, E C	1108	100	100 00
Homans, E C	1212	100	100 00
Hedges, Allen	A 67	23	23 00
Hengstler, Julius	A 111	50	50 00
Hengstler, Julius	A 112	50	50 00
Hollander, F	A 117	50	50 00
Haight, Henry M	132	50	50 00
Haight, Henry M	1571	100	100 00
Haight, Henry M	1572	100	100 00
Haight, Henry M	1583	100	100 00
Haight, Henry M	1574	100	100 00
Kennedy, Hutchinson & Co	278	100	100 00
Ludvigh, E	1453	100	100 00
Lansing, Edwin B	1570	100	100 00
Lansing, Edwin B	A 132	5	5 00
Monroe, E S	A 133	30	30 00
Monroe, E S	A 134	5	5 00
Monroe, E S	A 135	50	50 00
Rathborne, R Wm	139	100	100 00
Rathborne, R Wm	140	100	100 00
Rathborne, R Wm	197	100	100 00
Rochner, Edward	1390	100	100 00
Requa, F L	1321	100	100 00
Requa, F L	1322	100	100 00
Requa, F L	1326	100	100 00
Scott, Wm B	1110	100	100 00
Scott, Wm B	1491	100	100 00
Weed, Ed H	1267	100	100 00
Weed, Ed H	1272	100	100 00
Weil, Henry	242	100	100 00
Ward, A H	A 16	2	2 00
Ward, A H	1240	100	100 00
Ward, A H	1241	100	100 00
Ward, A H	1318	100	100 00
Ward, A H	A 118	50	50 00
Waldron, Albert	1430	100	100 00
Wills, A J	1451	100	100 00
Wills, A J	1452	100	100 00
Faitoute, H C	unissued	31	31 00
Kellogg, Chas	unissued	14	14 00
Litchfield, Edwin C	unissued	405	405 00
Brumagin, J H	unissued	100	100 00
Underbill, Frederick	unissued	100	100 00
Rathborne, R Wm	unissued	200	200 00
Wollberg & Co.	unissued	100	100 00

And in accordance with law and an order of the Board of Directors, made on the tenth day of July, 1878, so many shares of each parcel of such stock as may be necessary will be sold at public auction, at the office of the Company, room 33, Nevada Block, No. 309 Montgomery Street, San Francisco, California, on Monday, the ninth day of September, 1878, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale. LEANDER LEAVITT, Sec'y.

Office, Room 33, Nevada Block, No. 309 Montgomery Street, San Francisco, Cal.

POSTPONEMENT.—The above sale is postponed until Wednesday, the twenty-fifth day of September, 1878, at the same hour and place.

By order of the Board of Directors.

LEANDER LEAVITT, Sec'y.

Pocahontas Gold Mining Company.—Location of Principal Place of Business, San Francisco, California. Location of Works, El Dorado County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 14th day of August, 1878, an assessment (No. 14) of One Dollar and a Half ($1.50) per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, Room No. 9, 411½ California street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 23rd day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Wednesday, the 23rd day of October, 1878, to pay the delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors M. C. SOUTHARD, Sec'y.

Office, Room No. 9, 411½ California street, San Francisco, California.

Telegraph Copper and Silver Mining Company. Location of principal place of business, City and County of San Francisco, State of California. Location of works, Gopher Mining District, Calaveras County, California.

Notice.—There is delinquent upon the following described stock, on account of assessment (No. 1,) levied on the seventeenth day of July, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No Certificate.	No. Shares.	Am't.
Howland, W H	Not issued	1350⅔	$ 40 52
Jones, C C	Not issued	5640	160 20
McCrea, Wm	Not issued	4909	149 97
Bollinger, J C	Not issued	17,166	514 98

And in accordance with law and an order of the Board of Directors, made on the seventeenth day of July, 1878, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the Company, Room 2, 528 California street, San Francsico, California, on Monday, the ninth (9th) day of September, 1878, at the hour of 12 o'clock, M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

I. T. MILLIKEN, Secretary.

Office, Room 2, No 528 California street, San Francisco, California.

Vigorit Powder Company.—Location of works, California City, Marin County, State of California. Location of principal place of business, City and County of San Francisco, California.

Notice is hereby given that at a meetiug of the Directors held on the first day of August, 1878, an assessment (No. 1) of fifty cents (50c.) per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, Room No. 1, 109 California street, in the City and County of San Francisco, California.

Any stock upon which this assessment shall remain unpaid on Thursday, the twelfth day of September, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the second day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expense of sale.

JAS. W. BAKER, Sec'y.

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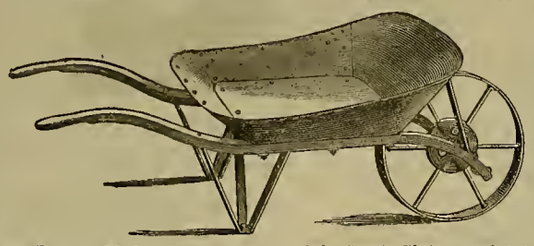

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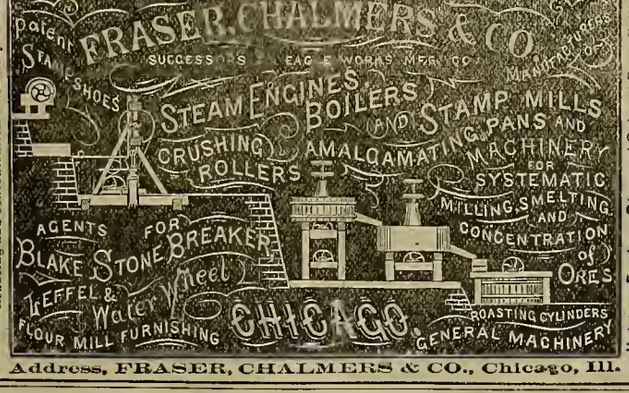

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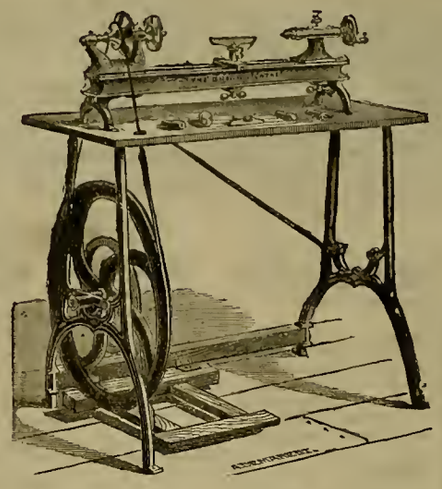

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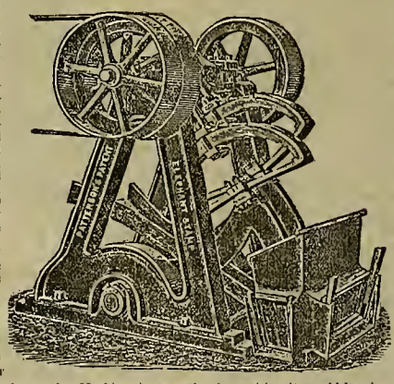

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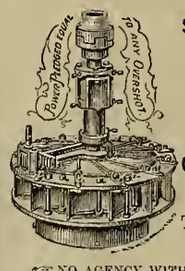

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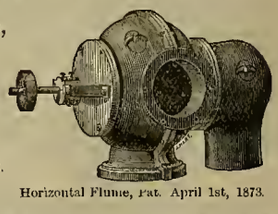

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MESSRS. DEWEY & CO.—*Dear Sirs*—My letters patent for car brake through your Agency has been duly received, for which please accept my many thanks. And allow me to say that your valuable advice so kindly tendered to inventors through your MINING AND SCIENTIFIC PRESS and circulars, together with the brevity and promptness of your action in securing letters patent to applicants, cannot be too highly endorsed. Again thanking you, I subscribe myself obedjently one among your many friends. Respectfully, H. H. GARRISON.

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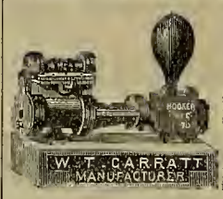

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Publishers.

SAN FRANCISCO, SATURDAY, SEPTEMBER 14, 1878.

VOLUME XXXVII Number 11.

Kitchen and Parlor Hardware.

Those who have cooked with "Dutch ovens" nnd old-fashionod stoves even, know how to appreciate Van's patent portablo French ranges, with their water-heaters, warm closets, etc., Second only to them come the Eureka and Family ranges, of which they have sixteen sizes, and other improved cooking apparatus.

These ranges, adapted as they are for wood or coal burning, aro cconomical in fuel, saving in time and labor, and dispense with the vexation of spirit that distresses the housewife when working with the old, red hot or stone-cold stove.

Something new is Van's pastry steam stove. The stove is surmounted hy hot water vessels, which generate the steam which is used for cooking vegetables, which is a great convenience, as they can he left in the vessels for hours after cooking, without detriment to flavor or quality. The oven is large, and can bo used for pies, cakes, etc. Waffle-irons and cake-griddle, fill np the space over the fire, and all cooking goes on at once without conflict or burning.

Van's new Ward carving-table is an achievement in culinary science. Furnished with planished tin soup-tureen, chafing dishes, water-pan and large and small dishes, covered, and two-burner gas pipe, meats can be carved and kept warm on it for any length of time. Heat can be supplied by steam, gas or coal oil stove, and it is altogether a handsome and convenient accessory to the kitchen of any hotel, restaurant or private house, and vastly superior to the old-fashioned cooking stoves so much in vogue heretofore. A steady, even heat *in* a range, not outside of it, is what is desirable, and Messrs. Montague & Co. never hand in any range that will not give this desideratum.

Van's coffee-urn is the result of study and experiment for years, and is an invaluable adjunct to the kitchen of every restaurant and hotel, and, indeed, is not out of place in large private establishments. It distills coffee, and keeps it n nll its aroma, strength and freshness, for twenty-four hours, and is therefore economical. Every known utensil of kitchen and dining-table, except knives, forks and spoons, can be made of this ware.

It is well known that many of the compounds used to line iron vessels for kitchen use are failures; but such a word inscribed upon any experiment, only serves to incite the Yankee inventor and chemist to fresh endeavor, and the granite iron-stone ware is the result. Of course, if you heat a cast-iron kettle red hot and plunge it into cold water, something will break, hut nny abuse short of this does not affect the granite iron-stone. Even had it no superiority, such as its resistance to aeids, etc., its beauty alone should render its sale immense.

Marbleized iron mantles excite at present considerable attention. They are worthy of it. For they combine with great cheapness, a beauty which is welcome about any fire-place. They are made of at least twenty patterns. The imitations of black walnut and laurel are said to be particularly beautiful.

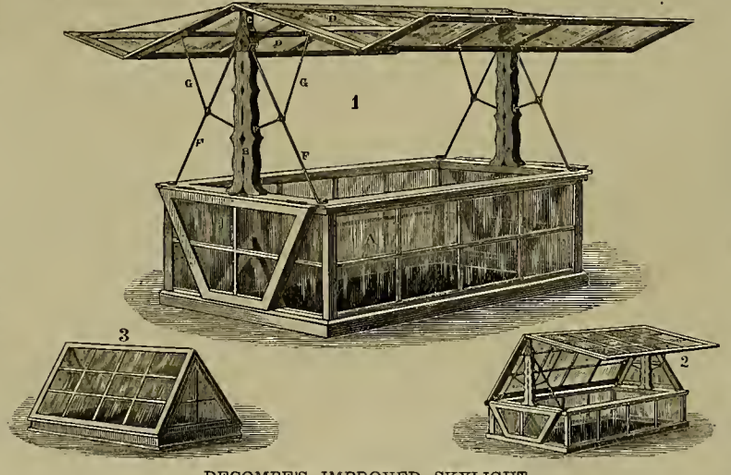
Messrs. Montague & Co. can supply any demand in the line of stoves, ranges, hardware, iron, steel, mining and milling supplies, etc., from their large establishment at the junction of Market and Bush streets in this city, and No. 52 to 58 J street, Sacramento.

Postal Changes.—Offices discontinued, Sargent, Santa Clara county, Cal. Postmasters appointed, John C. Flood, Alemo, Contra Costa county, Cal.; David L. Kent, Felton, Santa Cruz county, Cal.; Henry H. Sheldon, Sutro, Lyon county, Nev.; George Cruise, Bethel, Polk county, Oregon; John P. Roberts, Bonanza, Lake county, Oregon; John Hanks, Day's Creek, Douglass county, Oregon; J. W. Hanaker, Linkville, Lyon county, Oregon.

The Silver Peak mines, Esmeralda county, Nev., are working well and the mill running steadily. The clean-up for the three months ending August 31st, we are informed, showed a snving of 94% of hoth gold and silver contained in the rock. Proportion of silver to gold, ten to one. The bullion shipped during the month of August amounted to $16,451.90.

Decombe's Universal Ventilator, Sky-Light, and Exhibitor.

Joseph Decombe, of this city, who has recently patented through the Mining and Scientific Press Patent Agency an improved sky-light, which is represented in the engravings shown herewith. *It* represents the lower portion of the sky-light. The vertical end timbers, *B*, are extended upwards, as shown, and their upper ends are formed of metal, by the extension, *C*, heing formed with a socket, whieh fits over the ends of the timbers, *B*. Each side of the cover or top, *D*, is made with rafter and glass; but the rafters are fastened at top and bottom to horizontal timbers, which work each side of the top or roof separate and distinct from the main structure, these horizontal timhers not being secured to either plates or apex permauently. Through its upper iron portion, *C*, of the end timbers, *B*, are pivoted the holts, forming part of the hinges, attached to the



DECOMBE'S IMPROVED SKYLIGHT.

sides of the top. These hinges admit of the sides of top being raised or opened, as the lower edges of the rafters are not secured to the plates.

The side hraces, *F*, are secured to the plates of the lower portion and to the lower portion of the arm extension, *C*, of the uprights, thus forming hraces for the uprights and drawing the extension pieces, *C*, firmly into place, where they hold them. On these side braces, *F*, are pivoted the hinged braces, *G*, whieh, when not in use, hang down under the side braces, *F*. When the top is raised, however, these hinged braces, *G*, having their outer ends turned at right angles, as shown, engage with the holes in the plate on the under part of the sides of the roof, as shown in Fig. 1, and on one side of Fig. 2. The hinged hrace may then be put in any hole in the plate, so as to set the top at any angle. When it is desired to close the top by lifting this brace out of the holes in the plate, the top may be lowered and closed as shown in Fig. 3.

The gables are also hinged so as to be dropped down. When they are up, however, and the top dropped, the top covers the laps of the sides or gables and holds them in position as shown in Fig. 3.

It will be seen that the combination of braces in this at once renders it very strong, and that the roof can he set at any desired angle. The roof can be set so as to cause a draft of air to pass either one way or another. Only one side need to be raised, if desired, as shown in Fig. 3,

This same construction may be applied for portable houses, fruit and vegetable stands, etc. In such cases with a wooden or cloth roof, the side from the sun can be secured and the front be placed on the stand in the shade. The sides can bo dropped so as to be locked at night.

This invention serves the purpose not only of a sky-light, hut is adapted in a marked degree for use as an exhibitor and ventilator. Shelves may be arranged under the glass, on which any artiele may he placed for exhibition in public places. The roof may be lifted out of the way during the exhibit and afterward shut down and locked for safe keeping without disarranging the articles within. As a ventilator this iuvention claims advantages over all others. The different parts move independently, so that they may bc arranged in many different ways, according to the state of the weather. If the day is warm aud air is wanted in the house, even a light breeze can be made to descend and all of it used in cooling the apartments. Suppose, for instance, the breeze blows diagonally across the sky-light. It may be collected and sent down by arranging the parts as follows: Put up one end piece and shut down one roof piece, so that a corner will be formed, opened toward the wind. The wind rushing into this corner and against the inclined roof piece will be collected and shot vertically down into the house. It is evident thnt an infinite number of combinations are possible, according to the strength of the wind and the amount of air wanted below. On very hot and quiet days the full ventilating capacity of this invention can be utilized and at the same time the whole of the top covered, so that a full shade is obtained along with as much air as possible. Rain will not prevent ventilation, for the parts may be so fixed that openings will be presented only in such positions that the rain, coming from one direction only, cannot enter. So this patent provides for protection from rain and too great light, and at the same time affords most complete ventilation.

A Powerful, Economic Press.

The Boomer & Boschert cider press possesses many advantages which those interested in such matters can gather from the following description.

The grater is simply an iron cylinder slotted, or having plain grooves into whicb the knives are set, and adjustable steel springs press the apples against the swift revolving knives, so that they are pared down in shavings, as it were, instead of being crushed as with most grinding machines. Much more juice is obtainable with this process than with the old style of crushing, as nearly every cell in the fruit is broken, and the juice therefrom liberated and more easily expressed.

Turning, then, to the press, we find a machine whose power is only limited by its strength—not by the power applied, so to speak, for as the follower is run down in closer contact with the "cheese," the power increases in proportion to the resistance. The double screw and knee joint worked by the balance wheel at first, and by the lever pawl and racket as the resistance becomes greater, is the speediest and most powerful method of compression known except it be the hydraulic system. Two men on a small press can exert a pressure of 75 tons.

The principle of its working is such that as the resistance of the pulp becomes greater from its becoming solidified by pressure, the follower goes down more slowly, so that more turns of the screw are requisite for each niche of fall, and therefore the resistance and power continually equallize themselves. Fitted up with its cheese cloths and racks this cider press can hardly be equaled by anything in the market for its purposes. A. L. Fish & Co., who have it on sale, also show an exceedingly fine steam fire engine, that challenges the world for workmanship, beauty and power, and which has been awarded medals at the Philadelphia exhibition, Portland, Mobile and several other places.

This firm keep a large assortment of engines, Knowles' pumps, etc., on hand at their establishment on First street, and can supply any order entrusted to their hands.

Instructions Regarding Railroad Lands.

A circular of instructions has been issued by the Commissioner of the General Land Office under the recent decision of the Secretary of Interior in the Dadymott case, and is addressed to Registers and Receivers of United States District Land Offices. The Commissioner's instructions apply only to lands granted by the Act of July 1, 1862, as amended by the Act of July 2, 1864, and the Act of March 3, 1869, authorizing the transfer of a part of the grant to the Union Pacific Railway Company. Where any person shall apply to file a pre-emption declaratory statement for a tract or tracts not exceeding a quarter section within the limits of such grant, and when the entire roads shall have been completed for more than three years, such applicant will be required to show that he or she is duly qualified as pre-emptor. Thereupon the declaratory statement will be conditionally received, and a proper note thereof made. You will immediately thereafter call upon the proper officers of the railroad company for a statement showing whether the lands applied for bad been sold by it prior to the date of application to file a declaratory statement therefor. If the company shall report that the land had been sold, the report must show the date of such sale and the name of the person or persons to whom sold, and give a description of the deed or instrument of conveyance. On receipt of such report, you will reject the application to file a declaratory statement, subject to appeal to this office. If the company shall state that the land had not been so sold, you will admit the declaratory statement, and upon application showing at the proper time a full compliance with the requirements of the pre-emption laws, permit payment at entry at $1.25 per acre.

Following is a list of the companies whose grants are clearly under or subject to the terms of the Act of July 1st, 1862, with the date of the completion of each road, as appears from the records of the Department:

Union Pacific Railway—Completed July 15th, 1869.

Kansas Pacific Railway—Completed October 19th, 1872.

Union Pacific Central Branch—Completed January 20th, 1872.

Denver Pacific Railroad—Completed May 2nd, 1872.

Sioux City and Pacific Railroad—Completed March 2nd, 1869.

Central Pacific Railroad—Completed July 19th, 1869.

Western Pacific Railroad—Completed January 21st, 1870.

The State Government of the United States of Colombia gives 50,000 people four polling places and then fires on them if in the crowd and excitement there is any disturbance. The election goes for the government.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—Eds

Scenes in the High Sierra back of Yosemite.—No. 1.

[Written for the PRESS by J. G. LEMMON.]

Joy, wonder, exhaustion! I have just returned from a two weeks' exploration, alone, of the high Sierra back of Yosemite, 20 to 50 miles. The trip included the ascent of the world-famous Half-dome by means of a rope for the upper 900 feet, the lofty and never-before-surmounted Lyell group of peaks, and lastly, the culminating peak of this region, Mt. Dana. The exploration was a grand round of labor, exposure and pleasure. The striking views met with must accompany me through life.

Pinnacles of splintered rocks shooting skyward over 13,000 feet; vast amphitheaters scooped out of their bases by volcanic forces in the old ages, now half filled with perpetual snow, each mass resting upon a living glacier grinding its way down to limpid lakes at the present melting point, and carrying on its back scattered rocks as they fall away from the pinnacles in the never-ending process of disintegration; semi-circular moraines of these rocks arranged in curved parallels across canyons and valleys, for miles on miles, or waving lines of medial moraines threading the valleys, showing the dividing line between two glaciers; bright bands of sheen striping, forest-denuded mountain sides, showing where scoured the mighty ice masses in the old geologic æons, plowing the present Sierra valleys; noble forests of pine, fir and spruce, filling the worn, sheltered slopes, or strange, almost unrecognizable trees, sparsely fringing rock clefts of high spurs or depressed flat, to lichen-covered rocks by the ever-blowing winds of high passes; brilliant gardens of rare flowers studding sunny alpine slopes, or, more interesting still, new, undescribed flowers peeping from out bare terminal pinnacles upon these interesting objects; and on such as these, I have gazed enraptured, among them climbed bewildered, for a whole fortnight of red-letter days.

Of all the tourists and scientists in Yosemite I could get none to join me in the exploration I had planned. It was vain to pause regretting the absence of those who *would* accompany me had they been privileged to be here; so, packing my trusty and strong horse, "Stanley," with blankets, provisions, botanical papers and pick, I hastened away alone, taking the trail up the middle alcove of the Yosemite gallery, past the two grandest falls, Vernal and Nevada, to the upper Yosemite valley back of South Dome and Cloud's Rest. This upper valley would be a great wonder anywhere else, being walled and embossed with similar rocks and domes as the great Yosemite, but not so lofty. Its floor is clothed with a richer forest, owing to its greater elevation, 6,000 feet. The upper portion is fenced across by a high, strong fence of cedar rails, and contains some excellent meadows, the pasture grounds of Washburn & Bruce, the enterprising owners of the Mariposa Big Tree station. Between these valleys rise up three much visited and often portrayed objects: Cap of Liberty, Half-dome and Cloud's Rest. The first and last of these are easily climbed; but the Half-dome, an oblate, flattened mass of granite, protruding edgewise from the wooded mountain tops and split in twain logitudinally, has, until lately, defied all attempts at surmounting. But an ambitious, keen-eyed, cool-headed, sure-footed Scotch sailor named Anderson has compassed its ascent, and assisted by him a few daring spirits have climbed up the rope which he has fastened with iron pins driven into holes drilled into the rock, a most perilous and laborious work. He has prepared the material for a wooden stairway to the summit, but for some reason the completion of the enterprise is postponed.

It was by the merest accident that I ascended the famous throne of "Tis-sa-ack," the Half-dome, the cynosure of all eyes at Yosemite, and without doubt the most striking natural object yet discovered on our planet.

Leaving my baggage in camp at Little Yosemite valley, I started on the morning of August 14th up the trail leading to the base of the dome. When near the cabin of Anderson (of which I was ignorant at the time) my spirited horse, suddenly hurrying up a short steep, so shrunk in his body that the saddle girth slid back, causing him to take fright and to rear and plunge, finally landing me upon the rocks, badly spraining my back. For a few minutes I lay helpless, while "Stanley," still rearing and kicking, cleared himself of saddle, blanket, etc. With difficulty I rose, recovered horse and equipments, some of the latter sent hurling far down the slope. I resaddled the horse, mounted from a convenient, jutting rock, and rode on *up* the trail, determined at least to *see* the heroic achievement of Anderson.

In a few minutes a rude whip-saw mill, then a small log cabin came in sight. I rode up and hailed. A man came out, took in the situation at once by a glance at my pale face, lifted me off the horse and carried me into the cabin, where a herth of pine boughs and a cup of coffee soon began the work of restoration.

In a few minutes a fellow dariog spirit and coworker of Anderson's, Mr. J. B. Lamhert, came in, and at ouce he placed me right at home with rude but true and characteristic travelers' hospitality.

Learning that I was a botanist, Lamhert questioned me closely conceruing the trees of the vicinity, and urged a short walk among them, proffering his arm. By chance we wandered up the slope, talking about and studying the trees. Accideutally we fell into the trail, and at length reached the hare, steep dome that flanks "Tis-sa-ack" ou the east, aud is about one-third as high. Here I was exhausted and stopped to rest my broken back. While hewailing my condition, Lamhert proffered farther help, and getting down on hands and toes showed how Andersou climhed such rocks. I began painfully creeping along, aided hy a few fissures now and then in the smooth rock, for the first 100 feet. From thence the proper and perilous climhing commenced. Each hand and foot had to be carefully placed among the loose, dissolving granite resting on a surface elevated at an angle of ahout 60°. Slowly and with frequent halts the ascent was made of the attendant dome. From its top a close view of the giant wonder is giveu. But I could not he satisfied with only a sight of Anderson's rope running like a dark line from pin to pin until lost to sight over the crown. Lamhert kindly assisted me down across the saddle of rock hetween, and joyfully I handled and examined the lower end of the long 900 feet line. It is made of baling rope, 5 to 11 strands in number, one being knotted around the rest once in 10 to 14 inches for convenience of staying the hands from slipping.

My regret at being placed *hors de combat* just that morning, of all the 10 weeks almost constant riding from Santa Barbara to and about Yosemite, now became agony. I gatbered souvenirs of flowers and prepared to return, when a voice hailed us from over the east dome, and a man came stalkiug down the slope with a sure and easy tread that told the strength of his limhs and the resolution of his heart. He proved to he Mr. E. W. Baker, a cool headed carpeuter from Alameda, accustomed to walking on dizzy heights. Hastily inquiring he learned my state, but declared I must go up witb him if he had to carry me on his hack. Taking from a busb near by the rope that Anderson used for the purpose, ahout 15 feet long, he tied one end about his waist aud I placed the other about mine.

Promising to let me down from any point if my strength failed me, he grasped the rope and ran up nimbly as a cat, hand over hand, and I slowly followed. Raising the rope out from the rock causes your pressure against it witb nailed boots to be increased in the ratio of your lifting power. So firmly your feet cling to the glassy rock, and clink, clink, the iron nails ring out upon the air, keeping time with tbe regular reaching of the hands up, up, up!

Occasionally, clefts, in the rock afforded footbold enough for a moment's rest and a survey of the glorious scenery unveiling below. The great Yosemite from Mt. Watkins to Eagle Rock yawned on our right. The scarcely less interesting Little Yosemite, began to sbow its further domes over the forest on the south; before us diminished the attendant dome, from whose top the voice of Lamhert came cheerily: "You are doiug well!" "Ahout half-way up!" Later came the shout, "Three-fourths of the way!" My back seems to be separating in tbe region of the lumbar vertebra and pains shoot through the part keen as knife-thrusts, but I keep on grasping the rope with trembling, weakened fingers. "Only three pins more!" I gasp and feel an inclination to halt, and turn around giddily. "Depend more upon the little rope," Baker calls down, in a firm voice." "I can pull you up bodily." "Almost up!" shouts Lambert from the far depths. "One more pin!" Baker creeps up to it, sits down above it, and pulls me up over the cape stone. The perilous climb is done; the crown of "Tis-sa-ack," is reached, over 10,000 feet, nearly two miles above tbe level world! Rest followed, while the hearts throbbed and the eye wandered. O, what a glorious vision lies out-spread, of gorge and dome, turret and pinnacle!

Warm, forest-clothed valleys clasp the bases of cold snow-mantled peaks. Rivers rush cascading down precipices, their sources locked behind moraines as blue miniaturc lakes, the pools at the foot of melting glaciers. The air is cool and still, and unflecked in all the azure expanse save a few white cumuli in the far east, riding like vast argosies dangerously near the pinnacles of Lyell. How sweetly, softly, falls the noontide sunlight upon the deep, almost bottomless Yosemite! Scarcely you realize the valley is tbere. The dew and humidity of the atmosphere heclouds all below, in contrast with the clear ether of the upper depths that seemingly brings distant peaks to be close at hand. To see peaks you must climb peaks. What appears towering aud majestic to the observers of the valleys, is dwarfed to mole hills or lost entirely. Mt. Star King ou the south, Sentinel dome at the west, a nameless dome across the valley to the north, and Cloud's Rest at the east, all roundcd summits, seem brother formations with "Tis-sa-ack." Lower, hundreds of domes, embossing the granite plateau, tell where the glacial seas of old did effective work in crushing mountain summits, leaving their hardened knobs as records of their elevation and power.

Exploring the top of the half dome, we found it a convex, elliptical table of rock, depressed several feet near its center hy a cross valley, and extending ahout 100 rods in a direction nearly northeast and southwest. The uorth wall, seemingly so smooth and clean cut from below, is really notched and mucb diversified. On its outer point, the visor of "Tis-sa-ack's" crown, stands a flagpole of fir ahout 15 feet long, and eight iuches in diameter at its hase, upheld hy piled rocks. Though seldom registering myself in the usual places, I thought it proper to pencil my name here with the thirty or forty only others that have ventured up this fearful steep. We let fall stones from the cliff aud timed their arrival at the incline facing Mirror lake, 11 to 13 seconds according to character of plummet, whether light slate or heavy granite.

Southwest of the flagstaff ahout 10 rods is a fissure cleft through the crown of the dome, ahout one foot wide, concealed for most of its way by a sliding cap, the upper concentric layer of rock that overlies this dome like all tbe rest. We dropped pebhles into the exposed end of this fissure at the southwest, and heard them descending for 13 seconds. Takeu into consideration with other lesions, and splittings notably on the Cap of Liberty and elsewhere, there may he some ground for the helief of the Indian relics here that the sides of the Yosemite are destined to fall in and destroy the white man.

Only one tree has taken root on the summit. This stands near the edge at the western side of the ellipse and is ahout two feet thick at hase and 25 feet high, with the peculiar, many-branched, depressed limhs of the *Pinos monticola* found on such highths.

The flora of the dome is either dwarfed specimens of lesser elevations or small alpine species. I gathered characteristic specimens as souvenirs, and find that a few dozen speeies would comprise the list; principal of these are several species of *Eriogonum*, *Spiræa*, *Hieracium* and *Ivesia*, with the dwarfed form of tbe golden-cup oak *(Quercus chrysolepis)* that so puzzles our American authority for forest trees, Dr. Engelmann, of St. Louis. This was called a distinct species by Dr. Kellogg, of Sau Francisco, but on the various slopes ahout Yosemite and elsewhere in the Sierra, I have found specimens grading all the way from tbe tiny prostrate hush loaded with small, smooth-cupped acorns, to the tall, majestic tree hearing yellow, golden, dust-covered acorn-cups two inches across; and I quite agree with Dr. E. that the speecies included all the forms.

The descent of "Tis-sa-ack," by the small rope swinging almost vertically over the side, was scarcely less fearful though taking less time, and was performed by hacking down. Often the foot failed to find a resting place and you dangled in air until reaching over and heneath the concentric layers your iron boot-nails caught upon the inner rock. And thus slowly you drop down from the pinnacled horizon of myriads of of snowy crests to the misty and shadowry depths of the pathless forest, from the brightness of heaven to the gloom of earth, from "Tis-sa-ack's" crown to "Tis-sa-ack's" foot.

Milling of Auriferous Veinstone.

The following is abstracted from a paper read hy Mr. Melville Attwood, before the California State Geological Society, at a special meeting held August 1st.

It is now generally admitted, that all the gold of our California lodes, excepting that combined with tellurium, exists in a metallic state. The stamped veinstone issuing from our mills is associated with gold in four different states: 1st, free gold capable of concentration with water; 2d, laminated gold, easily carried off with water; 3d, gold mechanically mixed and enclosed in the coarser particles of pyritic matter, found associated with gold-hearing quartz, which particles require more complete pulverizing in order to liberate the gold; 4th, telluric gold.

Of the three modes of reducing veinstone, namely, crushing, stamping and grinding—the first by horizontal rollers and rock-breakers, the second by stamps, and the third by edge mills, pans, arastras and millstones—that of stamping will be found to be the most rapid and economical, particularly when the veinstoue requires to be reduced fine; so that in those mills where they use pans, it is a great mistake to allow the pans to do the work of the stamps.

The California stamping mills are considered the best of any in the world, doing a larger amount of duty, with less wear and tear, than those made elsewhere; but they are costly, all the iron used in their construction having to be imported—a large proportion coming from Great Britain, aud paying a heavy duty. This might be greatly lessened if the resources of this country were brought into use and the iron made here. Steel iron, vastly superior, much cheaper, and more suitahle for tbe construction of our mills, might he made from our large deposits of rich iron ore. In different parts of this State there are large deposits of the richest kind of iron ore (magnetite), out of which could he manufactured, direct from the ore, by the Catalan process, shoes, dies, tappets and cams, at a cost considerably less than what is paid for ordinary castings made of imported foreign iron. The iron, or rather semi-steel, made from the magnetite with charcoal by the Catalan process, has been used in the Brazilian stamping mills from their commencement. Its cost, delivered at their mills, is about four and a half cents per pound. It has two of the best properties of iron, namely, hardness and toughness. The cams made from it could hardly he broken, and, when worn, could he easily refaced; the shoes and dies would last out three or four cast iron ones, and, as the surfaces wear more evenly, they would reduce the rock finer and quicker than those made of cast iron.

In 1867, at my request, some 50 shoes, made of the hest Bessemer steel, were sent to one of the large Brazilian mills, and after a fair trial, the Brazilian millmen, I was told, pronounced in favor of the native iron. In order to illustrate the methods of which he treated, Mr. Attwood presented a number of speeimens, the first of which was veinstone from the Sumner mine, Kern river. It contained sphalerite (zinc hlende) arsenicaland, iron pyrites, and some small specks of galena. Besides the gold with the quartz, a large proportion was, he said, mechanically mixed and disseminated throughout the associated sulphide, hut in extremely fine condition, the grains heing smaller and lighter than those of the alluvial gold of the sea heach, or even the re-wash of the old river terraces hy the sea.

Ore like this specimen must he reduced to a powder, so fine that 90% of it would pass through a sieve having 10,000 holes to the square inch.

The loss of gold on treatment of such veinstone hy either of the milling modes in use in California, would, if the gold contents did not average more than ten dollars to the ton of veinstone, he at least 25%, the loss on treatment heing always greater in proportion to the poorness of the rock.

If the veinstone was rich enough to hear the extra expense of dry stamping and amalgamation in *wooden barrels* (iron barrels were tried, hut the results obtained by them were not satisfactory), the same as used at San Joao del Rey mine, Brazil, the loss on treatment would be less than five per cent.

The San Joao del Rey veinstone, when prepared for stamping, contains about 45% of pyritic matter. It is a remarkable fact, that the smallest speck of gold is rarely seen, previous to concentration, in any of tbe veinstone from this mine. The loss in gold by amalgamation of the concentrated pyritic matter (sulphurets) in wooden barrels is less than one per cent.

[In subsequent issues the remainder of this very practical and interesting paper will he published.]

How to Locate a Mineral Lode.

The Nevada City *Herald* extracts the following from the instructions of the Commissioner of the General Land Office. If parties wishing to claim their mineral discoveries would pay strict attention to these directions, they would he saved much expense in the courts and a great deal of trouble generally.

The claimant sbould, prior to recording his claim, unless the vein can be traced upon the surface, sink a shaft, or run a tunnel or drift, to a sufficient depth therein, to discover and develop a mineral-hearing vein, lode or crevice; should dctermine, if possible, the general course of such vein in each direction from the point of discovery, by which direction he will be governed in making his boundaries on the surface, and should give the course and distance as nearly as practicable from the discovery shaft on the claim, to some permanent, well-known point or objects, such, for instance, as stone monuments, blazed trees, the confluence of streams, points of intersection of well-known gulches, ravines or roads, prominent buttes, hills, etc., which may he in the immediate vicinity, and which will serve to perpetuate and fix the locus of the claim and render it susceptible of identification from the description thereof given in the record of locations in the district.

In addition to the foregoing data, the claimant shonld state the names of adjoining claims, or if none adjoin, the relative positions of the nearest claims; should drive a post or erect a monument of stones at each corner of his surface ground, and at the point of discovery or discovery shaft should fix a post, stake, or board, upon which should be designated the name of the lode, the name or names of the locators, the number of feet claimed, and in record, in addition to the foregoing description, should state whether the entire claim of 1,500 feet is taken on one side of the point of discovery, or whether it is partly upon one aud partly upou the other side thereof, and in the latter case, how many feet are claimed upon each side of such discovery point.

Within a reasonable time, say 20 days after the location shall have beeu marked on the ground, notice thereof, accurately describing the claim in the manner aforesaid, should be filed for record with the proper Recorder of the district, who will thereupon issue the usual certificate of locatiou.

CHANGES.—The Klamath Quartz M. Co. has filed a notice of a change of its priucipal place of business from Siskiyou to this city. The capital will be increased from $300,000 to $10,000,000. The Tellurium G. & S. M. Co. has given notice of increase of capital stock from $210,000 to $2,500,000, and from 2,100 shares to 25,000.

Mechanical Progress.

The Old Time Millwrights.

An English writer nf a book on mechanical progress pays the following passiug tribute to the old millwrights, whoso distinctivo occupation like Othello's, has now well nigh gone. It was very truly remarked that tho millwright nf former days was to a great extent the sole representative of the mechanical art, aud was looked upon as the authority in all the applications of wind and water, uuder whatever conditions they were to be used, as a motive power for the purposes of manufacture. He was the engineer of the district in which he lived—a kind of jack-of-all-trades—who could with equal facility work at the latho, tho auvil, or the carpenter's bonch. In country districts far removed from towns he had to exercise all these professions, and he thus gained the character of an iugeuious, roving, rollicking blade, able to turn his baud to anything. Ho wandered from mill to mill iu search of work, aud was everywhere recoguized as nn itiuerant engineor and mechanic of bigh reputatiou. He could handle tho axe, the hammer, and tho plane with equal skill and precision. He could turn, boro, or forge with the oase and dispatch of one brought up to thoso trades, aud he could set out and cut in the furrows of a millstouo with an accuracy equal nr superior to that of the miller himself. These varinus duties ho was called upon to exercise, and seldom in vain, as in tbe practico of his profession he bad mainly to depend upou his own resources. Generally bo was a fair arithmetician, know something of geometry, levelling, and mensuration, aud in some cases possessed a very competent knowledge of practical mathematics. He could calculate the volocities, strength, and power of macbines, could draw in plan and scetion, and could construct buildings, conduits, and water-courses in all the forms and under all tbe conditions required in his professional practice. He could build bridges, cut canals, and perform a variety of work now done by civil engineers.

The introduction of the steam-engino, nnd the rapidity with which it created new trades, proved a heavy blow to the distinctive position of the millwright, hy bringing into the field a new class of competitors in the shape of turners, fitters, machine makers, and mechanical engineers; and, notwithstanding the immense extension of the demand for millwork, aud the great stimulus which it afforded to the manufacturos of the country, it nevertbeless lowered the position of tho millwrigbt, and levelled it in a great degree with tbat of the ordiuary mechanic.

Tire Fastenings.—A new and valuable method of fastening tires, invented by Mr. Kaselowsky, a German engineer, has successfully stood the test of a series of experiments. A dovetailed groove is turned in tbe innor face of the tire, and a similar one iu the outside of tbe skeleton, so that, when the tire is slipped on, the two come opposite to each other and form a channel of dowel-shaped section going all round the wheel. Into this chanuel is run some easily-fusible metal (hy preference pure zinc), wbich, on cooling, makes a firm connection between the tire and wheel. In carrying out tbe operation the tire is only slightly heated, a sbrinkage of 1-1200 being found ample, and is then brought over the skeleton, wbicb is laid in a horizontal position, and forced upon it. The zinc is tben immediately run in througb holes cast in tbe skeleton, if of cast metal, or drilled in other cases; thus the zinc is at once prevented from cooling wbile being run in, and is compressed, and thus rendered much stronger by tbe subsequent contraction of the tire. That this mode of fastening, in addition to its simplicity and cheapness, offers full security, both against sideways shiftings and in case of breakage of the tire, has been proved by experiments made in the central workshops at Frankfort.

American Threshing Machines at Paris.—The American thresbing machines on exhibition at Paris are splendid specimens of workmanship, and they fairly astonish the elegant Parisians. The *Echo Agricole*, of Paris, speaks of them in the following complimentary terms: To see these tbreshing machines, constructed with perfect taste as to sbape, and with richness in tbe materials employed, true specimens of cabinet work and inlaying; these reapers and mowers, where all the metallic portions shine likc silver, one does not imagine himself in the midst of apparatus destined for work which is reputed vulgar, such as cutting the wheat or mowing the grass, hut in a store of enormous jewelry and among true works of art. Never, in any country, have been seen snch grace aud splendor. If by the magnificence of the machine we are to judge of the character of the workman, who would not be inclined to suppose the American farmer to be equally fine, walking the earth, not in blouse and wooden shoes, as with us, hut in full dress and with hands gloved?

A Car for Liquids.—There is shown at Paris a tank car for alcohol, wine, etc. It bas a cylindrical horizontal tank, with suitable connections, and a rotary pump serving to charge tbe tank, or, by reversing, to empty it.

The Manufacture of Cast Steel.

Hitherto cast-steel has been produced by the fusion of converted steel in pots or crucibles with or without the admixture of other ingredients; but, according to the *London Mining Journal*, Mr. W. H. Nevill, nf Ferryside, Carmarthon, has discovered that by reversing the usual order in which the processes of conversion and fusion are carried on—that is, by recarbonizing fused metal—he obtains a high quality of steel at a considerably reduced cost. In carrying his invention into effect he takes metal that has been made hy the ordinary Siemens or Bessemor processes, aud after tho necessary forging and rolling, or either of these separately, and after having brougbt the metal into the required size and form, he submits it to a recarbonizing process in closed vessels, or as nearly so as he is able to obtain them. Theso vessels may be nf cast or wrought iron, or fire-clay, nr nther material capable nf resisting the requisite heat, and the carbonizing materials may bo ordinary substances used in the cementing process as nt present carried on. He prefers, however, to carry on the operation in wrought iron vessels, about five-eighths or three-fourths of an inch thick, and of such a form as will best suit the purpose for which the steel is intended. He has used them from three to five feet in length, and from six to ten inches square, but he does not confine himself to these dimensions. The covers are made to project beyond the sides of the box, so as to admit of their being firmly fixed with keys, or wedges, or other suitable means, and the interstices afterwards filled with wet clay or other suitable material, rammed in tightly. The process may be carried on in an ordinary reverberatory or gas furnace, aud will require such a time and degree of beat as the purpose for which the steel is wanted may render necessary.

Compressed Fuel at the Exposition.

Foreign roports bring items concerning the progress in the manufacture of compressed fuel, as sbown by the exbibits at tbe Paris Exposition. A very powerful and apparently effective macbine for making "briquettes," or blocks of compressed fuel dust, is shown by tho Foyers et Chantiers de la Mediterranee, of Havre. Tbis apparatus is double, there being two vertical steam cylinders, whose pistons produce a pressure in a hydraulic cylinder below. This pressure is communicated to two otber hydraulic cylinders, one under one side of each of two horizontal intermittently rotating mold tables, in the line of the molds. The molds are filled from a mixer-hopper between the steam-cylinders, and pass under a strong iron plate over the side bydraulic cylinders, receiving upward hydraulic pressure. Tbe steam cylinders are single acting, the piston being witbdrawn by very small vertical cyliuders, placed above the main cylinders. Each rotating table bears 12 molds of a size sufficient to make a five-kilogram block. The pressure given is 300 kilograms per square centimeter. Tbe capacity of the machine is 320,000 kilograms in 24 hours.

The Societe Generale de Chauffage, Paris, shows some square flat briquettes, each pierced witb four holes to facilitate burning, aud state that the machine making them makes 24 briquettes at each stroke of tbe piston, making five strokes per minute, corresponding to 120 per minute, or 7,200 per bour, rather a bigh claim for a machine stated to consume but four-borse power.

Large Belts.—We read that, at the Paris Exposition, some fine main driving helts, made after Sampson's patent, are shown hy Mr. Edwards, of Manchester, England. There is one double helt, 207 feet long, 63 inches wide, which weighs 2,962 lbs., and is made to transmit 600 indicated horse-power. Another is 184 feet long, 53 inches wide, whilst a third is 163 feet long, and 63 inches wide. These two latter weigh together 4,378 lbs., are without cross-joints from end to end, and are intended for a large cotton mill, to drive direct a flywheel 30 feet in diameter, and 10 feet 3 inches on the face. The combined horse-power they are made to transmit is 1,000.

A Painting Machine.—An English firm shows at tbe Paris Exposition a novelty in the form of "Roberts' self-acting painting machine," which will paint or varnish, without steam power, the window-blind latbs of the figures given being 60,000 running feet per hour. The flywheel spindle of tbis machine carries a pair of bucket grooved wbeels, which in their rotation dip into a well or reservoir of the paint or varnish to be used, and then discharge the pigment on the lath inserted between small rollers. Equality of distribution is provided for hy means of stationary brushes. Hoop iron intended for packing purposes, or bedsteads, can he treated in the same manner.

A Steam Tricycle.—In one of the railway material annexes at Paris is a steam tricycle, having the boiler under tbe rider's seat, tbe hind wheels being driven by a cord from tbe crauk-shaft pulley. The engine is a tiny cylinder, inclined about 45°. The position of the boilcr, which, by the way, is of a ratber complicated and inexplicable type, commends itself for winter use.

Scientific Progress.

Ants and the Larvæ of Lycæna Pseudargiolus.

The behavior of ants toward aphides, from which they obtain supplies of a secretiou which is quite to their tasto, has long been a matter of observation. It is now announced tbat ants have a way of cherishing the larvæ of the butterfly *(Lycæna Pseudargiolus)* for tbe tasteful matters which it oxudes. In tbe last issue of the *Canadian Entomologist* there is a description of nbservations of this kiud by W. H. Edwards, of Virginia, from which we quote as follows: "The ants, when discovered on n stem, will invariably be on or near the larvæ. They run over the body, caressing with antennæ, plainly with the object of persuading the larvæ to emit a drop of the fluid on the eleventh segment. Most of this caressiug is doue about the anterior segments, and while the ants are so employed, or rather while they are absent from the last segments, the tubes of the twelfth segment are almost certainly expanded to full extent, and so remain, witb no retracting or throbbing, until the ants come tumbling along in great excitement, and put either foot or antennæ directly on or close by tho tubes, wben tbese are instantly withdrawn. Tho ants pay no heed to tbe tubes, do not put their mouths to them or to the openings from which tbey spring, nor do they manipulnte that segment. They seek for nothing and expect notbing from it. But they do at onco turn to the eleventh, caress the back of the segment, put their moutbs to the opening and exhibit an eager desire and expectancy. By holding the glass steady on the eleventh, a movement of the back of this segment will soon he apparent, and suddenly there protrudes a dull green, fleshy, mamilloid organ, from tbe top of which comes a tiny drop of clear green fluid. This the ants drink greedily, two or tbree of them perhaps standing about it, and tbey lick off tbe last trace of it, stroking the segment meantime. As the drop disappears this organ sinks in at the apex and is so withdrawn. The ants then run about, some seeking otber larvæ on tbe same stem, some with no definite object, but presently all return and the caressings go on as before. The intervals between the appearance of the globule varied with the condition of the larvæ. If exhausted by the long continued solicitings, some minutes would elapse, and the tubes meanwhile remained concealed; but a fresh larvæ required little or no urging, and one globule followed another rapidly, sometimes even without a retracting of the organ. I have counted six emissions in 75 seconds. Tbe larvæ did not always await the approach to the eleventh segment, but gave out the drop unsought and as soon as it was aware of the presence of tbe ant. Now and then the drop was preceded by a bubble several times larger than itself."

The Formation of Quartz.—A San Francisco engineer and metallurgist, J. Mosheimer, writes to the London *Mining Journal* as follows: A further proof of tbe formation of quartz from aqueous solutions has presented itself in a steam boiler in use in one of the Nevada mines. A boiler of four feet in diameter and provided with five flues, had been in use for some years, but little attention had been paid to cleaning it, or hlowing it off, as it is called, and a sediment accumulated until it reacbed the first two flues. The whole of the interior was heavily incrustated, and as it conducted too little heat tbe boiler had to he replaced by a new one. After cutting the former to pieces my informant, Mr. E. Watkins, M. E., found a heavy incrustation all around the inside. At the bottom of the boiler a soft sediment was found, which was overlaid by anotber hard crust. The flues were incrusted on top with silicato of lime, and had at the bottom a coating of solid transparent crystals of quartz; tbe crystals were of rhomhoidal shape, about one-half incb in length, and as perfect as any other natural quartz crystals. Tbe formation of quartz crystals of considerable size in boiling water in but a few years leads me to the belief tbat the large quantities of granulated quartz which were found in early days in the burning Moscow mine, on the Comstock lode, were of tbe same origin. As quartz can be decomposed and made soluble hy the action of steam in combination with an alkali, and then used as soluble silicate, it establishes in itself the theory of its formation from aqueous solutions.

In St. Gothard.—A singular depression has been lately noticed in the strata which are traversed by tbe St. Gothard Tunnel. Some geologists think tbat it indicates a subterranean sea in the interior of the mountain. A late report of the inspector of tbe works asserts tbat the irregularity has ceased, and tbe perforation bas resumed its regular course. On the southern side there is an advance of three metres per day. It is a little less at tbe northern extremity, where the tunnel has not yet emerged from the serpentine, although it has traversed tbat hard rock for double the distance that the geologists anticipated.

The Realm of Mathematics.

The opening address of tbe last meeting of the British Association for the Advaucement of Science was delivered hy Mr. W. Spottiswoode, and his theme was the science of mathematics. The following are his concluding remarks:

Conterminous with space and coeval with time is the kingdom nf mathematics; within this range her dominion is supreme; otherwise than according to her order nothing can exist; in contradiction to ber laws notbing takes place. On ber mysterious scroll is to be found written for those who can read it that which bas been, that which is, and that whicb is to come. Everything material which is tbe subject of knowledge has number, order, or position; and these are her first outlines for a sketch of the universe. If our more feeble hands cannot follow out the details, still her part bas been drawn with an unerring pen, and her work cannot be gainsaid. So wide is the range of mathomatical science, so indefinitely may it extend beyond our actual powers of manipulation, tbat at some moments we are inclined to fall down with even more than reverence before her majestic presence. But so strictly limited are all ber promises and powers, about so much that we might wisb to know does she offer no information whatever, tbat at nther moments we are fain to call ber results but a vain thing, and to reject them as a stone when we had asked for bread. If one aspect of the subject encourages our bopes, so does the other tend to chasten our desires; and be is perbaps the wisest, and in the long run the happiest among bis fellows, who has learnt not only this science, but also the larger lesson which it indirectly teacbes, namely, to temper our aspirations to that which is possible, to moderate our desires to that which is attainable, to restrict our hopes to that of wb'ch accomplisbment, if not immediately practicable, is at least distinctly within the range of conception. That which is at present beyond our ken, may, at some period and in some manner as yet unknown to us, fall within our grasp; but onr science teaches us, while ever yearning with Goetbe for "Light, more light," to concentrate our attention upon that of which our powers are capahle, and contentedly to leave for future experience the solution of problems to which we can at present say neither yea or nay.

In proportion as method is better than impulse, deliberate purpose than erratic action, the clear glow of sunshine than irregular reflection, and definite utterances tban an uncertain sound; in proportion as knowledge is hetter than surmise, proof than opinion; in that proportiou will the matbematician value a discrimination between tbe certain and tbe nncertain, and a just estimate of the issues whicb depend upon one motive power or the otber. While on the other hand he accords to his neighbors full liberty to regard the nnknown in whatever way they are led by the noblest powers that they possess; so on the otber he claims an equal right to draw a clear line of demarcation between that which is a matter of knowledge, and tbat whicb is at all events something else, and to treat the one category as fairly claiming our assent, the other as open to furtber evidence. And yet, wben be sees around him tbose whose aspirations are so fair, wbose impulses so strong, whose receptive faculties so sensitive, as to give objective reality to what is often but a reflex from themselves, or a projected image of their own experience, he will be willing to admit that there are influences which be cannot as yet either fatbom or measure, hut wbose operation be must recognize among the facts of our existence.

The Character of Recent Arctic Researches.—It seems that the Englisb are coming to doubt whetber, after all, the Arctic researches are wortb wbat tbey cost. At tbe last meeting of the British Association for the Advancement of Science, Sir C. W. Thomson read a paper in which be rejoiced in the scientific character of all recent explorations, and alluded to the question of a Polar sea, tbe search for which he considered hardly worth tbe cost. It should be carried out, if at all, by permanent stations on tbe principle recommended by Lieutenant Weyprecbt, or hy pushing forward during the Arctic winter, establighing refuge huts at enormous expense. He spoke of the one ocean flowing northwards, of which the other water spaces were but gulfs, and in the abyssal depths sounded by the *Challenger* expedition there were found sharks' teeth of an extinct species. It appears, he said, now to be a generally received opinion among geologists tbat "massive" eruptions wbich originated tbe mountain chains which form tbe skeleton of our present continents and the depressions occupied hy our present seas date from the secular cooling and contraction of the crust of the earth from a period much more remote than the deposition of the earliest of the fossiliferous rocks. If this view be correct, it is quite possihle that until comparatively recent times no part of tbe ocean was sufficiently deep for tbe formation of a characteristic abyssal deposit. He proceeded to refer further to the Antarctic icebergs, accounting for tbeir uniform hight, and considered tbe Antarctic low-lying continent bordered by an ice cliff 230 feet in hight, the top universally covered witb a layer of the whitest snow, the upper part of the cliff being pale blue, deepening at the base.

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

CALIFORNIA.

AMADOR.

KEYSTONE.—*Ledger*, Sept. 7: No sinking has been done on this mine for three years, nor will any he necessary for at least two years to come. Forty stamps crush 100 tons per day, yet little impression is mads on the vein. The yield of the last run was hatter than for eight or nine months past. The lowest level is 815 feet from the surface.

ITEMS.—The Gover ore, for some months past poor, is now of a superior character. What appears to he a large hody of quartz has been discovered outside the boundaries of the Ksnnsdy mine. Sinking progresses at ths Oneida mine. At the Moore mine the whols ledge is in paying ore, some of the quartz assays as high as $120, and enough rock is in sight to occupy a 10-stamp mill for a year. Ths Talisman is crushing Tucker Hill, Sutter Creek, ore. Noticsahle activity is reported at the Ione Coal Co.'s Carhondale mine. The quartz mills and mines using Amador Canal Co. water are in full running order.

CALAVERAS.

BONANZA.—*Chronicle*, Sept. 7: Moser & Co., proprietors of the Big Bonanza hydraulic on Tunnel Ridge, have cleaned up and closed their season. The mine paid well to the last. Less than two months netted over $2,000.

ITEMS.—Veith, of the Mammoth, Tunnel Ridge, has cleaned up and suspended. His season has been good. J. J. Holmes, of the San Joaquin mine, Mosquito, has at last cut the ledge, and is mining rich ore. A new 20-stamp mill is in prospect for the Wallace & Ferguson mine, at Sheep Ranch. Garland's mill is at work on quartz from John the Butcher mine. At Haskins & Hadler's Champion mine, West Point, work is active. Carlton's mill is at work on the ore. Porteous & Co. are husily working their mill on their Bummerville ore. The Banncr mine, at Mosquito Gulch, is freed from water, and sinking has commenced. Some Beardsley ore, worked at Harris' mill, paid $100 per ton. A tunnel to tap the ledge at a greater depth is being run. After considerable expenditure of capital and patience, Mr. Chavanne has struck good ore in his mine at Sheep Ranch. Hoey & Sliter gravel will average $1 per carload.

FRESNO.

SILVER.—*Expositor*, Sept. 5: W. P. Litten brought into this office a number of fine looking specimens of silver ore, taken from a depth of 50 feet in the Fresno G. & S. M. Co.'s mine in the Oro Fino district. The rock is very rich in silver, and the prospects are that the mine will be as rich in silver as it has been in gold. Gen. La Grange, former Superintendent of the U. S. Mint was present when the strike was made, and he pronounced the prospect a superior one, equal to the best ore from the Comstock. The metal-hearing quartz veins of this county all seem to carry silver, and as depth is obtained the silver predominates. The find in the Oro Fino mines seems to prove that the quartz veins of Fresno county are really silver lodes, and, as we stated last week, a continuation of the silver lodes of Inyo and Mono counties. The existence of gold in the surface rock is no drawback to this theory, as it is well known that the Comstock mines were originally worked for gold, and that the ores from the leading mines are very rich in gold.

INYO.

LAKE DISTRICT.—*Independent*, Aug. 31st: Paul Bennett reports about 200 people located in the district and the outlook for the locality generally most encouraging. The Alpha tunnel, at the distance of over 225 feet, is fairly into the ledge. From the face of the tunnel heading Mr. Bennett broke a piece of ore which he brought to Mr. Curt. Ober, at Big Pine, for assay. The result of two assays gave the highly flattering yield of $259.10, of which $25.11 was in gold. Mr. Bennett considers this, at near as may be, a fair average for the full face of the ore streak, which is no less than five feet in width. The mammoth mill will hs ready for operations some time in October. The Mammoth ledge is said to be very large, but of ore of a grade so low as to raise a question as to successful running of the mine.

INSPECTION.—A San Francisco party consisting of John Neate, President, and Fred Homer, one of the Directors of the Independence M. Co., accompanied by Captain H. Williams, will thoroughly examiue the mines of Kearsage. They may go back so far as Cerro Gordo and take a look at properties there and then go northward, taking in Benton, Lake and Bodie.

SILVER SPROUT.—The Rex Montis company have a force at work upon the old Silver Sprout mine. Quite a quantity of good ore is now on the dump, besides some five or six tons that have been packed down to the mill.

MARIPOSA.

MARTIN AND WALLING.—*Gazette*, Sept. 7: Douglass and Stevenson have purchased this mine, and have done considerable work at pumping, running levels and taking out ore. They have struck two good paying chutes. A mill is in contemplation. This mine was once a flourishing one and good management will revive it.

HASLOE MINE.—This is the old Samuel Funk mine. Since the death of its discoverer, whose name it bors, the mins has passed through several hands. Under the management of the Hasloe company, it did not succeed, hut the suspension of this company was not, it is thought, any fault of the mine itself. Capt. 1. Beck and Wm. Ncil, said to he experienced miners, have now honded the property for a year, and the old miue is to have a fair trial.

SCANLAN MINE.—Mr. Thomas is still expecting an ore chute. Thc improvements at this mine consist of a 10-stamp mill, run hy water power; the water lasts during eight months of the year, and is utilized hy a new turbine wheel; there are also three improved concentrators, pan and settler, and two improved ore feeders, all of which are new and in complete order.

MONO.

BODIE DISTRICT.—*Standard*, Sept. 4: Taks the whole mineral helt, from the Blackhawk on the north to the Sigourney on the south, and work is being advanced as never before since ths camp was struck. The vein in the Blackhawk is much wider and considerahly improved in quality. The new hoisting works for the Summit, Bodie and Champion mines are now on the ground, and those ordered for the Richer, South Bulwer, Old Dan, May Belle and Concordia will reach here in a few days. The hoisting works for the Champion are completed and have heen in first-class runuing order for the past week, and the shaft will now he driven down as rapidly as possible. The South Bulwer, recently incorporated, is showing up a very pretty two and one-half foot ledge, which is improving in quality, and from its location, heing south of the Bulwer and Belvidere, and only a short distance from the Bodie, makes it a valuable claim. It is thought that another ledge will soon be cut in the bottom of the shaft, as the formation is of the most favorable kind. J. M. Dawley and John C. Turner paid for this mine $20,000 in cash, hesides considerable stock, and in one hour after the purchase, $40,000 could not have hought the mine.

BODIE MINE.—Good progress is being made in sinking the new shaft, now down 50 feet; also the sinking of the Brice and Burgess winzes, the former of which is in very high-grade ore. The mill still turns out an immense amount of bullion. From July 31st to August 31st the 1,050 tons of ore crushed yielded $601,-103.87.

STANDARD.—The slowly sinking shaft is now 672 feet deep. No increase of water. North drift of 300 level now in 393 feet and steadily advancing. Ledge three feet wide and of good ore. The same is true of the ledge in the 450 level, south drift, upraise.

SIGOURNEY.—The main tunnel is in 142 feet. The ledge in the face is three and one-half feet wide, and of excellent ore. The north drift, in about 20 feet, shows a good ledge all the way. The south drift, 16 feet, also follows the ledge. Two shifts are at work and good progress is made.

RED CLOUD CON.—Work has progressed in both the north and south drifts, with marked improvement in the latter. The east crosscut is also being pushed forward.

OLD DAN.—Superintendent Singletary has commenced a new shaft on this mine, and will push it down as rapidly as circumstances will admit.

NORTH AMERICA.—Before crosscutting, the shaft will go 50 feet. At 25 feet a two-foot ledge was struck.

MARY ANN.—The shaft is down 35 feet. The ledge, though not very large, assays well, and promises to widen.

OTHER MINES.—Less than three days' work on the Muldoon has already developed strata of rotten quartz. On September the 4th, the ground was broken for the Mono shaft. Geo. Daly is Superintendent. Work commenced on the Mountain Belle September 2d. The Golden Star shaft at a depth of only 14 feet uncovered an eight-inch ledge. The shaft is down 30 fect on Horace Pullen's South Pacific. The Charter Oak shaft is down 18 feet. In the Hibernia shaft, down 15 feet, a good ledge formation has been struck. The True Business shaft, down 53 feet, has an 18-inch ledge. At 20 feet a small ledge is appeariog in the Enterprise shaft. The Apollo shaft, 23 feet, has a 10-inch ledge. The Acme shaft is down 40 feet. The Wide-awake, Richmond and Chieftain have been bonded to San Francisco parties.

SOUTH END.—Herctofore there has been so little work done that it was really impossible to say whether the claims would improve on attaining depth, but the bottom of the Richer shaft shows conclusively that the further they are sunk the larger and better the ore. Quite a number of mines have recently been bonded on Queen Bee Hill and a little further beyond; among them the Enright Nos. 1 and 2, Gold Fish, and others. These claims have all been sufficiently prospected to prove that the ledges will yield good paying ore, and ere long there will he several mills erected in the canyon.

NEVADA.

CANADA HILL.—*Transcript*, Aug. 9th: The claim owned hy W. H. Martin, S. Harper and John Richards, is thought to be very valuable. The company have a ditch a mile in length and a good water privilege from Little Deer creek. The average depth of the gravel is about eight feet, and in places it is from 10 to 12 feet. This is believed, and with good reason too, to be on the far-famed Blue channel, running through Nevada, Sierra and Plumas counties. During the summer the owners busy themselves prospecting their quartz ledge. Thus far the rock extracted has yielded, on the average, $6 and sometimes as high as $7 per ton. The nsw tunnel is now in 70 feet, and within a foot or so of one of the old tunnels, from the other side of the hill, where in times past the ore has paid from $15 to $30 a ton.

ITEMS.—Messrs. Campbell, Chadwick, Storey and Beck, owners of the Sailor Flat at Blus Tent, have purchased an adjoining property, which they are preparing to work. Hopeful news comes of the Murchie. Superintendent Nickels, of the Planet mine, near Lowell hill, thinks that the tunnel, now in 1,260 feet, will soon reach the gravel channel. Conlan's mine, on Oshorn hill, is thought to he a good property by its owner, who works quietly at it. The final Centennial clean-up, of 94 loads, amounted to $9,096. Cowger & Co.'s mine is the only one in operation at Snow Point. Nine men have worked for a while on a small portion of it. Their clean-up at the end of August netted $3,400 out of $5,700. The American mine has struck very rich gravel. The Stone Ridge mining company are nearly ready to commence. Three tons of New York Hill sulphurets, workcd by Edmond & Co., yielded $1,070. The Alaska has a good ledge, varying in width from eight inches to two fest. The last month averaged $15 per ton. McDonald & Ford ore, 20 loads, crushed at Allison Ranch mill, may average $120 per load. Jones & Sons continue to extract the peculiar Black Lead ore. E. F. Morse & Co., leasing the Ben Frauklin, expect a ledge in a few weeks. John Ford and others, leasing the Judd & Casey, are taking out fine quartz, showing gold and galena. The Lafayette has on the dump six loads of quartz, appraised at about $64 per load. The Idaho mine yielded during August $50,000. It has paid its 109th dividend.

PLACER.

DAMASCUS.—*Herald*, Sept. 7: The Boh Lewis claim is owned by Robt. Lewis, O. Griffith and Fagan & Thomas. Their channel is rich, but the gravel is so firmly cemented that it is impossible to save the gold by the ordinary washing process. A 10-stamp mill which they put up some years ago cannot be used economically, so the old process must be adhered to. After the gravel has heen washed three or four times, its tailings yield to parties helow this claim, $5 to $6 per day to the man. The main tunnel is now in some 900 feet. The formation has remained pretty much the same since the tunuel passed the grass roots, where gold was first found.

MOUNTAIN GATE.—This claim, now in thousands of feet, has never ceased to pay. The company works about 30 men. Preparations are heing made to run the cars with mules. The gravel in the main channel is entirely of quartz formation, like Hidden Treasure gravel. Lately, however, a small but very rich blue gravel lead has been struck, which, it is hoped, indicates the proximity of a vast hlue channel running through the ridge.

GIANT GAP.—This claim is located on the North Fork side of the ridge, a few miles above Iowa hill. The company, composed mostly of Eastern capitalists, have put up heavy machinery and are running an incline into the ridge hetween Indian canyon and the North Fork, with the view of tapping the main channel.

DANETOWN.—J. C. Croshy, on the Thirty-One ledge, has sunk a shaft and put up hoisting works and engine. The ledge is good and is easily worked. A quartz mill near by is working on the ore, but the results of no clean-up are at hand. Chase & Cartwright, a few hundred feet north of Crosby, are sinking for gravel.

KELSEY.—Work on the Gold Deposit progresses rapidly. Work on the extension will soon commence. A tunnel has been run 80 feet parallel to the lode. Cutting to the ore is now proposed. Bell, east of the Lyonsdale mill, and Miller, on the General Grant, are said to he getting good prospects. The Estrella mine will soon commence working. Lack of capital has prevented the more rapid development of this mine. Until machinery was needed the mine did well.

SIERRA.

ORIENTAL.—A rich pocket has just been struck. Septemher 3d the strike was reported. September 5th the assays gave over $6,000 per ton. Some years ago a pocket in this mine yielded the owners over $40,000.

ITEMS.—Dave Stewart has had another assay of rock taken from the prospect hole near the Downieville slaughter house. The sample gave $229 gold and a trace of silver; another $3,100 gold and $1,400 silver. The Phenix quartz mine, near Sierra City, has been honded to Eastern capitalists, *i. e.*, the Downieville *Messenger* has authority for such announcement. At the Pliocene an excavation is being made in the walls at the hottom to stop the water. From this tank the water will he pumped to the surface, a distance of 170 feet. Water has suspended work on the Savage.

SISKIYOU.

THE COAL MINE.—Yreka *Union*, Aug. 31: Richardson's coal has been tested in the foundry of Lawton & Skinner. The results were not quite satisfactory, hut the foundrymen think with proper mauagement the coal can he used for their purposes. As Richardson and his four men proceed on the ledge it improves in quantity and quality. It is thought tobe very similar to Seattle coal. Some quantity will be taken out and tried for domestic purposes this winter.

PACIFIC LEDGE.—The quartz ledge which was found in the bedrock in the drift of the Pacific M. Co. has been traced on each side of the river, and located hy the company. Assay of a weather-heaten piecs gave traces only of gold. The company is now drifting with a view to hreasting out. They have sent a ton to the Cornish & Co. mill. The gold taken out is getting coarser, an indication, it is thought, that the Humhug channel is near.

LONG GULCH.—Hughes, Brown & Co. realized from 26 days' work on Long gulch, near Hawkinsville, 9½ ounces and one dollar. The claim was opened this spring. It is worked by drifting. The dirt is accumulated by wheelbarrows until sufficient is piled to make a washing.

ITEMS.—The Lucky Baldwin is started again. Pumping progresses. The company will sink a shaft to hedrock. The Empire mill runs well. The water used is from the Klamath. This admits of coutinuous work the year round. At Oak Bar, F. Khols & Co. expect soon to reach. pay. The Portuguese company ran through pay and did not realize well. The Lawlor & Mott claim pays well. Kittlswood & Co. are among the expectant; no pay yet.

TRINITY.

COFFEE CREEK.—*Journal*, Sept. 7th: The Nash D. G. M. Co. has located some valuable mining land near the head of Coffee Creek, in the vicinity of Union Lake, and have done considerahle work towards its development. At the present nothing is being done in their mines, owing to a protest having been filed in the Land Office in Shasta to their applicatiou for a patent. When this is decided the company will resume operations.

Mr. T. H. Blythe, of San Francisco, has eight men at work on his Coffee Creek ditch, who have been at it since the 15th of May. Should prospects warrant it, it is probable Mr. Blythe will crowd his ditcb to completion another season.

E. R. Smith & Co., on Morrison Gulch, and Pete Tinkham & Co., near the mouth of the creek, have done well this season. John Dack & Co. are at work on the East Fork of Coffee Creek, with encouraging prospects.

ALTOONA.—The Altoona Quartz mining company is making money and has good prospects. They employ about 30 men. The yield last month was 336 flasks.

ITEMS.—Shipments of gold dust from this county have been larger the past two months than ever before known. The Bullychoop and Occidental company have plenty of ore in sight of good grade. They are running one arastra, of which Tom Baker has charge. P. P. Black & Co., on Canyon creek, lately made a satisfactory clean-up.

NEVADA.

WASHOE DISTRICT.

SIERRA NEVADA.—Gold Hill *News*, Sept. 11: The 600 east drift from main south drift on 1700 level progresses rapidly. Bottom in easily worked porphyry. Main south incline bottom during first part of week skimming over quartz and cutting occasional spots of ore. September 10th course of ore vein changed so as to cover size of incline, ore assaying as high as $300 to $800. The incline is four feet from the 2200 level. At the junction a working station will be opened and the width of the ore vein determined. At present it looks as if the entire size of the incline will he in ore by the time the 2200 level is reached. Enlarging shaft for douhle track progresses. The new machinery works well. The air upraise to the 1500 level makes good progress.

CALIFORNIA.—Yield for past week over 200 tons. The 1750 stopes yield good ore. On 1650 level the sill floor north from crosscut 4 in good ore. The face of the main north drift on same level in good ore. Winze started to prospect the vein helow the 1750 level. The south drift from the 1900 station of the Ophir winze to connect with the 2050 station of the C. & C. shaft progresses. The C. & C. shaft is 28 feet helow the 2050 station. The Con. shaft repairs make good headway. The heat in the lower levels is great. The water in the C. & C. shaft is strong.

OPHIR.—Progress good everywhere. A north drift from the 2000 level will soon start to open up new and promising ground.

NORTH CON. VIRGINIA.—A new drift started from the Union Con. will soon improve the ventilation of this mine and that of the Uniou Con., Mexican and North Ophir.

JULIA CON.—Assays light but prospects good. The main south drift on 2000 level is entering what appears to he a fine quartz vein, giving traces of gold and silver.

VARIOUS MINES.—Indications of a rich ore hody in the Con. Dorado. Good ore is coming from the Solid Silver. No change in the Yellow Jacket. Water in the Lady Bryan is rapidly receding. Vein and quartz matter in two drifts of the Caledonia. Vein streaks in north and south drift of the 1100 level in New York. The two east crosscuts of the 2360 level in Crown Point advance towards the ledge. Work progressing steadily in the Gould & Curry on No. 4, 1900, and in repairing main incline. Everything is in good order above and below in the Utah. Work on the main Sutro tunnel has heen temporarily stopped, while the Julia and Ward conuection is worked. A large ore body will soon he laid bare in 750, Leviathan. The appearances in the Vermont Con. are that the main vein is not very remote.

BULLION.—The west crosscut on the 2,000 level is steadily advancing, the face in vein matter of a soft character. A little water is coming in. The east crosscut on the 1,700 level is being pushed vigorously forward, the face in hard vein porphyry.

CON. VIRGINIA.—Daily yield of ore, 200 tons. There is no change in the ore producing sections of the mine.

SUCCOR.—The northwest drift on the 1050 level is steadily advancing, the face still in vein matter of the finest possible character, showing occasional bunches and streaks of good ore.

LADY WASH. CON.—The north prospecting drift on the 1300 level is still being pushed. Preparations are being made for prospecting the deeper levels by means of prospecting drifts from the lower levels of the Alta.

CON. IMPERIAL.—The face of crosscut No. 4 on the 2400 level is to-day in a splendid character of quartz carrying some ore.

WARD.—It is the intention to push the shaft downward until a connection is completed with the south drift on the 1800 level of the Julia shaft.

MORNING STAR.—It will not take long now to reach the point where the first vein of good ore was struck in running the tunnel.

ORIGINAL KEYSTONE.—Sinking the main shaft is making the best of progress. The prospecting drift from the north shaft is being pushed steadily forward to prospect the ore vein.

HALE & NORCROSS.—Monday last the pumps were again started. The water stands to-day, in the main incline, 65 feet below the 2000 level.

MEXICAN.—Sinking the joint winze below the 1600 level on the Union Con. south line is making good progress, the bottom in good blasting ground.

SAVAGE.—The pumps are again running and are rapidly lowering the water. It is now down 65 feet below the 2000 level. Work on the 2000 level has been greatly retarded during the week by the rising of the water. The face of the east crosscut on the 2000 level, 400 feet south of the Gould & Curry line, is still in vein matter.

SILVER HILL.—Not much was done at this mine during the past week except to overhaul the old and put in some new machinery.

TROJAN.—The north drift on the second station level is now in a distance of 147 feet, the face still in a fine character of quartz. The south drift from the fourth station is in 460 feet, the face in good quartz carrying some ore, spots of which are very rich.

UNION CON.—Sinking the joint winze on the south boundary line below the 1600 level is making the best of progress, the bottom in hard blasting rock. A drift northeast has been started from the main north drift on the 1600 level, which is designed to connect with the North Con. Virginia shaft.

BEST & BELCHER.—The east drift on the 1900 level is steadily advancing, the face in good vein matter carrying streaks of good quartz which afford low assays. Work has been resumed in the south drift from the bottom of the winze.

CHOLLAR-COMBINATION SHAFT.—The repairs to the broken machinery are all completed and everything again in the best of running order. The water has been drained sufficiently to permit of a resumption of work at all points in the shaft.

OVERMAN.—The south drift on the 1600 level from the bottom of the winze is progressing at the rate of 4½ feet per day, the face in very favorable vein matter.

ALTA.—Opening up the 1550 level is being pushed vigorously. The prospecting drifts on the 1450, 1850 and 1350 levels are all being pushed vigorously, so as to put those levels in the best condition possible for the rapid extraction of ore.

BELCHER.—The crosscut from the bottom of the 1900 winze is in twenty-nine feet, the face in fine looking quartz which has the appearance of making ore. Crosscut No. 1 on the 2360 level has penetrated into the vein five or six feet, the quartz affording average assays of $8 to $10 per ton. Crosscut No. 2 on the same level has reached the west clay wall.

JUSTICE.—The water in south lateral drift of 1150 level is drained, admitting of much better headway. The vein formation at that point is looking very favorable. The 1300 level lateral south drift, and winze No. 1 on the same level, both show a steady improvement.

UTAH.

ALTA.—Salt Lake *Tribune*, Sept. 4: The town is progressing very fast since the fire. There is not much change in the mines. The Flagstaff mine is working 150 men, and shipping 75 tons of ore per day. Reports on the street state that they have struck a new body of 90-cent ore, the largest body ever found in mine. It is reported they have struck, in the Emma, a small vein of ore from six inches to three feet wide, assaying up in the hundreds. They are working 16 men on eight-hour shifts in the lower levels. Mr. Scrimgeour is working from 40 to 50 men on the old works, digging the low-grade ore, and making it pay him very handsomely. The North Star mine, having been worked on lease, has shut down, but will start up in a few days. The Alta Con. is putting up large hoisting works, and will soon ship as much as the Flagstaff. They are working 30 men. The Toledo mine has changed Superintendents. They expect to make large shipments of ore each month, as they have plenty in eight, and it grows larger and richer as they gain depth. They are working 25 men, have shipped from 100 to 200 tons of ore per month, which assaye over 100 ounces per ton. The Reed & Benson is working 40 men, and shipping from 50 to 150 tons of ore per month. The ore assays into the hundreds. The Ophir mine, owned by H. C. Goodspeed & Co., is worked on a lease, and has struck a large body of high-grade ore. The Windsor Group are worked on lease, and are shipping from 25 to 50 tons of ore per month. They are working four men. The mine looks well. The Frederick tunnel is worked on contract, and is in over 1,000 feet. It is good property. The Gladiator tunnel, worked by contract, is in between 1,600 and 1,700 feet. The Equitable tunnel and mining company have struck ore and are shipping to California. They are to have the machinery completed, and are pushing the tunnel ahead as fast as possible, expecting to cut the vein by the 1st of March. The Davenport mine is working 12 men and shipping from 25 to 60 tons of ore per month. The Lavinia mine, or Grizzly, is working 20 men and shipping 100 tons of ore per month. The Antelope and Prince of Wales are working 65 men, and are shipping 150 tons of ore each per month. The Richmond works are on a lease, and employing 14 men and shipping 35 tons of ore per month. The Wellington, worked on lease, just shipped 25 tons which assayed 150 ounces in silver and 50% lead. The Kate Hayes mine, worked on lease, is working six men, and expects to make regular shipments of ore each week. The Alpha mine, worked on lease, is making regular shipments, and is working eight men. There are several hundred men prospecting. Only one new strike is reported, which is the Blue Bell in American Fork. They have struck a true fissure vein, which is two and a half feet wide, and can be traced several hundred feet on the surface. The ore assays from $200 to $300 per ton. The owners have been offered $16,000, but would not take it.

FRISCO.—*Tribune*, Aug. 31st: Rocky district, situated about 12 miles north of Frisco, is likely to come into prominence as a source of supply for fluxes. There are a number of mines in this district, the ores of which carry iron, silver, copper and gold, and a number of mines are being worked and shipping ores to the smelters. The important mines are the Centennial, Severance, Hickory, and the eight owned by the Big Mountain Con. C. & S. M. Co. Among the gentlemen interested are J. F. M. Rockafeller, Jas. S. Riley, J. R. Lindsay, John V. Easley, D. Severance, M. Terault, A. P. Athertou, and Henry M. Johnson.

News in Brief.

LANCASHIRE cotton mills are closing.

A WATER-SPOUT in Hungary killed 300 persons.

REPUBLICANS carried Vermont by 17,000 majority.

GEN. JOHN C. FREMONT is on the way to Arizona.

GOOD hop pickers can get $3 per day at Puyallup, W. T.

THE McCloud river salmon supply is larger than ever before.

THE western boundary of Jarupa Rancho is to be resurveyed.

GLANDERS among San Francisco horses seems to be on the increase.

CATTLE in large numbers are now being shipped East from Wyoming.

ALL but two of the large saw-mills on Puget sound are running on full time.

THE Nonpariel quicksilver mine in Douglas county, Oregon, has a tunnel in 330 feet, and will soon build smelting works.

SOLDIERS from the North and South meet in friendly union at Marietta, Ohio.

OBERLIN college has conferred the degree of A. M. upon nine lady graduates.

LARGE tracts of good land await settlement in the region of Cowlitz Pass, W. T.

JOHN BIDWELL, of Chico, California, has been awarded a prize at the Paris Exposition.

THE artesian well of Charleston, S. C., furnishes more water than the city requires.

SALES' gold mine, Georgia, has, without machinery, yielded $10,000 since January 1st.

POSTMASTER Gen. Key and friends will visit the State fair on the 19th and 20th instant.

GOLD is found in Ogletborpe and Murray counties, Georgia, as well as in Lincoln county.

IT cost Santa Clara county over $1,400 to elect delegates to the Constitutional Convention.

THE International Monetary Congress recommends a universal standard of one-tenth alloy for gold coins.

THREE Portugese have been fined $50 each for taking salmon out of season from the Sacramento river.

THE rinderpest is rapidly extending throughout Roumania. The authorities have not been prompt enough.

ISAAC BROWN, an octogenarian of Jefferson county, Ala., has ploughed the same field for 62 successive years.

THE Oxford Iron company of Oxford, New York, have failed. Estimated liabilities, $5,000,000 to $6,000,000.

IT is estimated that Delaware's peach export for the season will amount to 700,000 baskets, netting the shippers $575,000.

IN Cincinnati it is said 20,000 kerosene lamps have been sold within the last three months, and 4,000 gas meters taken out.

THE cotton spinners of Northern France have resolved not to work by gaslight, in order to lessen the accumulation of stock.

SECRETARY Schurz declines to interfere with the Land Commissioner's decision opening the large railroad grants to settlement.

LANDS near the line of the Utah N. R. R., in eastern Utah, are being rapidly settled. Farm land by the thousand acres lies idle.

THE New York water supply system has cost since 1842, to complete and maintain it, $34,000,000. Total revenue, $30,000,000.

SIR GARNET WOOLSEY took 6,000,000 pounds sterling to Cyprus to pay for the construction of harbors and other government works.

AUGUST 31st, the El Dorado South hoisting works and quartz mill at Belmont, Nevada, were destroyed by fire. Probably incendiary.

THE internal revenue tax collections for the fiscal year ending June 30th, last, were $104,717,437 accounted for, and $9,705 unaccounted for.

IT is thought that an extensive system of smuggling between England and the United States, is carried through the Mexican Free Zone.

THE Los Angeles Company's well in the Little Sespe canyon has now reached a depth of 1,250 feet, and has penetrated oil-bearing strata.

SEPTEMBER 4th, call was issued for redemption of 5,000,000 of 5-20 bonds of 1865, consols of 1865; 2,000,000 coupon and 3,000,000 registered bonds.

A NEW bonanza has been found within two miles of the Aztlan mill, Prescott, Arizona, which assays from the croppings, in gold and silver, $152 to the ton.

IN the Thames, September 3d, an excursion steamer with about 700 passengers was cut in too and sunk by collision with a propeller. Between 600 and 700 were lost.

AMMONIA from the commercial fertilizers manufactured in the suburbs of Augusta, Ga., has completely driven out chills and fever and other malaria from the region.

CLEARING House returns from 23 cities for August, as compared with the same month last year, show a loss of 8.8%. Kansas City has the largest loss; San Francisco, the largest gain.

THE English and American governments are petitioned through the instrumentality of the International Congress on Weights, Measures and Coins, to consider the adoption of the metric system.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch from Washington, D. C.

FOR THE WEEK ENDING AUGUST 27TH, 1878.

SEED PLANTERS.—Wm. T. Easterday, Watsonville, Cal.

PROCESS AND APPARATUS FOR MANUFACTURING WATER-GAS. Watson A. Goodyear, S. F.

BROOMS.—Wm. Walter, Arcadia, Washington Territory.

STENCH OR BASIN TRAP VALVES.—Wm. E. Worth, S. F.

TUBULAR NEEDLES FOR EMBALMING.—Samuel Rodges, Los Angeles, Cal.

GRAIN SEPARATORS.—John W. Young, Union, Oregon.

Woodward's Gardens were never more attractive than at present. Besides three lions already mentioned, six monster living alligators, several iguanas and a boa-constrictor have just been added. New stars are constantly engaged for the Pavilion exercises. Rates of admission as usual.

Signal Service Meteorological Report.

Week Ending September 10, 1878.

HIGHEST AND LOWEST BAROMETER.

Sept 4	Sept 5	Sept 6	Sept 7	Sept 8	Sept 9	Sept 10
29.86	29.96	30.03	29.97	29.93	30.01	30.05
29.82	29.89	29.97	29.86	29.86	29.95	29.98

MAXIMUM AND MINIMUM THERMOMETER.

78	63	62	68	77.5	73	68
58	55	55	52	56	54	54

MEAN DAILY HUMIDITY.

57	83	80	77	69	83	80

PREVAILING WIND.

SW	SW	SW	SW	SW	SW	SW

WIND—MILES TRAVELED.

218	365	287	185	100	224	245

STATE OF WEATHER.

Clear.	Fair.	Fair.	Fair.	Clear.	Fair.	Fair.

RAINFALL IN TWENTY-FOUR HOURS.

Total rain during the season, from July 1, 1878, .01 in.

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, September 11, 3 P. M.

LEGAL TENDERS in S. F., 11 A.M., 99¾@99.90. SILVER, 1¼@1.60. GOLD in New York, 100¾.

GOLD BARS, 890@910. SILVER BARS, 8@15 ℔ cent. discount.

EXCHANGE on New York, ¼%; on London bankers, 49@49¼. Commercial, 50; Paris, five francs ℔ dollar; Mexican dollars, 91@92.

LONDON Consols, 94 15-16; Bonds, 103⅜.

QUICKSILVER in S. F., by the flask, ℔ lb, 41½@42c.

UNION READING ROOMS, FIRST STREET, SAN JOSE. WELCOME TO ALL!—Having lately been removed to the old hall of the City Zouaves, this institution is located in a pleasant and spacious apartment. The latest and best periodicals of the day are found on its tables, free to all. Also many choice volumes upon its shelves. Good music is provided for every Wednesday evening's social. Admission [to these entertainments, 25 cents—to pay expenses.

PIOCHE, Nev., Aug. 17th, 1878.

MESSRS. DEWEY & CO.—*Dear Sirs:*—My letters patent for car brake through your Agency has been duly received, for which please accept my many thanks. And allow me to say that your valuable advice so kindly tendered to inventors through your MINING AND SCIENTIFIC PRESS and circulars, together with the brevity and promptness of your action in securing letters patent to applicants, cannot be too highly endorsed. Again thanking you, I subscribe myself obediently one among your many friends. Respectfully, H. H. GARRISON.

Battle of the Books.

We take the following from the *Argonaut* of Saturday, September 7th. We think it well for persons and associations interested to be well posted in the matter before investing their money in expensive works.

General H. D. Watson, of Johnson's Cyclopedia, reconnoiters in force, and captures the very light brigade that Appleton throws out as skirmishers. Knowlton must get his Ebenezer up, brandish his little hatchet, and come scalping back upon the war-path. Chaw-ink-sky, Warsaw's last champion who shrieked when Appleton's Cyclopedia fell, must rally for another bluff. In this battle of the Cyclopedias, the schoolmaster and the second-hand dealer in old clo'—th-covered novels seem to be getting the worst of the conflict. Watson's last broadside is thus entitled:

The Loet Čauee and Ebenezer Knowlton.

Appleton's revised American Cyclopedia is blighted and doomed. It deserves to be, for it has falsified the facts of history in the interest of a church which has for centuries stood in the way of human liberty and intellectual progress. Let intelligent American parents and patrons and friends of our Public Schools ask themselves the question, Why are the Catholic priests and Jesuitical foes of our Public School system so strenuous in their efforts to force this lying Cyclopedia into the schools of this State? Why do they so zealously recommend the faithful of their flocks to buy this costly and worthless production? No doubt their object is to preserve the minds of the school children of this State and the hearts of their parishioners free from the taint of sectarian prejudice! They have every confidence in a book made by Father O'Reilly, and most heartily sanctioned by Cardinal McCloskey. Why shouldn't they?

And now comes the redoubtable "Professor" Ebenezer Knowlton, after his perilous ascent of Mount Shasta, "alone without a guide" (?), with his deep chest and brawny arms and his "words of learned length and thundering sound," to prop up the falling fortunes of James T. White and his blighted Cyclopedia. The "Professor," however, "having jointly and severally in the aggregate examined over a thousand test topics," comes to the sage conclusion that "the American Cyclopedia is unquestionably and very decidedly the better book." The learned "Professor" would do well to invest twenty-five cents in a composition primer and devote his next year to the mastery of its contents before he ventures to appear before the public in the role of a literary critic. I trust that those who know me will give me credit for possessing too much discernment and knowledge of men and things ever to leave to Ebenezer's determination the merits of Johnson's Cyclopedia, or of any other book. For the benefit of those who do not know me, I will state that I never challenged White to leave the two Cyclopedias to the judgment of Ebenezer Knowlton, or to the judgment of any committee of which the renowned Ebenezer was a member.

The "Professor" accuses me of attempting to bribe him! Will the doughty "Professor" tell the public when, where and how? I assert that I never tried, either directly or indirectly, to bribe Ebenezer Knowlton, and I defy him to prove that I ever did. It is hard for me to say this where many young ladies still live to whom the immaculate "Professor" once exclaimed, "My children, you see before you a man who, thanks to the training of his good mother and the kindness of his Heavenly Father, never told a lie." Oh! Ebenezer, lesser than Washington, yet better, how has the mighty fallen into the hands of Appleton's agent.

And now a word or two in reference to the card of the almost equally renowned Choynski, the far-famed antiquarian who sells second-hand books on Geary street. Let me inform the gentle antiquarian that either he or his friend White can have all the Appleton's American Cyclopedias which he or his friend will furnish bonds to pay for, at the following rates: Revised, in sheep, for $60; agents', price, $96. Condensed American, 4 vols., $10; agents' price, $38. On my return to the city last Saturday I found three cards from the courteous Choynski in my post-office box, in one of which he threatened to publish my offer in last Sunday's *Chronicle* as mere buncombe. Now, to settle this question forever, I hereby challenge either Choynski or White to place $6,000 in the Bank of California of this city, and if I do not deliver at any place they may direct one hundred sets of Appleton's Revised 16 vol. American Cyclopedia for $6,000 within ninety days, I agree to forfeit $100 for every set I fall short, and I will place $6,000 in bonds in the above mentioned bank as an evidence of my good faith in making this proposition. Among the one hundred sets which I am ready to furnish will be those that were kicked out of the Oakland schools by the unanimous vote of the Board of Education of that city, in order to make room for Johnson's Cyclopedia. White has not accepted my challenge, which, I submit, was a fair one. Neither he nor D. Appleton & Co. dare accept it. I dare Choynski or White to put up money to take Appleton's Cyclopedias at $60 a set. H. D. WATSON.

[COM.]

A New Deal.

L. Reynolds, Esq., the Secretary of the Senator Mining Company, announces that the property which is situated in Virginia City, Nevada, and on the north extension of the Julia mine has lately been purchased by a number of gentlemen of large mining experience and extensive capital, and work will soon be commenced upon it; and that the greatest expectations are entertained that rich developments will soon be made. He also states that a limited number of shares will now be disposed of, at bedrock prices, so that those parties who desire to invest can do so prior to the mine being called on the different stock boards. He reports that this company has large and powerful machinery, all complete, is entirely free from debt, and the mine will soon be placed in connection with the Sutro tunnel. It certainly appears that the Senator Mining Company possess a valuable claim, and parties desirous of obtaining stock should call upon Mr. Reynolds at his office, No. 302 California Street, Room 5.

The Pacific Rolling Mill Display.

A display that shows, more than any other in the Fair, the material progress in mechanical industry, which has been made on this coast within the past few years, is that of the Pacific Rolling Mills. It is not very long since that almost any of the articles shown in the display had, if required, to be imported from the East. Now they are all made here by our own mechanics and in quantities to surprise any one not familiar with the subject. The Pacific Rolling Mills are the only ones of the kind this side of the Sierra Nevada, and although established for the purpose of only furnishing heavier articles, now manufactures a line of goods extending into nearly every branch of the business. Although the display made at the Fair is not one to attract the attention of the superficial observer very closely, from the nature of the articles, there is more there than in any other exhibit in the Fair to show our mechanical advancement. It shows results, not machines which produce results, as is the case with most other displays, and its importance is, therefore, not so noticeable at first glance. A closer examination will, however, repay any one interested in mechanical matters, and convince them that we are not behind the East in rolling mill products.

Probably among the first things which attract notice are the ponderous turn-huckles exhibited, two of which are of four and six inch diameter of thread respectively. These turn-bnckles are made from 6-inch down to ⅜-inch, the larger ones being for the heavy halance hobs for mining purposes. Mining machinery has now so greatly increased in size and is made so immense that work oi this class has had to he chased in a lathe, making the expense very heavy. For this reason the rolling mills have procured machinery which will cut thread, for 6 inch turn-huckles, with the same ease as a three or two inch one. The large nuts cut by same machine, up to 6 inches in diameter, are more particularly intended for bridge work.

The large pieces of square iron exhibited are "square irons," or square shafts in hars. The mills now roll, up to 8 inches in diameter, round iron. Shafts of this size were, up to a few years ago forged only at the mills, until then, rolled up to four inch; but as they now roll to eight inch, the cost of larger shafts is materially reduced. Bar iron is exhibited up to six inch, round and square. No eight inch is exhibited, as it is too heavy for convenient handling in such a placc as the Fair. All the hars exhibited, are rolled. Both round and square iron are made from one-quarter inch up to six and eight inch. Flat hars are exhibited from one-quarter inch to 1¾ in thickness, and from three-quarters in width up to 12 inches, all rolled.

A series of sections of rolled heams or girders, from three inches up to 10½ in hight, are exhibited. Two or three of them joined together form double girders for building construction. A peculiar feature in connection with these may be noticed. Instead of box-girders, which are riveted together, and in which the whole strain of the girder is left ou the rivets, these beams are joined two or more together by riveting a flat bar on top, which increases the power to resist the "butting" strain, and does not weaken the iron by an excess of rivet holes. Girders made in this style are much lighter in proportion to strength than those of the old style, being capable of carrying one-third more weight per yard.

The planished, round edge tire iron is a recent article of mauufacture here. The surface of this iron is hardened, and there is a perfectly smooth surface without the tire bsing liable to break hy any sudden jar, as steel would. This iron is rolled with a heavy stream of water pouring on it to chill the surface.

Arranged on the wall is a series of angle iron from three-quarters by one-eighth inch up to five by one-eighth inch. Cross sections of different sizes are shown, all rolled. The mills do a large amount of this angle iron work; they have just rolled fifty tons for the new City Hall. For the iron steamer "Bolivia," which is being lengthened 80 feet at North's ways, they are making upwards of 50 tons of angle iron of different sizes.

Among other things made by these mills are iron bridges, two of which are now being made for the Yosemitc valley. One of these has 100 feet span and the other 90 feet. They are made complete, ready to be set up. One of the same kind was recently shipped to the South Pacific for the French Government. The arch part of these bridges is made of 6-inch channel iron, and the upright parts made of angles made into star bars, the chords being framed of heavy flat links.

Another new hranch of iron manufacture recently introduced at the mills, is that of chain making, and a very interesting exhibit of the results of this work is made. They manufacture chain from one-quarter inch upwards to chain cables of any desired size. Special iron is selected for this work, as only first-class chain is made. A large stock of this class of goods is kept on hand at all times ready for purchasers.

A very large display is made of machine bolts, hot and cold pressed nuts, etc., in boxes. There are also inventions of nuts that are forged, faced and tapped. Track nails, tire-nuts and burrs, etc., are displayed in quantities. Great numbers of these goods are made and kept in stock at the mills, ready packed for shipment.

Of course a large part of the work done by the mills is on rolling railroad rails, aud an exhibit is made of rails of 12, 16, 20, 28, 30, 35, 50 and 56 pounds to the yard. Great quantities of these rails are made. Over 4500 tons were made last year for the South Pacific Coast Railroad Company. They have also two contracts for 2,000 tons, of 28 and 30 pound rail for two roads in Oregon and Washington Territory. Considerahle rail is made for mining companies. This track iron manufacture is now growing to he a great industry, and the mills keep a regular supply of different sizes on hand.

The Pacific Rolling Mills keep at work constantly from 400 to 450 men, the establishment heing a very extensive one and well supplied with all the modern improved machinery of every kind.

For the making of iron, in the rolling mill proper, there are six trains of rolls, each train composing a mill in itself. One train is eight inch, two are 12 inch, and three 18 inch. There are five steam engines connected with the rolls. There are also two saw-engines for cutting off the ends of rails, and there are eight other engines connected with the works. There arc 12 heating furnaces and four puddling furnaces in the mills proper.

In the forge there are two steam hammers aud three furnaces. The forge has a capacity up to a 20-ton shaft. The hlacksmith shop has three steam hammers and one helt hammer. There are in the shop ahout 16 fires, and eight more in the chain shop. The repair or machine shop is well supplied with lathes, planers, drills, shapers, etc.

In the factory are made the bolts, nuts, washers, spikes, rivets, etc. It is of a capacity of 8,000 fish holts a day, and other articles in proportion. There are twelve holt machines, capahle of cutting from one-quarter inch up to six inches; three spike machines, five holt benders, three hot pressed nut machines, five punches for cold punched nuts, etc., one steam and one helt hammer; then smith's fires, etc. A room is also set aside for making the tools used in the various machines. They have also a box shop for making the heavy boxes in which are packed the bolts, rivets, nuts and other smaller articles of manufacture. The mills use ahout 12,000 tons of coal a year, from the Bulli mines in Australia.

From this hrief sketch it will he seen that the Pacific Rolling Mills is an institution of considerahle magnitude, and it has heen so conducted that its products are recognized as first-class in every respect. The managers are continually adding to the resources of the mills, and as fast as any demand arises the machiuary is purchased and product made to meet it. The officers of the company are: Wm. Alvord, President; L. B. Benchley, General Manager; B. P. Brunner, Superintendent; P. Noble, Assistant Superintendent; Chas. M. Keeney, Secretary.

New Incorporations.

The following companies have filed certificates of incorporation:

Eureka Con. B. G. M. Co.—Location: Nevada county. Capital, $5,000,000. Directors—J. H. Thompson, Valentine Schmidt, A. Lusk, George R. Spinney, S. B. Hunt.

Favorite G. & S. M. Co.—Object: To mine, etc., in the States of California and Nevada aud the Territory of Arizona. Capital, $6,000,000. Directors—P. Von Loesecke, Victor Repayre, Julius Peters, P. B. Nagle, J. B. L. Louis.

Lady Alice S. and M. Co.—Object: To acquire mines, mills, water rights, etc, and to run tunnels in the Bodie mining district, Mono Co. Capital, $10,000,000. Directors—C. W. Kellogg, Charles Main, G. W. Fisher, W. H. Sears, C. J, Pillsbury.

Relief Con. M. Co.—To mine in the Bodie district. Capital, $6,000,000. Directors—Wm. M. Stewart, W. F. Herrin, P. Van Clief, W. J. Hutchings, W. W. Foote.

Mackey G. and S. M. Co.—To acquire and purchase mines in Storey conuty, Nevada, etc. Capital, $5,000,000. Directors—J. D. Hunt, H. Harmon, M. C. Murtagh, F. A. Ronleau, M. P. Finnegan.

Bodie H. M. and W. Co.—To carry on placer and hydraulic mining in the Bodie district, and to introduce water into the town of Bodie. Capital, $5,000,000. Directors—N. K. Masten, G. T. Coulter, A. J. Ralston, R. N. Graves, H. M. Yerington.

University G. M. Co.—Location: Mono county, Cal. Directors—N. K. Masten, R. G. Brown, Dwight Chittenden, G. W. Beaver and H. M. Farrington. Capital, $1,000,000.

Callison M. Co. — Location: Esmeralda county, Nevada. Directors—C. L. Weller, J. P. Jackson, E. L. Sullivan, J. P. Jones and J. L. Callison. Capital, $6,000,000.

Middle Hill M. Co.—Location: Esmeralda district, Nevada. Directors—J. M. Walker, W. S. Lyle, R. G. Brown, G. Congdou and W. L. Oliver. Capital, $10,000,000.

San Pedro M. Co.—Location: Arizona. Directors—C. R. Greathouse, B. B. Minor, G. O'Briter, G. Hearst and J. Clark. Capital, $10,000,000.

South Bulwer G. M. Co.—Location: Bodie district. Directors—J. Miller, P. Caduc, J. Hagan, E. O. Weiner and W. Stuart. Capital, $10,000,000.

Ajax G. & S. M. Co.—Location: Bodie district. Directors—R. Sherwood, W. S. Lyle, R. Barton, E. B. Rail and W. F. Meyers. Capital, $5,000,000.

Addenda G. & S. M. Co.—Location: Mono county. Directors—W. F. Leon, M. C. McGlennon, S. Dixon, J. Dixon and T. A. Dixon. Capital $10,000,000.

Davis Pulverizer Manufacturing Co.—Object: To manufacture quartz crushers, known as "Davis' Pulverizers." Directors—J. Neate, J. T. Davis, S. M. Holmes, T. Homer and B. B. Minor. Capital, $120,000.

Prince of Wales Island Copper Co. Object: To mine for copper at and from Karto hay and other points in Alaska. Directors—E. L. Sullivan, J. Currey, W. Sherman, B. Flint and C. T. Fay. Capital, $10,000,000.

Resolute T. M. Co.—Location: Bodie district. Directors—W. R. Davenport, J. G White, W. S. Chapman, T. W. Hadley and F. K. Bechtel.

Orient M. Co.—Location: Bodie district. Directors—F. Tagliabue, J. M. Wilde, V. Fernbach, M. Fernbach and T. H. Lawlor. Capital, $10,000,000.

True Blue G. & S. M. Co.—Location: Bodie district. Directors—H. H. Barling, D. E. Coughanour, B. B. Minor, J. T. McGeoghegan and G. L. Bradley. Capital, $5,000,000.

Headlight M. Co.—Location: Lake district, Mono county. Directors—G. S. Dodge, T. Bell, W. M. Stewart, Sol. Heydenfeldt and A. H. Rose, Jr. Capital, $10,000,000.

May Belle Con. M. Co.—Location: Bodie district. Directors—R. N. Graves, W. M. Stewart, W. B. Carr, W. F. Herrin and A. J. Ralston. Capital, $6,500,000.

Dante G. & S. M. Co.—Location: Nye county, Nevada. Directors—C. T. Fay, J. Moorhead, J. G. Jeffress, C. Gutierrez, H. Pink, J. B. Haggin, M. D., and J. H. Smith, Jr. Capital, $10,000,000.

Helena G. M. Co.—Location: Del Norte county. Directors—H. L. J. Warren, J. D. Gray, J. L. Fields, C. F. Davis and E. P. Hutchins. Capital, $300,000.

Dudley M. Co.—Location: Bodie district. Directors—R. N. Graves, A. J. Ralston, J. M. Quay, W. Haynie and W. M. Stewart. Capital, $6,400,000.

Paradise Valley M. Co.—Location: Nevada. Directors—S. Linktou, P. S. Van Ransaeller, S. F. Gashwiler, H. Jauin and L. W. Greenwall. Capital, $10,000,000.

Rustler G. M. Co.—Directors—W. B. Willard, George Story, D. Crittenden, Robert Sherwood, A. C. Ellis. Capital, $6,000,000.

Bunker Hill G. M. Co.—Directors—Benjamin Flint, C. P. Tinkhone, Albert Heath, Warren Craig and Frank D. Cooper. Capital, $5,000,000.

Golconda G. M. Co.—Directors—Romualdo Pacheco, Geo. L. Bradley, J. Calvert, B. B. Minor, H. L. Burrows, Chas. Webb Howard, J. R. Casonava. Capital, $10,000,000.

Blue Jacket S. M. Co.—Location, Storcy county, Nevada. Directors—James Phelan, A. Hemme, Thos. R. Hayes, S. D. Bullock and Wm. S. Ryrme. Capital, $10,000,000.

Montana G. M. Co.—Directors—Thomas Cole, C. J. Garland, H. S. Flood, F. W. Hadley and C. W. Kellogg. Capital, $2,000,000; shares, 20,000.

Caledonia G. M. Co.—Location: Dakota Territory. Dirctors—Sol. Heydenfeldt, Heury D. Bacon, M. L. McDonald, Frank Locan and J. W. Gashwiler. Capital, $10,000,000; shares, 100,000.

Republic Con. M. Co.—Object: To mine in Bodie district. Capital, $6,400,000. Directors—John F. Miller, Wm. M. Stewart, W. F. Herrin, P. Van Clief and W. W. Foote.

Fairfax M. Co.—Object: To mine in California and Nevada. Capital, $10,000,000. Directors—John W. Coleman, Max Morgenthau, John Rosenfeld, O. H. La Grange and Warren Bryant.

Riquesa M. Co.—Object: To mine in Bodie district. Capital, $10,000,000. Directors—E. McCrary, C. W. Kellogg, J. B. Ingo, Samuel Poorman and Charles S. Pettigrew.

Selby Copper M. and Smelting Co.—Object: To work in Nevada. Capital, $10,000,000. Directors—Thomas H. Selby, D. W. F. Bishee, C. P. Sykes, F. R. Webster and F. A. McGee.

Petroleum in California.

Mr. Edward Maden, a petroleum expert, in a recent interview with a reporter of one of our local papers gave, in substance, the following as to the outlook of this new industry on our coast: As far as present developments go, the crude oil of Ventura county is inferior in lighting qualities to Pennsylvania oil, as it does not give a paying percentage of kerosene. For lubricating purposes it is far superior. The San Fernando oil produces as much kerosene as the Pennsylvania product. The conclusion is not justified, however that the San Fernando wells are superior to those of Ventura, for the latter have not, as yet, heen bored deep enough. They have produced thus far ouly heavy oil, the lightest being about 35°, the greater production heing an unprofitable oil of which the largest portion is tar. The wells must be sunk deeper before conclusions are settled. The crude oil of California contains more sulphur than that of Pennsylvania. This, however, may he so easily removed that it does not injure the commercial hopes of the industry.

The present production is about 150 harrels per day, one-half of which is produced by the Star company's wells. Every month the supply is increased by the San Francisco and Los Angeles companies' wells. This is a mere cipher compared with the cousumption now supplied hy Pennsylvania wells. California's yearly consumption alone reaches 3,500,000 gallons, worth $1,000,000, and the export must amount annually to 4,000,000 gallons. Pennsylvania lays down oil at a very reasonable rate, hut California can compete with her in San Francisco, because of the freight she has to pay and for other reasons. A petroleum refinery is soon to be erected in San Francisco.

The oil may yet be put to many uses to which it has not heretofore heen applied. An Eastern chemist has heen making a special study of the products of California petroleum. He is frequently discovering new resources, and having the henefit of his knowledge, it is hard to say what may yet he found contained in the oil; still we shall commence to manufacture three grades of hurning oil, several grades of lubricating oil, such as are used for lubricating every kind of machinery, and for preserving leather, harness and for tanners' use; also, painters' use, paints, varnishes, roofing compounds, as well as medicinal purposes, in which the products of California petroleum take a leading part.

There is no douht, and it is admitted hy Eastern oil men, that the southern coast of California is full of oil, and if surface exudations are any sign, the country is literally covered with them. The oil industry of California is only heginning to force itself hefore the people of this State, and ere long California will be receiving the large henefits of exportations that are now passing into the pockets of Pennsylvanians. Taking a direct line east and west from Lyon's Station to Santa Clara, the country is very rich in oil of the finest quality, equal in many cases to that of Pennsylvania, and the oil belt is easily traced. Before many years pass, the country will be covered with derricks, and an enormous production had, that will exceed any other commodity on the coast.

Railroad Lands.

Secretary Schurz, in declining to either reverse or suspend the General Land Office Commissioner's decision, hy which large tracts of land covered by grants to railroads were opened to settlement, says: "It has heen, from the earliest history of this Government, one of the most important and heneficent principles governing its land policy, not to favor the creation of large estates, hut to put public lands at such rates and in such quantities within the easiest possible reach of the poor and homeless, that the latter might acquire homes for themselves and their families, and thereby promote a healthy development of the agricultural resources of the country. This principle has evidently heen kept in view hy the law making power when aiding the construction of national highways hy extensive grants of land, and in accordance with it it was wisely provided in this grant that unless lands granted were sold hy the compauies within a reasonable time they should be opened to actual settlement under the auspices of the Government of the United States and under the provisions of the pre-emption law, so that they might be acquired and settled upon by persons of limited means, while the proceeds of such sales are to be turned over to the compauies. I am therefore of opinion that an actual sale to a bona fide purchaser for a valuable consideration within the time limited, is the only disposition which it was iutended hy Congress should exemyt any of said lands from sale uuder the pre-emption law. Counsel have filed certain mortgages, called deeds of trust, executed by said companies, to secure payment of bonded obligations of the same. Counsel argue that execution and delivery of these mortgages was in effect a sale and conveyance of legal title of the companies to all lands inuring to them under such grant. For the purpose of determining the question thus presented, it becomes necessary, not only to fix the character of the instruments executed by said companies, but also to ascertain whether legal title to lands therein described was hy said iustruments conveyed to the trustees therein named."

After quoting various prominent legal opinions on the subject of mortgages, to the general effect that a mortgage is mere security, and does not vest in the mortgagee any estate in land either hefore or after condition broken, and that payment after default operates to discharge a lien equally with payment at the maturity of the debt, the Secretary expresses the opinion that mortgages in the several States and Territories in which land granted hy the Act of July, 1862, and the Act amendatory thereof, of July 2d, 1864, are located, are not at variance with legal title, but simply a pledge, a security, a lien thereon, and that no estate is by such instrument vested in the mortgagee either before or after condition broken. In each and every one of the mortgages presented in this case, the legal title, as well as the rights of sale and disposition of the lands therein described, is retained in the companies, the Trustees endorsing the mortgage with a full knowledge of the limitations of the right and authority of the companies to make the same. While the companies, by the terms of the mortgages, had the right tc sell and dispose of the lands, the Trustees were to receive the proceeds of all sales of lands made. This right of the companies to sell lands having ceased hy virtue of the third section of the Act of July 1st, 1862, the security of the mortgages will be subrogated by monies arising from sales when made by the Government.

In concluding, the Secretary says: "After full consideration, I am unable to find any reason for suspension of my decision of July 23d, 1878, and you will therefore, without unnecessary delay, cause directions to be issued to local officers as therein directed."

The Atlantic and Pacific Forests.—No. 3.

[By Prof. Asa Gray.]

I cannot pretend to account for the extreme magnificence of this Sierra forest. Its rainfall is in winter, and of unknown but large amount. Doubtless most of it is in snow, of which 50 or 60 feet falls in some winters, and different from the coast and in Oregon, where it falls as rain, and at a temperature which does not suspend vegetable action, here the winter must be complete cessation. But with such great snowfall the supply of moisture to the soil should be abundant and lasting.

Then the Sierra, much loftier than the Coast ranges, rising from 7,000 or 8,000 to 11,000 and 14,000 feet, is refreshed in summer by the winds from the Pacific, from which it takes the last drop of available moisture; and mountains of such altitude, to which moisture from whatever source or direction must necessarily be attracted, are always expected to support forests, at least when not cut off from sea-winds by interposed chains of equal altitude. Trees such mountains will have. The only and the real wonder is that the Sierra Nevada should rear such immense trees!

Moreover, we shall see that this forest is rich and superb only in one line; that, beyond one favored tribe, it is meagre enough. Such for situation and extent and surrounding conditions are the two forests, the Atlantic and the Pacific, which are to be compared.

In order to come to this comparison, I must refrain from all account of the intervening forest of the Rocky mountains, only saying that it is comparatively poor in the size of its trees and the number of species; that few of its species are peculiar, and those mostly in the southern part and of the Mexican plateau type; that they are common to the mountain chains which lie between, stretched north and south *en echelon*, all through that arid or desert region of Utah and Nevada, of which the larger part belongs to the great basin between the Rocky mountains and the Sierra Nevada; that most of the Rocky mountain trees are identical in species with those of the Pacific forest, except far north, where a few of our eastern ones are intermingled. I may add that the Rocky mountains proper get from 12 to 20 inches of rain in the year, mostly in winter snow, some in summer showers.

But the interior mountains get little and the plains or valleys between them less; the Sierra arresting nearly all the moisture coming from the Pacific, the Rocky mountains all coming from the Atlantic side.

Forests being my subject, I must not tarry on the woodless plain, on an average 500 miles wide, which lies between what forest there is in the Rocky mountains and the western border of our Eastern wooded region. Why this great sloping plain should be woodless, except where some cotton-woods and their like mark the course of the traversing rivers, is, on the whole, evident enough. Great interior plains in temperate latitudes are almost woodless, even when not very arid. This of ours is not arid to the degree that the corresponding regions west of the rocky mountains are. The moisture from the Pacific which those would otherwise share is, as we have seen, arrested on or near the western border by the Coast Ranges and again by the Sierra Nevada; and so the interior, except for the mountains, is all but desert.

On the eastern side of the continent, the moisture supplied by the Atlantic and the Gulf of Mexico meets no such obstruction. So the diminution of rainfall is gradual instead of abrupt. But this moisture is spread over a vast surface, and it is naturally bestowed first and most on the seaboard district and least on the remote interior. From the lower Mississippi eastward and northward, including the Ohio river basin, and so to the coast and up to Nova Scotia, there is an average of 47 inches of rain in the year. This diminishes rather steadily westward, especially northwestward, and the western border of the ultra-Mississippian plain gets less than 20 inches.

Indeed, from the great prevalence of westerly and southerly winds, what precipitation of moisture there is on our western plains is not from Atlantic sources nor much from the Gulf. The rain-chart plainly shows that the water raised from the heated Gulf is mainly carried northward and eastward. It is this which has given us the Atlantic forest region, and it is the limitation of this which bounds that forest at the west. The line on the rain-chart indicating 24 inches of annual rain is not far from the line of the western limit of trees, except far north, beyond the great lakes, where, in the coolness of high latitudes, as in the coolness of mountains, a less amount of rainfall suffices for forest growth.

We see then why our great plains grow bare as we proceed from the Mississippi westward, though we wonder why this should take place so soon and so abruptly as it does. But, as already stated, the general course of the wind-bearing rains from the Gulf and beyond is such as to water well the Mississippi valley and all eastward, but not the district west of it.

[To be Continued.]

The St. Louis *Journal of Commerce* moralizes: A proof in the falling off of stock-gambling may be gathered by statistics just made up in San Francisco. Sales at the San Francisco Board for the first six months of the year—1875, $125,000,000; 1876, $126,000,000; 1877, $63,000,000; 1878, $48,000,000. This exhibit is a sign of the enforced morality of commercial revulsions. It hints at the doctrine of compensation, and the self-retribution of evil.

Useful Information.

Hints for Workshops.

We glean from exchanges, chiefly from the *Jeweler and Silversmith*, the follow useful hints for workers in the finer manufactures:

A method which has of late years come largely into use for silvering mirrors of various kinds, and notably the reflectors of telescopes and lighthouses, is based on the power of certain chemical reagents to throw down silver in the metallic state from certain of its solutions, etc., the reduced silver in many cases adhering firmly to the surface of the vessel in which the action takes place, or to objects immersed in the liquid. Thus, says *Nature*, if calcium tartrate in a moist state be placed in a glass vessel with a crystal of silver nitrate and a drop of ammonia solution, and the mixture cautiously heated, and made to flow successively over the whole inner surface of the glass, a fine mirror may be developed. Aldehyde, oil of cloves and other essential oils, grape sugar, and some other organic substances, may also be employed as reducing agents, especially the first substance.

A good liquid polish for silver plate is made by taking three or four drachms of cyanide of potassium, eight or ten grains of nitrate of silver, and four ounces of water. Apply with a soft brush, wash the article thoroughly with water, dry it with a soft linen cloth, and polish with chamois skin; neither whiting nor powder of any kind should be used for cleaning and polishing; they only destroy and scratch the silver.

A safe and easy silver test is to scratch the article with the usual testing stone, and apply a little aquafortis. Then lay two or three grains of salt on the spot; and, if pure silver, a milky froth, principally a deposit of dissolved silver, will be found under these grains, while in the case of base metals the salt will turn green, and no deposit is to be seen.

The composition of "Chinese silver" is as follows: Sixty-five and two-tenth parts copper, 19.5 zinc, 13 nickel, 2.5 silver, and 12 cobalt of iron.

Cobalt plating is recommended by M. Graiffe as superior to nickel for many purposes. He praises very highly the extreme beauty, hardness, and durability of the cobalt coating obtained by the galvanic current. He uses as a bath a neutral solution of the double sulphate of cobalt and ammonia.

The following is reported to be the way Swiss watches are "cleaned:" A small stand of gilded brass about one and one-quarter inches in diameter, and turned round in a lathe, is employed. The latter is mounted on a firm base with a stud in the center running up to the plate; on this is engraved the shape of a watch movement with the bridges on it, and the screw holes drilled in. When the watch is taken down the screws are placed in the holes as in the watch, and then left there until ready to put up again. Thus they never get mixed, and may be cleaned by carefully drawing a brush over them. The other arrangement is a tapering punch, something like a "pusher," used for pushing rivets out of pins, etc.; and after cleaning the bridges in a paper, as usual, the punch is pushed in the screw hole with friction enough to prevent slipping. A fine brush is used for finishing.

The following method is given for inserting teeth in watch and clock wheels: Make a hole through the plate of the wheel immediately below the point from which the tooth has been broken. Let its diameter be a little greater than the width of a tooth. Next, with your tooth-saw, cut down where the tooth should stand till you come into the hole. You then dress out, with a head upon it, a piece of brass wire, till it fits nicely into the cut of the saw, with its head in the hole. With a fine graver you then cut a crease into the wheel plate above and below, on either side of the newly fitted wire, after which, with your hammer, you cautiously spread the face of the wire until it fills the creases, and is securely clinched or riveted into the wheel. This makes a strong job, and one that dresses up to look as well as any other.

Making Pencil Marks Indelible.—The *Papier Zeitung*, in a recent issue, mentions a new method for preparing paper for indelible lead pencil marks. Any ordinary drawing paper is slightly warmed and then rapidly and carefully laid on the surface of a bath, consisting of a warmed solution of bleached colophonium in alcohol until the entire surface is moistened. It is then dried in a current of hot air. The surface of the paper becomes smooth, but readily takes the impression of a lead pencil. In order to make the lead pencil indelible the paper is warmed for a short time on a stove. This method may prove very valuable for the preservation of working drawings when a lack of time will not permit the draftsman to finish them in ink.

Restoring Faded Writing.—Manuscripts which have been illegible may be restored by Von Bibra's process of developing faded ink. A solution of tannin is applied with a brush, the excess is removed by a current of water, and the document is dried at a temperature of from 144° to 177°. The solution of tannin should be moderately concentrated. It does not possess the destructive influence upon the paper which is produced by hydrosulphate of ammonia. The writing developed in this manner remains clear and black for several months.

Nickle Plating Iron and Steel.—Simple processes for nickle plating are coming forward in numbers. In a foreign journal M. F. Stolba describes a process for nickel-plating iron and steel by immersion. The operation is very simple. To a dilute solution (5 to 10 per cent.) of chloride of zinc as pure as possible, a sufficient amount of sulphate of nickle is added to color the solution green, which is then boiled in a porcelain dish. Without paying any notice to the precipitation of a basic salt of zinc, the objects to be coated are introduced into the bath (after having been perfectly freed from all traces of grease or rust) care being taken to keep each object isolated. The whole is kept boiling from thirty to sixty minutes, water being added to replace the loss by evaporation. The nickle precipitates on all the clean surfaces of metal, in the shape of a white, brilliant coat, which a longer period of boiling does not render any thicker. The objects taken out of the bath are washed with water holding a little chalk in suspension, after which they may be polished if desired. The chloride of zinc must contain no metal which is precipitated by iron. It is best specially prepared for the purpose desired. A point to which particular attention must be given is that the sulphate of nickle is free from copper. By replacing the sulphate of nickle by sulphate of cobalt, a coating may be obtained whose aspect differs but little from that of burnished steel, which adheres firmly to the metal.

Preparing Wood for Polishing.—The *Cabinet Maker* says: After staining size over with varnish or polish, for mahogany, walnut, and similar woods, finish the surface with sandpaper, No. 0; oil with linseed oil, colored red with alkanet root; let it stand for a time until the oil has thoroughly soaked in; then proceed to fill in the pores with the following composition: Plaster of Paris, 3; tallow, 1; and a little red polish (ordinary polish colored with dragon's blood). Work the whole until it is thoroughly mixed and becomes a crumbly mass. Rub well into the wood with a piece of rag, clear off all the superfluous filling in, and the surface is ready to body in and polish.

Heavy Blast.—The *Engineering Journal* learns that the heavy blast in the limestone quarry of the Gleudon Iron company, near Easton, Pa., was fired on Thursday evening, at 7.45 o'clock, with complete success. The charge was 12,000 lbs (6 tons) of mortar powder, probably the largest blast, not subaqueous, that has ever occurred in this country. It was a complete success, there being little noise, jar, or smoke, while it is estimated that 70,000 tons of rock were displaced.

Good Health.

The Office of Perspiration.

A writer on hygiene for the *Prairie Farmer* makes the following allusions: The amount of perspiration that exudes from the surface of the skin is greatly varied by circumstances. As for example, it is large when the body is surrounded by hot, dry air, even to the extent of five pounds in 24 hours, while in a cold and moist one the amount in the same time may be but one pound. The results of these conditions are often strongly felt by man and beast. We should naturally suppose that if we lose five pounds of water in 24 hours, we should need that large amount of water to supply the place of that which has passed away. And to some extent this is no doubt true. It may have been observed by all who labor that they feel the want of a large amount of drink. The sensation of thirst does not arise from dryness of the mouth or throat alone, but in part from dryness or need of moisture felt by all the tissues. They all employ the throat and mouth to make known their wants. Another fact is not to be forgotten, that the kidneys have duties so similar to those of the skin, that they aid each other. On a cold, moist day the skin is disabled and cannot execute its usual amount of secretion. Moisture checks evaporation from the surface, and cold lessens the caliber of its pores. In this disability of the skin, the kidneys lend a helping hand in relieving the system of its impurities. And so, if the air be hot and dry, the skin is well able to do extra duty and grant the kidneys a recess from their usual toil.

Another fact is worth a passing notice, namely, that the dryness of the skin retains the heat generated within the system and so creates a fever. Relieve the skin, help it to do duty by warm baths or in some other way and the fever disappears. No moisture came upon the surface and so no evaporation and no cooling of the system could occur. On this fact is based the habit of washing the surface two or more times a day, because this process induces evaporation, cools the skin, opens the pores and lets off the heat retained.

In health, perspiration is graduated by the temperature of the air and amount of exercise. On reducing our temperature in hot seasons of the year, not only our health and comfort but our life depends. The ordinary heat of the human body is 98° Fahr. If the air surrounding us is higher, we suffer more or less. Heat disease begins to manifest its power, and the great remedy is the free application of cold water to reduce the temperature of the body and induce free perspiration. Thus it seems perspiration contributes largely to our health and comfort. But to reap its greatest good, we should daily wash the surface and so prevent the absorption of what is waste and poison. Excessive bathing, as practiced by some boys, may be harmful. All that health and comfort can require is simply washing away the excretion deposited on the skin.

Drainage of Seaside Towns.—Among the causes which have most conduced to bar the way to prosperity in the case of seaside towns has been and is inefficient sanitary regulations. The disregard of proper drainage in them has been often commented on and has much prejudiced them in the eyes of visitors accustomed to see sanitary laws better followed. But, secure in their belief in the protection afforded by abundant fresh air, natives are but slowly converted to a belief in the virtues of systematic sewerage. Zymotic disease, however, has gradually proved an effectual tutor, and our seaside resorts have one by one adopted the measures approved of by science and common sense, until nearly all our most favored watering places have fallen in line with well ordered towns. Among the progressive spots, says our English exchange, *Iron*, is Torquay, which a few years ago determined to deposit its sewerage at such a point as to enable the strong current of the Channel to carry it away without the risk of its polluting the beautiful waters of Torbay. This has been at last effected, at a great outlay of money and engineering skill, and now, by a series of tunnels under the various hills on which Torquay is built, the new main drain collects all the branches as they descend towards the sea, and carries the sewerage into the Channel, two miles from the town, at the extreme eastern point of Torbay, at such a hight above the sea level that the tide does not interfere with the perpetual flow of its contents. There are very few seaside towns, if any, which can point to so effective a system of finally disposing of its sewerage as Torquay now possesses.

Poison in Peach Stones.—A fatal case of poisoning by peach stones, which is noted in the French papers as having recently occurred in Paris, should serve as a warning to families in which children are allowed to look after themselves for hours at a time. Probably very few adults themselves know how poisonous peach stones are. The victim of the recent accident in Paris secreted the stones of a number of peaches, and obtaining a hammer, when left alone broke them open industriously and ate them, the result being that he was fatally poisoned by hydrocyanic (prussic) acid. Since the peach season is now upon us, it is well to explain what quantity of poison the peach stone possesses. Writers on toxicology state that one ounce of the kernels contain about one grain of pure prussic acid, and this quantity, it is well known, is sufficient to kill any adult person. Even two-thirds of a grain has very often proved fatal, and indeed may well be regarded as a fatal dose for any child.

Eucalyptus Tea as a Febrifuge.—A reader writes to the *Alta* from Kings River, Fresno county, as follows: In view of the frightful affliction of the South, I need not apologize for offering a suggestion, which is this: That, as all fevers are more or less the result of poisonous malaria, may not an antidote which neutralizes one form of fever, be beneficient in all? Hot tea, made by steeping the leaves of the blue gum, is specific in the case of fever and ague in California. On Kings' River the fever is very malignant. I have known a few cupfuls, taken hot, so as to produce profuse perspiration, effect a radical cure in 24 hours. It can be taken in any quantity, is a good tonic, and sweetened, a pleasant beverage.

The "Anti-Fat" Remedy.—A death is recorded at Chicago from the over use of a patent medicine which is being extensively advertised, with pictorial illustrations, as the "Anti-Fat" Remedy, the object of which medicine is to reduce the flesh of obese persons and keep down corpulency. This death is enough to show that the ingredients of which the medicine is compounded are unsafe, and that people should be cautious how to use it. Educated physicians are very suspicious of all such nostrums, and will be generally found to say that the only way to reduce flesh is by the adoption of a proper dietary regimen.—*Morning Call.*

Killing Fungus in Cellars.—A correspondent recently asked the *Journal of Chemistry* for a simple and effectual remedy for fungus and mould in cellars. A German agricultural journal gives the following: Put some roll brimstone into a pan and set fire to it; close the doors, making the cellar as nearly air-tight as possible for two or three hours, when the fungi will be destroyed and the mould dried up. Repeat this simple and inexpensive operation every two or three months, and you will have your cellar free from all parasitical growth.

Cleaning the Teeth.—A writer says; A good way to clean teeth is to dip the brush in water, rub it over genuine white Castile soap, then dip it in prepared chalk. I have been complimented upon the whiteness of my teeth, which were originally anything but white. I have used the soap constantly for two or three years, and the chalk for the last year. There is no danger of scratching the teeth as the chalk is prepared; but with a good, stiff brush and the soap it is as effectual as soap and sand on a floor.

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NEW ADVERTISEMENTS.

Ames' Portable Steam Engine on Skids, Baker & Hamilton, S. F.; The Kendall Battery, Rankin, Brayton & Co., S. F.; Steam Pumps, Guild & Garrison, Brooklyn. N. Y.; To Owners of Rebellious Ores, S. P. Pressler, Elkardt, Ind.; Notice of Meeting—South Comstock Con. Silver Mining Co., P. Conklin, Sec'y, S. F.; Assessment Notice—Orion Mining Co., P. Conklin, Sec'y, S. F.; Delinquent Notices—Telegraph Copper and Silver Mining Co., I. T. Milliken, Sec'y, S. F.; Vigorit Powder Co., Jas. W. Baker, Sec'y, S. F.

The Week

The press and the reports of the mining share market alike indicate continued activity and hopeful prospects in mining circles. The contract for the ties to be used on the Bodie railroad has been let. Rich strikes are reported in the Richmond mine and also in the Eureka T. & M. Co.'s property. Idaho complains for want of capital. One hundred men, she says, might be profitably employed where one is now at work. Nearly every day the pick is struck into some new claim in Bodie district. In the more northern counties, men, driven perhaps by the hard times, are cleaning out old tunnels and prospecting dead mines, and their prospects are often good. Meanwhile, everything prospers with the more live mines. The Oriental, Sierra county, has struck a pocket that warranted the sending of four or five startling telegrams, the burden of which was: "Never so rich before!" The Meadow Lakers of Nevada county have found a process that will work their ore. The rich Idaho mine, of the same county, has been visited by a French metallurgist, fresh from Europe and representing capital. His presence in the country argues well. A more northern county reports that the bullion shipments of the last two months exceeded the product of the same time in any previous year.

Branch State Prison.—George Rich writes us that the Sacramento foundry has the contract for the branch State prison at Folsom. The foundry will use up some 220 tons of iron for its construction.

Want of Enterprise?

With no censorious spirit, but with a desire to awaken inquiry we wish to ask a question. If, as would be most natural, a foreigner should study our Fair with a view to determining the resources of the country whose metropolis is San Francisco, would it be found in his conclusion that the Pacific coast is the most wonderful mining district of ths world? Would his conclusion go even so far as to decide that a large portion of our time and money is spent in dealing with mines? We all know that such a conclusion would he true. During the last year, out of 409 companies incorporated in San Francisco, over 250 were for the purpose of carrying on mining operations. Among incorporations having their offices in our city the mining companies, during the last month, paid more in dividends than hanks, gas, water and street railroad companies put together. And the amount of our capital that goes iuto non-dividend paying mines is incalculahle. Moreover, we know that foreign engineers, with command of large capital, come to San Francisco with instructions to find mining investments. Yet, if such a one should seek in the Fair to find some guide to his investment—and what is the paramount purpose of a Fair if it is not to show strangers as well as residents what we can do?—we helieve that his search would he a failure, and that his opinion so formed would misrepresent us.

A French engineer, representing several heavy capitalists, has just arrived in San Francisco. He hears that there is a Fair in full hlast. He knows well what a Fair is and what is its purposs, and congratulates himself on having arrived at so timely a season. He visits the Fair even hefore he has presented his letters of introduction and inquiry to mining men in the city. Suppose we join him in his visit, and appreciate as far as we can his impressions.

As might he expected he has little eye for exhihitions of compressed coffee, of milk champagne, of yeast powder, of wire-work, of hair work, of what not, except anything related to mining, and he is somewhat chagrined when he finds that he has accepted from a small hoy a card which directs him to an infallihle cure for the catarrh. He finds some little solace iu an exhihit of lead pipe, and hegins to imagine that he is iudeed among a people that have at least heard of mining when he discovers a little case of hlasting powder. Attracted hy the noise of the machinery, he goes to the north wing of the Pavilion. In his ramhles here he sees a new patent furnace for roasting certain classes of ore. That is very interesting and keeps his attcution longest. The drill that he sees at work he has often observed hefore. A novel propeller pump excites his curiosity and claims much of his time. He notices everything keenly, and leaves this side of the Pavilion, hy no means impressed with the idea that in the exhihit of machinery he has heen exauiniug, machines especially adapted for mining purposes predominate. But of this he is thoroughly convinced, viz: that what he has seen is arranged in a very unsystematic way.

Once more in the body of the huilding, he inquires of several men and hoys where the exhihit of minerals is. No one seems to know. At last, however, he finds a hoy who tells him that what he seeks is "over there under the stairs." He explores uuder the stairs and is ahout to decide that the hoy has some patent notion as to the meaning of "minerals," when he does discover a case of ore from Siskiyou county. Ore, however rich it might he, from one mine, in one county, in one part of the country, placed hy itself alone among miscellaneous exhihits, afforded him no opportunity for comparison and gave him correspondingly little satisfaction. He next spent a few moments looking at the small exhihit made hy a metallurgist. The novel inventious and the few rare specimeus excited some little intcrest, hut he had not found what he was seeking. In the course of much wandering he discovered four piles of coal, two of them separated from each other and from all their relations, and two placed side hy side, giving him the first sign of that useful systematic arrangement for which he had been looking. Though shy of small hoys with advertisements ever since he had the adventure with the catarrh, he ventnred to accept another card from a man. The card was a notice of a Cleveland mineral oil company. Little interested in this, he coufided to the man his trouhles. He was directed to an exhibit made by a publication company. Here again he found the principle of consecutive display hinted at, but, as with the two coal piles, in a very meagre and unsatisfactory way. Here were collected, laheled and placed side hy side, specimens of different minerals from different parts of the State. He found there marhle from different parts of California, borax from Nevada, salt, lime-stone, antimony and copper ores, magnetite, hematite, chromite, and numerous varieties of that inevitahle coal. There was nothiug striking ahout the specimens, but the right idea of exhihit had heen conceived.

Would any Californian feel satisfied to have this Frenchman form his estimate of our mineral wealth from what we have watched him examining? Certainly not. Nor did he do so. He found in the catalogue that in the art gallery there was a magnificent display of minerals. He visited the gallery.

Perhaps the best description of Hatch's display of minerals at the Fair is to say that it is placed just where it belongs, viz: in the art gallsry. It is indeed a work of art, and possesses many of the requirements of a good painting. It has heautiful and variegated colors, whose naturalness no critic dare question. And with the attraction of its numherless natural tints and hues it has that which relates it still more closely to a successful painting, the element of suggestiveness. As one looks at it half hewildered, striving to comprehend the richness that it represents, and to realize the full significance of the depths to which man has hurrowed to hring to light some of its individual memhers, California ceases to have dull hrown hills, mines are remembered no mors as dismal, damp holes where men meet death almost as often as gold, and over our whole coast there settles down the mantle of the Arabian Nights. But stop! This mood will never do for the close-fisted, practical century that hoasts itself the nineteenth. If you want to indulge in such an opium-tainted atmosphere, go and huild a shanty in some younger country as Turkey, and consent to live on dreams and die. But here, with somehody else's hard cash jingling in your pockets, and somehody elss's telegrams arriting every day with the order, "Invest, invest," and the admonition, "But look out for wild-cats and picked specimens," hers is no place for auy but cool, clear-headed men.

But what has all this to do with the "Mineral Exhibit?" Much. Our criticism on Hatch's display is this, namely: That it is hetter calculated to dazzle and hewilder than to convince; that, to a practical man seeking an investment, this collection is not good for its face value. Suppose the Frazer Combination Company, on the ocean heach, wanted to acquaint the puhlic with ths value of their claim. Suppose, that in order to do so they took the following course: They washed a ton or so of the sand, carefully collected the "colors" and put them in a highly polished silver plate. Then they picked up all the pretty shells they could find around their claim, had them nicely polished, added a piece or two of coral, and then neatly arranged them all around the edge of the plate. This plate they put on exhihition to convince the puhlic that their claim was rich. Now, we would not advise them to haul a ton or so of heach sand from their claim aud have it dumped in the Pavilion as a specimen from their mine. But we do think that if the silver saucer with its "colors" were supplemented hy a few hottles of the original sand, a circular or two stating how much sand would yield so much "colors," and a picture or pictures showing the machinery used and the manner of extracting the gold, we think, we say that the attractive saucer so supplemented would convey a far more practical idea of the combination claim than the clean gold with its fringe of shell and coral could alone. And a series of similarly complete exhihits, representing all the miuing or mineral-hearing counties in the State or on the coast, would furnish inquirers with a comprehensive field for comparison, and one opportunity to make intelligent choice. Such exhihits could not injure hona fide mines. Nor would they cost a great deal, for much ore is already sent to Sau Francisco for sampling and working, and it is the freight on the ore that would be the principal expense.

We have numherless, worthy mineral sections that are longing for capital to come and give them a trial. We have numberless, idle capitalists that are longing for somcthing worthy to try. A little enterprising effort on the part of claim-owners would hring these together so as to henefit all concerned. And a fair is the appointed place and time. If a man owns chrome iron ore in San Luis Ohispo, let him exhihit some of it and puhlish his needs. Alongside of this exhihit let the man who owns chrome iron ore in Del Norte, or in Sacramento, or iu Nevada, display some of his ore, and tell how much capital will develop his mine and what market the product will find. Let the owner of copper in Shasta exhihit his copper and a map of the deposits, alongside of ores from Calaveras. And with coal from Sonoma and Contra Costa, and Monterey, and Los Angeles, and horax from Lake and the country east of the Sierras, gold-hearing quartz and gravel from how many counties even miners could not tell, with marhle from here and there and magnetite and argentiferous galena and quicksilver ores from north, south, east and west, and with what not in the shape of minerals from everywhere on the coast, we would have material enough to fill one whole wing of the Pavilion with a most useful and rational exhihit. And in this exhihit, we may add, we would put at least a card from some California mineral oil company, and not let Cleveland come 2,000 miles and get ahead of us.

This plan may he too sanguine. It must be very much so in order to make with the reality a tolerable average. For, while complimenting Hatch on his energy and good taste, and Phillips on his acknowledged ingenuity, the *Journal of Commerce* for illustrating, as far as outside co-operation enabled them, the correct principle of exhihition, congratulatiug the Klamath mine on its richness, and blaming no one in particular, we must state as our most charitahle conviction, that the "mineral exhihit" at the Fair is unjustifiably poor, and in fact hardly can claim existence under its quoted name. And not pride alone, hut the money bump as well, urges to greater enterprise at the next exhihition.

Trade dollars have only a hullion value, and should not be received for the face. This is not news, but it is well to note it.

The Chemical Section.

It is with much pleasure that we rscord the first working meeting of the Chemical Section, whose formation has already heen recorded in the Press. The meeting to which we refer was held on Friday, August 30th, at ths chemical lecture rooms of the University of California, where, on account of the hetter facilities, apparatus, etc., afforded hy the laboratories, the meetings will bs held for the present. The meetings will he held monthly. The memhership of the section is not very large as yet, and will he strictly limited to such persons as are either professional chemists or who have received a thorough chemical education. The purpose of the section heing the development of pure and applied chemistry, the memhers should he selected with the greatest care.

Even with the present limited memhership, the various sides of chemical science are already tolerahly well rspresented, *e. g.*: analytical chemistry, physiological chemistry, metallurgical chemistry, agricultural chsmistry, mineralogical chemistry, chemical geology and organic chemistry.

The list of members is as follows. Prof. W. B. Rising, President; Jno. Ls Conte, Prof. Jos. Le Conts, Prof. Hilgard, Dr. G. F. Beeker, A. W. Jackson, S. B. Christy, J. M. Stillman, Edward Booth, August Harding; and it is expected that other memhers will soon he added to the roll. Ths officers of this section are as follows: President, W. B. Rising, Professor of Chemistry at the University of California; Vice-President, Jno. Le Conte; Secretary, J. M. Stillman; Treasurer, A. W. Jackson; Council, Profs. Jno. Le Conte, Jos. Le Conts and W. B. Rising. The president elect, Prof. Rising, on opening the meeting, made a short but pertinent address, which we print in another column.

A paper was then read hy Mr. S. B. Christy, on the "Oceau Placers of San Francisco." Mr. J. M. Stillman followed with an interesting description of the recent artificial preparation of indigo hlue hy Prof. Baeyer, of Munich, and some other recent discoveries in the domain of organic chemistry. Prof. Hilgard exhihited some specimens of a fihrous plant from Fresno, which, hy the process of rolling, gives a strong fiher, stronger than hemp, and which may perhaps be found to furnish a good material for bagging and similar coarse fahrics. He also exhihited a kind of water plant or conferva from Colusa, which exists in various other parts of the State, and which exhihits the characteristics of a natural hatting, resemhling very much in appearance ordinary cotton hatting.

Mr. A. W. Jackson gave an interesting ahstract of a method of micro-chemical analysis, which has heen recently developed for the detection of the metallic hasis under the microscope hy means of hydrofluosilicic acid. After discussion the meeting was adjourned.

We have long heen waiting for the work of these sections of the academy to hegin. We shall follow the work of the Chemical Section with much interest.

Post-office News.—Post-offices estahlished: Herrick's Cross, Tulare county, Cal., Peter P. Davis, Postmaster; Pinole, Contra Costa county, Cal., Bernardo Fernando, Postmaster; Silverado, Los Angeles county, Cal., P. A. Clark, Postmaster; Klamath Agency, Lake couuty, Oregon, Linus M. Nickerson, Postmaster; Patterson's Mills, Douglas county, Oregon, Wm. Patterson, Postmaster; Willamina, Yam Hill county, Oregon, Jackson Munro, Postmaster. Offices discontinued: Madeline, Lassen county, Cal.; Falcon, Elko county, Nevada. Postmasters appointed: W. J. Johnson, Black Bear, Siskiyou county, Cal.; James W. Malone, Davis Creek, Modoc county, Cal.; Jacoh Boringer, Eagleville, Modoc county, Cal.; Wm. L. Cole, Mountain House, Sierra county, Cal.; James Deroice, Oasis, Gilmore county, Cal.; John Beam, Pine Grove, Esmeralda county, Nevada; L. W. Ballard, Slaughter, King county, Washington Territory.

Iodine Manufacture.—W. B. Jones, of Benicia, tells us that he has made further experiments with Pacific Coast seaweed, more particularly *Laminaria Andersonii*, with a view to determining the practicahility of the profitable production of iodine on our coast. He promises to give us a more detailed account of his work, and we will merely say here that he helieves a fair profit could he made at this new industry. Since the publication of his first article on the subject in the Mining and Scientific Press of August 10th, the San Francisco *Alta* has noticed his work, without, we helieve, giving us the credit of its first publication. H has received a letter from a gentleman in I Angeles, who says he has some thoughts of a tcmpting the manufacture of iodine.

Mr. Wm. E. Smith, for many years a prominent tclegraph official in the southern part of this State, hut latterly engaged in mercantile husiness in Arizona, has purchased an interest in the Pioneer Reduction Works of this city, with Mr. G. F. Deetken, the well-known metallurgist. These gentlemen are greatly enlarging the capacity of the works, and will hereafter confine themselves to the purchase and reduction of gold, silver and copper ores. See their card in this issue.

The Oakland Harbor Improvements.

Among the few things for which the Pacific slope can conscientiously feel gratified to the general government, we must certainly count the improvement of the Oakland harbor as one of the most important. There is perhaps no way in which the people can be made to feel more directly and more pleasantly the influence of the central government than by those noble pieces of engineering, which have for their object the improvement of the natural resources of an entire community. Such undertakings, in order to be of any practical value, have to be considered from so many sides before they are begun, require such a long period of time for completion and usually involve such an immediate expenditure of large sums of money that no individual or corporation would feel justified in waiting for the small and uncertain returns that would be its recompense.

It is not any less important to the widely separated States of our Union than it was to the provinces of the Roman empire that the feeling of national unity be made as pleasant as possible. If we are ever to have a distinctly American civilization, an influence tending to unify their widely diffusing interests can be neglected.

Among these influences none are more permanent or affect a greater number of the people than these large engineering improvements. There is no nobler or more lasting monument to the Roman civilization than the magnificent causeways which are even yet the admiration of the world.

There is still another reason why these undertakings should be taken in hand by the government, a reason which those of a cynical turn of mind will appreciate perhaps more than any other. Money spent in this way at least gives the people some return for their taxes, and if it did not go in this way something worse might be done with it. And we are of the opinion that for money spent under the direction of our Government Engineers, who are at least men of honor and gentlemen, our people have more chances of getting an adequate return than usually falls to their lot in the apportionment of public moneys.

For the benefit of such of our readers as are not familiar with the harbor, we give a brief description of the situation. Oakland is situated on the eastern shore of San Francisco bay, and as San Francisco can be reached by land only by going around the head of the bay and up the peninsula, Oakland is naturally the landing place of the traffic through San Francisco to the Eastern States. Now Oakland is situated on an extensive plain, which forms the whole of the eastern side of the bay and which does not cease when it reaches the shore line, but extends out into the bay for nearly two miles. The whole of this country, as far up as the foothills, has probably been deposited by the tide waters of the bay, checking the velocity of the silt-bearing stream of the Sacramento river. Of course this necessitated the building of a wharf two miles in length to reach deep water. Over this long wharf all the railway traffic with the Eastern States has been carried on for several years. But the piles of the wharf are being constantly attacked by the *toredo*, and some other means of communication has long been needed, not merely for the accommodation of the Central Pacific Railroad Company, but by the whole community. The railroad company made an unsuccessful movement some years ago to secure Goat island for their terminus. To this they intended building a solid roadway. But the natural harbor existing in San Antonio creek at last began to secure the attention due it. This creek and the adjacent region is shown in the accompanying map, which is taken from a coast survey chart. It will be seen what a fine harbor the creek forms, when it is remembered that it has naturally a depth of from 14 to 18 feet. The only difficulty in the way was a very extensive bar at the mouth, which at low water only had two feet of water upon it.

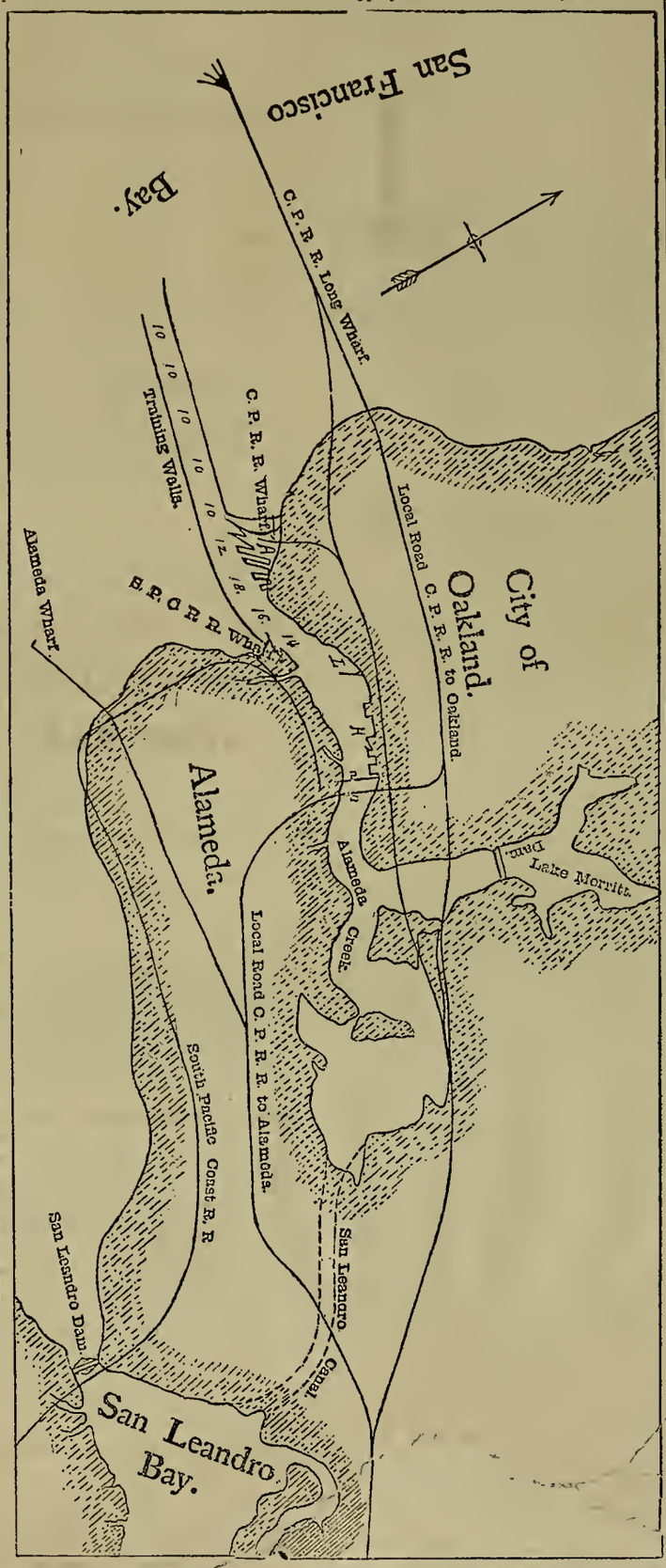
The first action by the Government was taken by the 42d Congress, which directed an examination of San Antonia estuary, and a report upon the most feasible plan for rendering it navigable. This was undertaken by the Board of Pacific Coast Engineers, consisting of Gen. B. S. Alexander, Major G. H. Mendell, and Col. C. S. Stewart. These gentlemen made a thorough examination and gave a favorable report in 1874. They found that the tide in the adjacent San Leandro Bay (see map) rises a little higher and falls a little lower than in San Antonia creek, the difference being four-tenths of a foot. The times of high water were also earlier at the former than at the latter place by about one hour. The reason of this, by the way, is evident in the different forms of the respective bodies. The extreme difference of high and low water, in the creek, is 10 feet. The mean difference is four feet. The tides are 25 minutes later than at Fort Point. In view of these facts and others to which we have already alluded, the gentlemen recommended a plan which is now being carried out. It is as follows:

1. To build parallel training walls of stone 1,000 feet apart from the mouth of the creek and across the wide mud flat out to deep water. The purpose being, of course, to concentrate the tidal current upon the bar at the month, and thus to partly remove it.

2. To double the amount of water flowing out by adding the tidal prism of San Leandro Bay.

This, it was estimated, was nearly equal to that of the creek itself, and if it could be done would greatly increase the scouring action of the current.

The order in which the work was to be accomplished is as follows:



MAP OF OAKLAND HARBOR IMPROVEMENTS.—A. New wharf and two slips of the C. P. R. R. L. Market street wharf. H. Broadway slip, C. P. R. R.

1. Building of training walls.

2. Digging canal connecting San Antonia creek and San Leandro Bay.

3. Dredging of deep water at the mouth of San Leandro Bay with tide gates opening inwards to admit the tide, but closing automatically when the tide falls, thus compelling the whole tidal prism to find its exit by the way of San Antonia creek.

4. The excavation of the tidal basin at the head of the creek.

5. Protection, by stone embankments, of such portions of the banks as will be injuriously effected by the scouring of the current.

It is expected that when the work is completed there will be a channel from the head of the creek to deep water containing 18 to 20 feet of water at low tide.

The estimated cost was $1,736,985.20. In 1875 Congress made an appropriation of $100,000, in 1876 another of the same amount, in 1877 one of $75,000. In 1878, of the $275,000 appropriated, $20,000 remained in the hands of the Board, and they only asked for $80,000 as the appropriation for the current year.

The work was begun by the Board in 1876, and is being carried out under the immediate supervision of Louis J. LeConte, son of Pres. John LeConte, of the University of California. The training walls have been completed since then out as far as deep water. These walls, as built at present, are 10,000 feet long, and on an average 800 feet apart. They are shown on the chart. They are built of broken or "random" stone, from Angel Island and Telegraph Hill. These walls contain 13,8560 tons of rock. Its top is at present 5 feet above low water. This "random" stone is intended merely as a foundation. The intention is to build a concrete wall upon this, to be eight feet above low water, four feet wide at the top where the wall begins, and increasing in width as it goes out into deep water, until at the extremity it has a width of 15 feet. The contracts for this work are shortly to be let. The random stone wall is protected from the sea on the northern side by the long wharf of the C. P. R. R. Co., so that the slope of the wall is only 1 to 1 on that side; while on the southwest it receives the full force of the prevailing sea, and it has taken a slope of 1 to 2. On both sides of the channel, on the outside of the wall, there is a rapid deposit going on. On the north side this deposit has increased six feet, and on the south side four feet since the wall has been built. This deposit runs from the shore out for a thousand feet. No danger is apprehended from it, at least at present.

The present channel is dredged 200 feet wide and is 10 feet deep at low water. Vessels of this draft can enter as far as the city front at low water. At high water vessels drawing 16 feet enter with perfect ease and safety, and the creek is becoming a very popular place for seagoing vessels of the larger class. The bottom, as has been discovered by dredging, is composed of three layers. The top is sandy, below this is a very tough blue clay, while below this at the depth of 15 feet (below low water) is the "hard pan," which is a soft yellow sandstone mixed with clay. This substance exposed to the air becomes very hard. The present bottom is in the blue clay, but the bed of the creek will eventually be the hard pan. The bottom at the end of the wall seemed much softer, the wall sinking at this place two feet (the maximum), but it seems to have reached a firm foundation. The action of the tides seems even at present to hold its own against sedimentation. The soundings in the channel do not show any tendency to shoaling during the past year. The effect of the improvements already made foreshadows what an impact piece of work this will be when it is completed. In the map at *A* are seen the slips and extension wharfs of the C. P. R. R. Co., which are now in process of erection. It is the intention to transfer all the freight car traffic to this place, and save the long wharf for the Berkeley and West Oakland traffic.

At present, as is well known, much of the local freight and passenger traffic goes by the creek route. The steamers *Capital* and *Amador* make hourly trips to the Broadway wharf, shown on the map at *H*. The trip is made to Broadway in 30 minutes, as against 45 minutes by the other route. On the opposite bank from the C. P. R. R. Co.'s slips is seen the wharf of the Bay and South Pacific Coast Railroad. These were described in a late issue, and we will only add that since that time four trips are made daily from San Francisco for this wharf by the steamer *Newark*, connecting with trains for the various stations of this road. All of these new wharfs are on the line of the new channel. There are at present numerous steamers drawing from five to 10 feet of water, a fleet of small craft and several square-rigged vessels within the harbor.

The next step will be the digging of the San Leandro tidal canal, shown on map. This will be about a mile long, 400 feet wide and will contain eight feet of water at low tide. After this is finished, the next step will be the building of the dam at the mouth of San Leandro bay. (See map.) This will have sectional gateways of sufficient dimensions to admit the incoming tide, and opening inward so that they admit the incoming water, but shut automatically as soon as the water begins to fall.

There is no doubt that the advantages to be derived from these improvements will be worth to the community many times what they cost. It is an advantage also which the humblest shares with the wealthiest, and we hope to see more work of this nature undertaken by our Government engineers. It is estimated that if Congress does not cause any delays by failure to provide funds, that the minimum time required to complete the work will be three years. Meanwhile private enterprise and the public at large is reaping the benefits of the work already, and we hope that a short-sighted policy on the part of our Congressmen will not put any obstacles in the way of a good work so well begun.

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THE gold on the Whitewood, below Deadwood, is found in the gravel from the top to within half a foot of bed rock, but none to speak of on the rock.

THE principal place of business of the Klamath quartz mining company has been changed from Siskiyou county to San Francisco.

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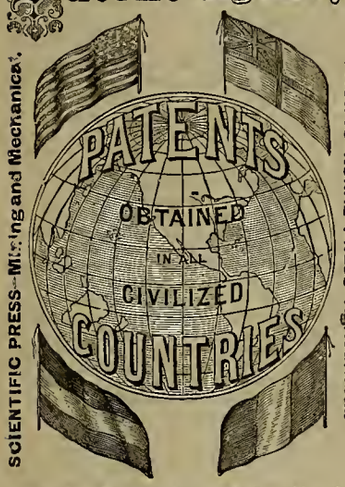

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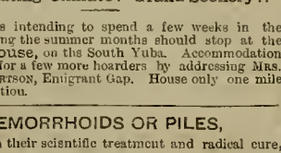

Market, head of Front Street, San Francisco

Dewey & Co. { 202 Sansome St } Patent Ag'ts.

Business Directory.

Mining Law. Patent Law

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Attorney and Counsellor at Law,

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SANTA CRUZ, CAL.

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This popular House, having been thoroughly refurnished and refitted, is now open for the reception of guests as a

FIRST-CLASS HOUSE,

And in the character of its accommodations second to no interior Hotel in the State.

The Hotel Coach will carry passengers from all Trains and Steamers to the House

FREE OF CHARGE.

Two lines of Street Cars pass the Hotel to the Beach and Bath Houses.

SUSPENDED

WIRE ROPE TRAMWAYS.

This system of transport is peculiarly adapted for the carriage of minerals over rough countries. Heavy gradients and long spans easily overcome, and cheaper than by any ordinary means.

Transmission of Power by Wire Ropes.

The power of water or steam can by this means be carried for long distances, with great economy.

For estimates and practical information apply to

JOHN SAMSON, Engineer,

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California Steam Navigation Co.

The Steamers

ALICE GARRATT and CITY OF STOCKTON

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DAILY (Sundays excepted) at 5 P. M., from Washington Street Wharf, near foot of Market street.

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Model Makers, and Manufacturere of Emblematic Signs Models for the Patent Office, in Wood or Metal, a Specialty.

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All kinds of tin, copper and brass work made to order.

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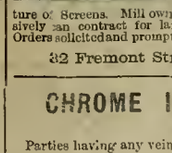
(BETWEEN BROADWAY AND WASHINGTON.)

OAKLAND, CAL.

San Francisco Pioneer Screen Works,

J. W. QUICK, MANUFACTURER,



Several first premiums received for Quartz Mill Screens, and Perforated Sheet Metals of every description. I would call special attention to my SLOT CUT and SLOT PUNCHED SCREENS, which are attracting much attention and giving universal satisfaction. This is the only establishment on the coast devoted exclusively to the manufacture of Screens. Mill owners using Battery Screens extensively can contract for large supplies at favorable rates. Orders solicited and promptly attended to.

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CHROME IRON WANTED.

Parties having any vein or deposit of Chrome Iron will please send all particulars as to location, distance from railroad or other communication with this City.

Address, CHROME IRON,

SCIENTIFIC PRESS, No. 202 Sansome St., San Francisco.

Machinery.

The Ingersoll Rock Drill.

The lightest, most easily adjusted, and only Drill using rubber buffers to protect cylinder-heads, and with Automatic Feed.

Some of the mines using this Drill on the Comstock Lode, Virginia City, Nevada:

Best & Belcher M. Co.,	Con. Virginia M. Co.,
Crown Point M. Co.,	California M. Co.,
Belcher M. Co.,	C. & C. Shaft,
Yellow Jacket M. Co.,	Utah M. Co.,
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REYNOLDS, RIX & CO., Agents.
18 & 20 Fremont Street, San Francisco, Cal.

KING ENGINE.

The Only SAFE BOILER.

SAVES One-half the FUEL Consumed by Others.

The engine is adapted to all the various industries in which small power is required. The engines are FIRST-CLASS, and are made from two to twelve horse-power.

The smaller sizes are especially recommended for irrigating land, driving printing presses, or manufactories. The larger sizes are being extensively introduced in small quartz mills, where their economy of fuel and portability especially commend them. Send for circular.

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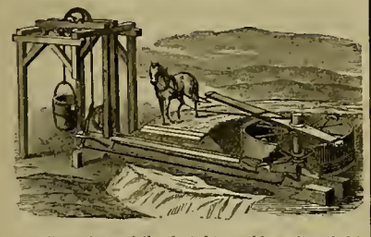
MINERS' HORSE-POWER.



This Power is especially adapted to working mines, hoisting coal or building material, etc. It will do the work of a Steam Engine with one-tenth the expense. One Horse can easily hoist over 1,000 pounds at a depth of 500 feet.

The Power is mainly built of wrought iron, and cannot be affected by exposure. The hoisting drum is thrown out of gear by the lever, while the load is held in place with a brake by the man tending bucket. The frame of the Power is bolted to bed-timbers, thus avoiding all frame work. When required these Powers are made in sections for packing.

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THE O'HARRA CHLORIDIZING FURNACE.

This furnace is guaranteed to chloridize from 88 per cent. to 95 per cent. of the silver, and put gold in a state so that 88 to 95 per cent. of the battery assay can be obtained by amalgamation on any gold or silver ore ever formed by nature.

The cost of Roasting and Chloridizing is as follows:

One man, per day	$ 3 50
One man, per day	3 00
Wood, 1¼ cords at $3	7 00
Cost of 20 tons	$13 50
Cost of one ton	67½

From 2½ to 5 per cent. of salt is necessary.

In a furnace of three or four times this capacity the cost is decreased by 20 per cent.

Several furnaces are in successful operation in California, Nevada and Idaho.

Any persons wishing any reference can address:

JUDGE WM. WEBSTER, Paymaster Mine, Reno, Nev.
LEWIS CHALMERS, Manager Exchequer and IXL Mines, Silver Mountain, Cal.
J. S. CONE, Vice-President Tehama County Bank, Red Bluff, Cal.
R. H. CAMPBELL, Superintendent Afterthought Mine, Redding; Shasta County, Cal.

For further information, apply to
D. J. O'HARRA, Reno, Nevada.

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ENGINE FOR SALE.

A first-class, large sized Britton Fire Engine, in fair order is offered for sale cheap. Price, $400. It is worth more than double that sum. About forty men can work on the brakes. Towns or corporations wishing a good machine should examine this engine before ordering elsewhere. Apply to

ROOT, NELSON & CO.,
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SAVE YOUR GOLD.

Highly Important to Miners and Quartz Mill Men.

SILVER PLATED AMALGAMATING PLATES
Supplied in any quantity and size at greatly reduced rates at
SAN FRANCISCO GOLD, SILVER, NICKEL AND COPPER PLATING WORKS,
Nos. 653 and 655 Mission Street, San Francisco.
E. G. DENNISTON, - - - - - - - - PROPRIETOR

Hotel, Restaurant, Plumbers', Gunsmiths', and all kinds of metal work plated in the most durable manner. A large stock of new Plated-ware and Cutlery for sale at Manufacturers' prices.

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Importers of and Dealers in

MACHINERY of all Descriptions.

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Tanite Co.'e Emery Wheels and Machinery
Payne'e Vertical Enginee and Boilere,
Judson'e Standard Governors,
Dreyfue' Self Oilers,
Gould Manufacturing Co.'e Hand Pumps,
Platt'e Patent Fuse Lightere,
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A FULL LINE OF

Belting, Packing, Hose, and Other Mill and Mining Supplies on Hand.

☞Send for Illustrated Catalogue.

Established 1844.

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ENGINEER
—AND—
MACHINIST.

Flax, Hemp, Jute, Rope, Oakum and Bagging Machinery, Steam Engines, Boilers, etc. I also manufacture Baxter'e New Portable Engine of 1877, of one horse-power, complete for $125; can be seen in operation at my store. Two horse-power, $225; two and a half horse-power, $250; three horse-power, $275. Send for descriptive circular and price.

Address J. C. TODD,
10 Barclay Street, N. Y., or Patereon, N. J.

Mill and Mining Machinery OF ALL KINDS FOR SALE by BERRY & PLACE

At the Old Stand, Market, head of Front Street, S. F.

BURNHAM'S STANDARD TURBINE WATER WHEEL.
WARRANTED BEST & CHEAPEST.
Also, MILLING MACHINERY.
PRICES REDUCED APR. 20, '78.
Pamphleta free. OFFICE, YORK, PA.

FOR SALE.

One Engine, 16 by 36 Inchee, Link Motion.
One Engine, 14 by 30 Inches, Link Motion.
One Engine, 12 by 24 Inches.
One Engine, 9 by 18 Inchee.

☞Boilers to match each Engine. Each of the above will be sold at a very low figure.

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Ice at $1.00 Per Ton.

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In Store for Sale at Loweet Market Ratee

500,000 FEET.

BLACK AND GALVANIZED IRON PIPE
—FOR—
GAS AND WATER.

Sizes From ¼ Inch to 6 Inches.

Brase, Wrought, Cast and Malleable Pipe fittinge for Gas, Steam and Water.

W. W. Montague & Co.
110, 112, 114, 118 & 120 Battery St.,
SAN FRANCISCO.

Fig.1

Fig.2

Single samples will be mailed from office for 50 cents, (and upward, according to size), postpaid. Wholesale and retail agents wanted.

THE BEST FILEHOLDER.—After having used Dewey's patent elastic hinge fileholder for over a year past, the *News* cheerfully indorses it as the best newspaper fileholder in existence, possessing important advantages over any and all others in use. The holders are neat, light and convenient, and the newspapers are placed in them with the utmost facility and least possible time and exertion. They are the simplest, handiest and cheapest of all. Anybody keeping files of papers in reading rooms, offices or at home, should send at once to the proprietor, A. T. Dewey, San Francisco, and get the only proper fileholder. Samples by mail fifty cents.—*Gold Hill News.*

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MINING AGENTS,

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French Savings and Loan Society,

411 Bush Street, above Kearny, SAN FRANCISCO

G MAHE, Director.

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Another Wonderful Cure Effected by CALIFORNIA ELASTIC TRUSS!

CALIFORNIA ELASTIC TRUSS COMPANY, W. J. Horne, Proprietor.—DEAR SIR:—I feel that I owe it to you and to humanity to write the fact that I have been SUBSTANTIALLY CURED of a bad case of Rupture of 30 years' standing, by one of your Incomparable Trusses, which I purchased from you three months ago. I cannot describe the suffering, both physically and mentally, that I have undergone during that period; and now I feel like a new being. I have worn all kinds of Trusses, both Steel and Elastic, and never received any permanent relief until I tried yours. Its simplicity of construction, and facility with which it can be adjusted, and the ease and perfect freedom to the motions of the body with which it can be worn without causing any irritation, are its chief merits, and it is a perfect supporter. I have not had any sign of a return of the Rupture since the first day I put it on, and feel that I am PERFECTLY CURED. It is invaluable, and the fact should be known to the world. You can refer anyone to me on the subject of their merits.

I am truly yours, ALFRED J. BURKE,
Chief Mail Clerk S. F. *Daily Evening Post.*
San Francisco, July 20th, 1878.

Endorsed by the Medical Profession.

SAN FRANCISCO, July 9th, 1878.

California Elastic Truss Co.:

After practicing medicine many years in this city, during which time I have had an extensive experience in the application of all kinds of Trusses, I can and do recommend yours as the best in every respect, for it is as near perfection as modern science can make it. It has many advantages over the torturing steel-hoop Trusses, which inflict great injury on the hips and spine, bringing on other distressing ailments, such as lumbago, morbid affections of the kidneys and numbness in the lower limbs, all of which are avoided by wearing the California Elastic Truss. It is not only a perfect retainer, combining ease and comfort, but the pressure can be changed to any degree. It also remains in the proper place at all times, regardless of the motions of the body, and is worn night and day with perfect ease. It is superior to any of the Elastic Trusses now in the market, while it combines the merits of all. 1st—It is easily adjusted on and off with snaps, doing away with straps and buckles. 2d—The universal spring between the plate and pad prevents all irritation, which is a godsend to the sufferer. 3d—The pad is adjusted on and off in an instant, and can be changed for any other size and form most suitable to the case. In fact, it combines every quality essential to comfort and durability, and is unequalled in lightness, elasticity, natural action, and artistic finish. Many of my patients who are afflicted with hernia are wearing them, and all shall in the future, for I think the great ease by which these purely scientific appliances are made efficacious, is truly remarkable. You can refer any parties to me on the subject of their merits. I remain yours truly,

L. DEXTER LYFORD, M. D.,
Physician and Surgeon,
609 Sacramento street, San Francisco.

A Physician's 45 Years' Experience.

COLUMBIA, Tuolumne Co., July 16th, 1878.

W. J. Horne, Esq.—DEAR SIR:—For some time past I have used, in my practice, the California Elastic Truss, with entire satisfaction in most cases of complicated hernia of both sexes. During a practice of 45 years I have found no Truss that would, with the same ease and certainty, retain the required adjustment, the pressure being always under the immediate control of the patient. The simplicity and ease of application is of itself a guarantee to every experienced physician. I have the honor to remit by mail the amount due, knowing that I contribute to the alleviation of afflicted humanity.

Yours truly, J. P. TIBBITS, M. D.

It is constructed on scientific principles and sells on its merits. If you want the best Truss ever manufactured, don't forget the name and number.

Trusses forwarded to all parts of the United States at our expense, on receipt of price.

Send for illustrated Catalogue and Price List, giving full information and rules for measuring.

CALIFORNIA ELASTIC TRUSS CO.,
615 Sacramento Street, San Francisco, Cal.

Pocket Map of California and Nevada.

Compiled from the latest authentic sources, by Chas. Drayton Gibbs, C. E. This map comprises information obtained from the U. S. Coast and Land, Whitney's State Geological, and Railroad Surveys; and from the results of explorations made by R. S. Williamson, U. S. A., Henry Degroot, C. D. Gibbs and others. The scale is 18 miles to 1 inch. It gives the Judicial and U. S. Land Districts. It distinguishes the Townships and their subdivisions; the County Seats; The Military Posts; the Railroads built and proposed, and the limits of seme of them; the occurrence of gold, silver, copper, quicksilver, tin, coal and oil. It has a section showing the hights of the principal mountains. The boundaries are clear and unmistakable, and the print good. 1878. Sold by DEWEY & CO. Price, postpaid, $2; to subscribers of this journal, until further notice, $1.

Steel Castings,

From ¼ to 10,000 lbs. weight, true to pattern, sound and solid, of unequaled strength, toughness and durability. An invaluable substitute for forgings or cast-iron requiring three-fold strength. Send for circular and price-list to

CHESTER STEEL CASTINGS CO.,
EVELINA STREET, - - - PHILADELPHIA, PA.

ESTABLISHED IN 1856, G. F. DEETKEN, Manager.

PIONEER REDUCTION WORKS,

Channel Street, Foot of 4th, San Francisco.

☞Gold Silver and Copper Ores purchased at highest rates, also reduced on commission. Working tests made.

San Francisco Cordage Company.

Established 1856.

We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manilla Rope, all sizes: Tarred Manila Rope; Hay Rope; Whale Line, etc., etc

TUBBS & CO.,
611 and 613 Front Street, San Francisco.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending Aug. 22.	Week Ending Aug. 29.	Week Ending Sept. 5.	Week Ending Sept. 12.
Alpha	16 13½	17½ 13½	16½ 13	16 13¾
Alta	15 9¾	18¾ 13¾	24 17¾	23 17
Andes	90c 60c	80c 65c	85c 75c	95c 65c
Alpa				
Argenta	70c 40c	1.15 60c	2.35 1½	2½ 2
Atlantic				
Aurora Tunnel				3 2
Baltimore Con				2 1¾
Belcher	11¾ 9	15 10½	15½ 13	16 12
Belmont	3 1.30	2.60 2	3¼ 2½	5 3¼
Best & Belcher	20½ 17½	28 18	25½ 20	30 23
Bullion	13 9¼	12¾ 10½	11¾ 7½	13 8¾
Bechtel	3.10 2.05	2½ 1.10	2 1.30	1.60 1.05
Belle Isle				35c
Bodie	48 23½	52 37½	49¾ 33	37½ 28¾
Benton	5¾ 3½	5.90 4.90	7¼ 4¼	11¾ 9¼
Bulwer				13 11½
Boyle				
Black Hawk				1.90 1¼
Belvidere				3 2
Booker				1.65 1
Caledonia	4 3	5½ 3¾	4.95 3¼	4.55 3¾
California	11¾ 10¾	14¼ 11¼	13 12	12½ 10½
Challenge	2.10 1¼	1.90 1¾	2 1.40	1¾ 1¼
Cholar-Potosi	39 33	40 36	40 34	50 36
Comanche				
Conness	7 5¼	12¾ 5¾	7.07 5¾	8¾ 6¼
Con Imperial	1¾ 85c	1.40 1	1.20 1	1.10 1
Con Virginia	10¾ 9¼	13 9¾	13 11¼	13 11¾
Crown Point	10¾ 8¾	11 9	13 9¼	12¾ 9
Con Wsshoe				2 1¼
Champion				
Concordia				80c 40c
Dayton	50c 40c	45c 40c	55c 40c	45c 35c
DeFrees	30c 15c	30c 15c	30c 25c	40c 25c
Daney				
Day	90c 60c	90c 75c	95c 80c	80c 40c
Eureka Con	45 36½	43 38¼	41 40	42 40¾
Exchequer	6¾ 5	6¾ 5¾	5¾ 4¾	6 4¼
Endowment	2 1	1.10 50c	75c 50c	70c 55c
Gen Thomas				
Grand Prize	5¾ 3¾	6 5¾	6¾ 6¼	6¼ 5¼
Gila	55c 40c	50c 35c	45c 40c	40c 30c
Golden Chariot	60c 25c	5oc 45c	45c 40c	50c 35c
Golden Terra				4
Goodshaw				1¼ 50c
Gould & Curry	11¾ 9¼	14 9¾	12¾ 9¾	18 11¾
Hale & Norcross	9¾ 8¼	11 9¾	10¾ 9¾	16 6¾
Hillside				3 2
Highridge				2.15 1.70
Homestake				7¾ 7½
Hussey	80c 60c	1 65c	1 75c	80c 60c
Independent				2¾ 2.20
Julia	17 13¾	17 9¾	11 5¾	8 6
Justice	9¾ 6¾	9¾ 7¾	10¾ 7¾	11¾ 9¼
Jackson	5¾ 4¼	6¾ 5¾	6¾ 4¾	8 6
Joe Scates				
K K Con				
Kentuck	6 4¾	6¾ 5¾	7 5	10 6¾
Kossuth	25c 20c	25c 20c	40c 20c	30c 25c
Keystone				6 6
Lady Bryan				3¾ 2¾
Lady Wash	14¾ 11¾	13¾ 12¾	17¾ 15	5 2¾
Leopard	2.70 1.20	2¾ 1¾	2 1.60	2 1¾
Leviathau	95c 60c	75c 65c	85c 70c	85c 65c
Leeds	1 80c	1 90c	1 75c	1.10 95c
Lee				2 1
May Belle				2 1.70
Modoc	80c 25c	70c 50c	70o 60c	60c 50c
Manhattan	9¾ 5¾	7 6¾	7 6	7 6
Martin White				7¾ 7
McClinton				1.30 80c
Meadow Valley	40c 25c	50c 40c	50c 35c	50c 40c
Mexican	24¾ 20	31 22¾	47 24	55c 42
Mides				2 2
Morning Star				7 5
North Con Virginia	5¾ 3	4¾ 3	4¾ 3¼	12 8
New York	2.35 1.20	2 1¾	3 1.80	3 1¾
Northern Belle	11 9	10¾ 10	11 9¼	11 9¾
New Coso	40c 40c	50c 30c	50c 35c	40c 53c
Navajo	95c 65c	1.10 80c	1.30 1	1.30 1.15
Occidental	1.70 1	1¾ 1	1.05 40c	1¼ 1
Ophir	46¾ 41	50 43	54¾ 41	60 47
Oriental				3 1¾
Overman	18 13¾	21¾ 15¾	21 16	22 16¾
Panther	30c 15c	45c 35c	45c 20c	25c 22½
Phenix				2¾ 2¾
Phil Sheridan				3¾ 3
Prospect				50c 50c
Raymond & Ely	5 3	3¾ 2¾	4 3¾	4¾ 4¼
Richer				50c 1¾
Rock Island			35c 10c	50c 25c
Rye Patch				
Rough & Ready				3¼ 2¼
Savage	14¾ 12	14¾ 12¾	15 12¾	19¾ 13
Seg Belcher	35 31	40 35	39¾ 32	45 36
Sierra Nevada	41¾ 25	81 40	105 49¾	170 96
Silver Hill	4 1.45	4 3¼	4 2¾	4 3
Silver King				
Silver Prize				15c 15c
Succor	2¾ 1.15	2¾ 1.80	2¾ 1¾	2 1.70
Summit				3¾ 2
Scorpion				15 9¾
Solid Silver	5 3¾	6¾ 5	9 7	5 4¾
South Bodie				1 50c
South Standard				60c 40c
Star	1¾ 80c	2 1	1¾ 85c	1 75c
St. Louis				80c 60c
Syncate				2¾ 2¼
Tioga Con				2.80 1¾
Tiptop				1.40 50c
Trojan	3.55 50c	85c 65c	1¾ 50c	75c 50c
Union Con	30 24¾	47 27	87 30	115 77
Utah	18 15	39 19¾	39 20	51¾ 34¾
Vermont Con				2 1¾
Ward				2¾ 1¾
Wells-Fargo	95c 15c	75c 45c	1 50c	90c 55c
Woodville	85c 50c	90c 80	75c 50c	75c 50c
White Cloud				
Yellow Jacket	16 13	28 17¾	25½ 21¾	

Sales at S. F. Stock Exchange.

Friday A. M., Sept. 6.

2535 Alta.....22½
325 Alpha.....14@14½
345 Best & Belcher.....24@23
2145 Bullion.....9½@9¾
3110 Belcher.....12@12½
935 Con Virginia.....12¾@12¾
675 California.....12@12¾
90 Challar.....37@36¾
4705 Crown Point.....10½@9¾
5020 Con Imperial.....1@1.10
735 Caledonia.....3½@3.85
1640 Exchequer.....5½@5½
1500 Gould & Curry.....12@12½
490 Hale & Nor.....5¾@6
3385 Justice.....9½@10
640 Julia.....7¼@8
375 Kentuck.....5½@6
25 Lady Bryan.....3
2030 Mexican.....43½@42
585 Overman.....16½@17
1035 Ophir.....47¾@49
1630 Sierra Nevada.....98@96
710 Savage.....13¾@13
295 Succor.....1.70@1¾
60 Seg Belcher.....36@37
1360 Union Con.....20@17
315 Utah.....34½@37
390 Yellow Jacket.....21½@22

AFTERNOON SESSION.

2130 Argenta.....2¼
1250 Aurora T.....2¼@2
495 Andes.....65@75c
1385 Bentcu.....11¼@10
1130 Bechtel.....1½@1¾
30 Bodie.....37½@35
970 Belmont.....3½@3
1055 Bulwer.....14¼@13
770 Black Hawk.....1¼@1.90
600 Bavidere.....3@2
1300 Booker.....1½@1.65
800 Challenge.....1¼
300 Champion.....2
200 Coacordia.....40c
450 Croesus.....50@10c
200 O Pacific.....1¼@1.60
1545 DeFrees.....35@40c
1260 S Bodie.....60@75c
650 S Standard.....60@75c
300 Santiago.....95c
700 St Louis.....60@70c
630 Solid Silver.....4¼@3¾
625 Tiptop.....1.40@1.35
665 Tioga Con.....2¼@2.80
1970 Trojan.....60@50c
615 Vermont Con.....8¼@3
30 Woodville.....50c
2085 Ward.....2¾@2¼
1810 Wells-Fargo.....55@55c

Saturday A. M., Sept. 7.

380 Alpha.....13¾@14
1180 Alta.....22¾@22
1470 Argenta.....20@21
1005 Bullion.....9@8¾
735 Best & Belcher.....23½@24
1935 Belcher.....12¾@13
800 Bodie.....35¼@34
830 Belmont.....3¼@3
50 Belle Isle.....55c
105 Bechtel.....1.35@1.40
160 Bulwer.....12
1210 Con Virginia.....12¾@12¾
715 California.....11¼@11¾
250 Confidence.....34@3¼
735 Challar.....36½@36¾
200 Crown Point.....9¼@10¼
3100 Con Imperial.....1.05@1
1030 Caledonia.....3¾@3.80
650 DeFrees.....40c
1200 Day.....75c@80c
920 Endowment.....60c
100 Eureka Con.....42@41¾
905 Grand Prize.....61@64
1040 Gould & Curry.....11¾@11¾
300 Gila.....30c
1100 Hussey.....80c@1.00
1235 H & Norcross.....9¾@9¾
20 Hamburg.....3
320 Independent.....2¼
2745 Justice.....9¾@9¾
170 Jackson.....61@64
1995 Julia.....7@7¼
275 Ke tuck.....6¾@6¾
1210 Lady Bryan.....3¼@3.10
50 Leopard.....1.90
2290 Mexican.....46@44
300 Meadow Valley.....50c
90 Manhattan.....6¾
350 Modoc.....55@50c
750 McClinton.....1¼
1355 Navajo.....1.15@1.20
80 Northern Belle.....1¼
1045 Ophir.....49@4.
310 Overman.....16¾@16¾
65 Raymond & E.....4¾
705 Savage.....13¾@13¾
840 Succor.....1.90@1.95
20 Seg Belcher.....34
170 Star.....1@95c
850 Silver Prize.....15c
930 Sierra Nevada.....95@97
1200 Summit.....3
725 Tioga.....2@2¼

AFTERNOON SESSION.

2595 Union Con.....80@85
195 Utah.....36@35
1400 Yellow Jacket.....22¾@22

Monday A. M., Sept. 9.

2240 Alta.....25@24¾
250 Alpha.....15@14¾
1390 Bullion.....9¼@8
640 Best & Belcher.....24@24½
3195 Belcher.....13@13¾
1145 California.....11¾@10¾
1050 Con Virginia.....13@12¾
290 Challar.....36@36½
2820 Crown Point.....10¼@11
6070 Con Imperial.....1.05@1
245 Confidence.....3¼@3½
1120 Caledonia.....4@4.10
1335 Exchequer.....5¾@4¾
1130 Gould & Curry.....12¾@12
670 Hale & Nor.....9¾@9¾
4120 Justice.....11¼@11
3115 Julia.....7¼@6¾
550 Kentuck.....6¼@6
4320 Lady Bryan.....3¼@3.05
2295 Mexican.....53c@51
1760 Ophir.....51c@53
310 Overman.....16¾@17
505 Savage.....13¾@13¾
1380 Sierra Nevada.....104@109
10 Seg Belcher.....37
1200 Succor.....1.80@2
610 Utah.....38¾@37¾
810 Union Con.....87@89
515 Yellow Jacket.....23¼@23

AFTERNOON SESSION.

655 Andes.....50@95c
1770 Argenta.....2.10@2
820 Aurora T.....2¼
1025 Bodie.....33@34
360 Bulwer.....12@11¾
480 Bechtel.....1.60@1.35
640 Belmont.....2¼@2
1410 Booker.....1¼@1.40
3320 Belmont.....4@3
110 Belle Isle.....35@40c
1620 Benton.....10¾@11¾
320 Black Hawk.....1.60@1
1050 Chromplain.....2@1.80
950 Concordia.....50@75c
200 C Pacific.....1.60
1560 Challenge.....1¼
70 Day.....70c
700 Dayton.....55@50c
500 DeKoven.....3¾
395 Eureka Con.....42@41¾
3640 Endowmeut.....70@55c
530 Grand Prize.....6¾@6¾
200 Golden Terra.....4
1545 Goodshaw.....1.10@1¼
430 Golden Chariot.....40@35
675 Hussey.....80@75c
620 Hillside.....5@4¾
470 Highbridge.....1.90@2
1275 Independent.....2¼@2.20
1610 Jackson.....6¾@6
400 Kossuth.....25@30c
500 Keystone.....6
1320 Leeds.....1
400 Leopard.....2@1.90
1130 Lady Wash.....4@2¾
1350 Leviathan.....80@75c
1350 Lee.....1¼@1¾
430 Morning Star.....7@6¾

SALES OF LAST WEEK AND THIS COMPARED.

Thursday A. M., Sept. 5.		Wed'sday A.M., Sept. 11.	
180 Alpha	14¼@14¾	645 Alpha	15@16
1455 Alta	25@24¾	1505 Best & Belcher	27@26¾
700 B & E	24@23¾	1000 Belcher	12¾@13¾
1900 Bullion	8@9	4290 Bullion	13@12
1305 Belcher	14@13¾	1015 Califoruia	11@11¼
415 Chollar	37@38¼	1840 Con Virginia	12¾@13
1785 Con Virginia	12¼@12	1820 Crown Point	12@11¾
1035 California	12@12¼	1545 Chollar	37@36¾
1000 Caledonia	4@3.80	5320 Con Imperial	1.10@1.05
2465 Crown Point	10¼@10¾	345 Confidence	3½@3¾
4345 Con Imperial	1@1.10	1750 Exchequer	5¼@6
335 Confidence	3¾@3¼	2475 Gould & Curry	18@16¾
1130 Exchequer	5@4.80	1825 Hale & Nor	15@16
1170 Gould & Curry	12¾@12¼	1215 Justice	9¾@10
1270 Hale & Nor	10@9¾	540 Kentuck	6¼@10
2600 Justice	9¼@9¾	1395 Lady Bryan	2¼@3
2235 Julia	7¼@6¾	2765 Mexican	49¾@56
375 Kentuck	6¼@7	910 Ophir	60@52
2070 Lady Bryan	3¼@3	630 Overman	20@19
2525 Mexican	53c@51c	1520 Sierra Nevada	115@150
600 Overman	18¼@18	1610 Savage	19¼@19
1625 Ophir	54¼@52	3590 Succor	2
275 Succor	1¼@1¾	40 Seg Belcher	43@44
1035 Savage	14¼@13¾	1770 Union Con	115@105
1225 Sierra Nevada	101@99	2490 Utah	45@51¼
80 Seg Belcher	35@32	2490 Yellow Jacket	25@25¾
2395 Union Con	87@82	AFTERNOON SESSION.	
180 Utah	38@39	360 Alta	17@17¾
1680 Yellow Jacket	23@22	840 Argenta	2@2.05
AFTERNOON SESSION.		460 Aurora T	2¾@3
675 Aurora T	2¼@3	1085 Andes	50c@55c
2400 Argenta	2¼@2.30	285 Bulwer	12@11¾
1150 Andes	50c@55c	705 Bodie	28¼@29¼
530 Bulwer	11¾@12	2645 Bechtel	1¼@1.05
1630 Belmont	3¼@3¼	2050 Belmont	4¼@5
1150 Belvidere	2¼@2	1835 Booker	1¼@1¼
420 Black Hawk	2@1.90	280 Black Hawk	2¼@2
630 Bodie	37@36¾	560 Belvidere	2¼@2

MINING SHAREHOLDERS' DIRECTORY.

Compited every Thursday from Advertisements in Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS—STOCKS ON THE LISTS OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business
Argenta M Co	Nevada	3	25 Sept 7	Oct 11	Nov 1	R H Brown	327 Pine st
Bullion M Co	Washoe	7	1 50 Aug 12	Sept 16	Oct 7	J Gruss	418 California st
Bechtel G M Co	California	2	50 Aug 14	Sept 19	Oct 10	W H Lent	309 Montgomery st
Belmont M Co	Washoe	18	40 July 29	Sept 2	Sept 24	J W Pew	310 Pine st
Boyle M Co	Nevada	1	15 Aug 1	Sept 4	Sept 23	Wm H Watson	302 Montgomery st
Chollar Potosi M Co	Nevada	15	5 00 Sept 5	Oct 8	Oct 29	W E Dean	1203 Bush st
DeFrees M & M Co	Nevada	7	10 Aug 5	Sept 6	Sept 23	Thos E Atkinson	310 Pine st
El Dorado South Con M Co	Nevada	13	25 July 27	Aug 30	Sept 23	C A Sankey	331 Montgomery st
El Dorado W & D G M Co	California	18	2 00 Aug 15	Sept 16	Oct 4	Thos Price	524 Sacramento st
Endowment M Co	Nevada	1	50 Aug 23	Sept 30	Oct 21	R H Brown	327 Pine st
Gila Con M Co	Arizona	2	03 Aug 8	Sept 28	Oct 15	P B Pettigrew	419 California st
Gila S M Co	Nevada	2	25 Aug 27	Oct 3	Oct 24	Wm W Parrish	328 Montgomery st
Hale & Norcross S M Co	Washoe	59	1 00 Aug 13	Sept 18	Oct 9	J F Lightner	58 Nevada Block
Julia Con M Co	Nevada	6	1 00 Sept 6	Oct 11	Oct 30	A Noel	419 California st
Justice M Co	Washoe	26	1 50 Aug 13	Sept 18	Oct 9	R E Kelly	419 California st
Kentuck M Co	Washoe	13	1 00 Aug 7	Sept 9	Sept 30	J W Pew	310 Pine st
McCracken Con M Co	Arizona	1	50 July 10	Aug 24	Sept 28	H Aug Whiting	211 Sansome st
Modoc Con M Co	California	5	50 July 17	Aug 26	Sept 16	J W Pew	310 Pine st
Martin White M Co	Nevada	3	1 00 July 23	Sept 3	Oct 1	J J Scoville	309 Montgomery st
Mint G & S M Co	Washoe	22	20 Aug 8	Sept 11	Oct 2	D A Jennings	401 California st
New York M Co	Nevada	16	30 Aug 1	Sept 3	Sept 24	D L Thomas	419 California st
Northern King M & M Co	Arizona	3	10 Aug 17	Sept 21	Oct 9	G F Glover	318 Pine st
N Con Virginia M Co	Washoe	13	1 00 Aug 13	Sept 16	Oct 4	W M Holman	309 California st
Overman S M Co	Nevada	42	3 00 Sept 5	Oct 10	Oct 30	G D Edwards	414 California st
Ophir S M Co	Nevada	33	1 00 Sept 10	Oct 15	Nov 4	C L McCoy	203 Bush st
Raymond & Ely M Co	Washoe	8	1 00 Aug 6	Sept 12	Oct 8	J W Pew	310 Pine st
South Standard M Co	California	2	25 July 23	Aug 27	Sept 17	C A Saukey	331 Montgomery st
Sierra Nevada M Co	Washoe	55	1 00 July 31	Sept 4	Sept 25	W W Stetson	309 Montgomery st
Succor M & M Co	Washoe	15	1 00 Aug 12	Sept 16	Oct 5	W H Watson	302 Montgomery st
Savage M Co	Nevada	35	1 00 Sept 6	Oct 8	Oct 28	E B Holmes	309 Montgomery st
Tiptop S M Co	Arizona	3	50 July 15	Aug 21	Sept 18	D F Verdenal	327 Pine st
Wells Fargo M Co	Nevada	11	60 Sept 11	Oct 14	Oct 31	W M Helman	309 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Aurora T & M Co	Bodie	1	15	Aug 12	Sept 20	Oct 10	A Baird	304 California st
Almaden Quicksilver M Co	California	1	25	July 30	Aug 31	Sept 21	W J Forde	207 Sansome st
Benton M Co	Nevada	1	35	Aug 1	Sept 5	Sept 24	Wm H Watson	302 Montgomery st
Colorado River C & G M Cn	Arizona	2	25	Aug 5	Sept 9	Sept 30	P A Whiting	211 Sansome st
California W Co	California	20	10	Aug 13	Sept 24	Oct 15	G P Thurston	315 California st
Cal & Arizona M Co	Arizona	3	05	Aug 26	Sept 30	Oct 18	T E Jewell	607 Montgomery st
Champion M Co	California	2	10	Aug 26	Sept 27	Oct 22	F P Simon	525 Commercial st
Eagle S M & M Co	Nevada	10	15	Sept 7	Oct 3	Oct 15	R H Brown	327 Pine st
Equitable T & M Co	Utah	18	05	Aug 29	Oct 3	Oct 22	C S Healy	45 Merchant's Ex
Echo G & S M Co	Nevada	1	02	Aug 21	Sept 26	Oct 18	T C Winchell	302 Montgomery st
Gover M & M Co	California	37	50	Aug 9	Sept 23	Oct 21	W O Wilson	402 Front st
King M & S Co	Nevada	1	25	June 24	July 29	Sept 19	Chas K Clark	1111½ Leidesdorff st
Mono O M Co	California	1	50	Aug 23	Oct 21	Oct 22	W H Lent	309 Montgomery st
McElroy G M Co	California	2	10	Aug 28	Sept 17	July 23	Lewis Lillie	519 Montgomery st
McClellan Con G & S M Co	Nevada	2	25	Aug 5	Oct 3	Oct 19	Otto Metchke	328 Montgomery st
Newton H & D M Co	California	1	08	July 21	Sept 2	Sept 20	G W Cummings	330 Sansome st
Nevada Gravel M Co	California	3	05	Sept 4	Oct 7	Oct 25	J Pentecost	511 California st
Oak Grove M Co	Arizona	1	05	Aug 6	Sept 10	Sept 30	R D Bogart	16 Leidesdorff st
Orion M Co	California	3	75	Sept 5	Nov 5	Nov 20	P Conklin	24 Sansome st
Richer M Co	California	1	50	Aug 28	Sept 30	Oct 22	W H Lent	309 Montgomery st
Real Del Monte M Co	Nevada	3	1 00	July 18	Aug 26	Sept 16	A Baird	304 California st
Selby Hill M Co	California	1	10	Sept 10	Oct 30	Nov 16	H A Whiting	211 Sansome st
S F Sulphur M Co	Nevada	1	10	Sept 8	Oct 15	Nov 12	P P McLaren	310 Pine st
Tiger M Co	Arizona	1	30	July 16	Aug 26	Sept 20	W H Lent	309 Montgomery st

MEETINGS TO BE HELD.

Name of Company.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Alexander M Co		A R Cooper	Safe Deposit Building	Annual	Sept 30
Bechtel G M Co	California	W H Lent	309 Montgomery st	Annual	Sept 16
Eureka M & S Co	Nevada	A C Ryce	308 California st	Annual	Sept 30
Grand Prize M Co	Nevada	R H Brown	S. F. Stock Exchange	Annual	Sept 17
Niagara G & S M Co		W R Townsend	59 Nevada Block	Annual	Sept 24
Pittsburg G M Co		R Wegener	414 California st	Annual	Sept 21
Scorpion S M Co	Arizona	G R Spinney	327 Pine st	Special	Sept 30
South Comstock G & S M Co	Nevada	J M Buffington	309 California st		Oct 10

LATEST DIVIDENDS—WITHIN THREE MONTHS

Name of Company.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Bodie G M Co	California	W M Lent	309 Montgomery st	3 00	Sept 14
Bodie G M Co	California	W M Lent	309 Montgomery st	5 00	Aug 31
Bodie G M Co	Nevada	Wm M Lent	309 Montgomery st	3 00	Aug 14
California M Co	Washoe	C P Gordon	Nevada Block	1 00	Aug 15
Con Virginia M Co	Washoe	A W Havens	Nevada Block	1 00	June 15
Eureka Con M Co	Nevada	W W Traylor	37 Exchange Block	3 00	Aug 20
Excelsior W & M Co	California	Geo P Thurston	315 California st	50	July 15
Excelsior W & M Co		Geo P Thurston	315 California st		Aug 15
Eureka Con M Co	Nev	W W Traylor	309 Montgomery st	3 00	July 20
Empire M Co	California	David A Jennings	401 California st	26	June 15
Independence M Co	Nevada	R H Brown	327 Pine st	25	Sept 14
Independence M Co	Nevada	R H Brown		25	July 20
Independence M Co	Nevada	R H Brown	327 Pine st	25	Aug 20
McMillen S M Co	Arizona	A O McMeans	Safe Deposit Bldg	5	June 20
Napa Con M Co	California	W W Parrish	Safe Deposit Building	10	Aug 15
Silver King M Co	Arizona	W H Boothe	320 California st	50	Sept 10
Standard G M Co	Cal	W Willis	309 Montgomery st	1 00	Aug 12
Standard G M Co	Nevada	W Willis	309 Montgomery st	1 00	Sept 12

Pacific Board—Latest Sales.

Wed'sday A.M., Sept. 11.

80 Alpha.....15¼@15½
300 Alta.....17¼@17¾
200 Best & Belcher.....27@26¾
370 Bullion.....12¼@11¾
165 Belcher.....13@13¾
285 California.....11¼@11
355 Crown Point.....11¼@11¾
170 Con Imperial.....1.10@1
210 Con Virginia.....12@12½
10 Chollar.....48¼

180 Caledonia.....4¼
245 Exchequer.....5¼@5¾
180 Gould & Curry.....16¾@17
230 Hale & Nor.....15¾@16
320 Justice.....9¼@9¾
320 Kentuck.....7@8
280 Savage.....19¼@19½

90 Sierra Nevada.....165
230 Silver Hill.....3¾@3¾
35 Union Con.....110
45 Yellow Jacket.....24¼@24

AFTERNOON SESSION.

165 Andes.....85@70c
85 Alta.....17¼@17
10 Bodie.....30@29
40 Best & Belcher.....29
30 Belcher.....13@13¾
700 Bullion.....12¾@13
60 Black Hawk.....1¼
75 California.....11¼@11¾
30 Con Virginia.....12¼@12¾
10 Chollar.....48
430 Con Imperial.....1.10
150 DeFrees.....30c
10 Exchequer.....52
40 Gould & Curry.....17¾
150 Gila.....35c
200 Golden Chariot.....40c

40 Hale & Nor.....14¾
70 Hussey.....70c
800 Julia.....7@6¾
45 Yellow Jacket.....24¼@24

AFTERNOON SESSION.

100 Lee.....1¼
100 Leviathan.....75c
65 Mexican.....58
470 Modoc.....67@60c
30 North Con Vir.....10@10¼
65 New York.....2¼@2
700 North Carson.....20c
145 Ophir.....52@53¾
490 Phil Sheridan.....3¼@3¼
30 Sierra Nevada.....176@180
250 Scorpion.....13¾@13¾
100 Succor.....2@2¼
150 Tuscarora.....7@5c
10 Utah.....49
40 Union Con.....105
20 Woodville.....60c
300 Wells-Fargo.....50@60c

California Board—Latest Sales.

Wed'sday A.M., Sept. 11.

70 Union.....119@125

AFTERNOON SESSION.

90 Bechtel.....1.60@1.55
120 Caledonia.....4¼
90 California.....11¾@11¾
600 Con Imperial.....1.16@1.15
130 Crown Point.....12@12¼
100 Endowment.....65c
70 Exchequer.....5¼@5¾
70 Gould & Curry.....18¾@18¾
240 Goodsh.....1.10
100 Hale & Nororos.....15¾@15¾
10 Justice.....9¼@9¾
30 Julia.....7¼
400 Kossuth.....25c
200 Lee.....1.10
70 Mexican.....61@58
60 Ophir.....62@62¼
170 Phil Sheridan.....3¼@3¾
80 Sierra Nevada.....205@200
80 Savage.....18@19
1050 Twin Peaks.....22@25c

600 U Flag.....20c
950 Wells-Fargo.....70c
300 Wash Bon.....25c

AFTERNOON SESSION.

290 Andes.....90@85c
600 Belcher.....17@17¼
100 Alexander.....7¾
90 Best & Belcher.....29¼@29¾
70 Belcher.....12¾@12¾
110 Bullion.....12¾@12¾
100 Caledonia.....4¼
70 California.....11¾@11¾
40 Chollar.....45
90 Con Virginia.....12¼@12¾
100 Con Imperial.....1.15@1.05
60 Justice.....9¼@9¾
10 Gould & Curry.....16¾
30 Hale & Nor.....14¾@14¾
80 Julia.....7¼@7
200 Lee.....1.10
70 Justice.....9¼@10
150 Leviathan.....70c
100 Monumental.....6c
1200 North Carson.....19@23c
60 Ophir.....62
80 Savage.....18¾@19
45 Sierra Nevada.....165@170

Mining Share Market.

The activity in the mining share market points to the dissolution of old "Hard Times." Last week a big bonanza was predicted and men watched the Sierra Nevada. The big bonanza came, but was not so big nor so steady as was wished. Sierra Nevada was propped up above $200 by reports of ore. But at that hight was unsettled and fell again, under the influence, so think the Virginians, of a declared false report of uncontrollable water in the bonanza incline September 6th. Julia had a bonanza that should give assays of from $300 to $400 September 7th. Julia's bonanza turned out base metal. No fluctuations of consequence resulted.

METALS.

[WHOLESALE.
WEDNESDAY M., September 11, 1878.

IRON.—
American Pig, ton..... 28 00 @30 00
Scotch Pig, ton..... 28 00 @30 00
White Pig, ton..... 28 00 @— —
Oregon Pig, ton..... — @— —
Refined Bar..... 2½@ 3
Horse Shoes, keg..... 5 00 @— —
Nail Rod..... —@ 7
Norway, Oval..... —@ 7
COPPER.—
Sheathing, lb..... 34 @ 35
Sheathing, Yellow..... 21 @
Sheathing, Old Yellow..... 12 @
Composition Nails..... 24 @—
Composition Bolts..... 24 @—
STEEL.—
English Cast, lb..... 13 @ 14
Anderson & Woods, ordinary sizes..... 15 @— —
Drill..... 15 @— —
Flat Bar..... 14 @ 19
Plow Steel..... 8½@ 12½
TIN PLATES.—
10x14 I C Charcoal..... 7 50 @ 8 50
Banca Tin..... 23 @— 24
Australian..... 17 @ 17½
ZINC.—
By the Cask..... 9 @— —
Zinc, Sheet 7x3 ft, 7 to 10, lb..... 9 @— 10
7x3 ft, 11 to 14..... 10"@— —
8x4 ft, 8 to 10..... 11 @— —
8x4 ft, 11 to 10..... 11 @— —
NAILS.—
Assorted sizes..... 3 15 @3 25

LEATHER.

[WHOLESALE.]

WEDNESDAY M., September 11, 1878.

Sole Leather, heavy, lb..... 22 @ 29
Light..... 20 @ 24
Jodot, 8 Kil., doz..... 48 00 @50 60
11 to 13 Kil..... 65 00 @76 00
14 to 19 Kil..... 80 00 @90 00
Second Choice, 11 to 10 Kil..... 55 00 @70 00
Cornellian, 12 to 16 Kil..... 57 00 @67 00
Females, 12 to 13 Kil..... 63 00 @67 00
14 to 16 Kil..... 71 00 @76 00
Simon Ulmo, Females, 12 to 13 Kil..... 58 00 @62 50
14 to 15 Kil..... 66 00 @70 00
16 to 17 Kil..... 72 00 @74 00
Simon, 18 Kil..... 60 00 @63 00
20 Kil..... 65 00 @67 00
24 Kil..... 72 00 @74 00
Robert Calf, 7 and 9 Kil..... 35 00 @40 00
Kips, French, lb..... 1 00 @ 1 35
Cal. doz..... 40 00 @60 00
French Sheep, all colors..... 8 00 @15 00
Eastern Calf for Backs, lb..... 1 00 @ 1 25
Sheep Roans for Topping, all colors, doz..... 9 00 @13 00
For Linings..... 5 50 @10 5
Cal. Russet Sheep Linings..... 1 75 @ 4 50
Boot Legs, French Calf, pair..... 4 00 @— —
Good French Calf..... 4 00 @ 4 75
Best Jodot Calf..... 5 00 @ 5 25
Leather, Harness, lb..... 35 @ 38
Fair Bridle, doz..... 48 00 @72 00
Skirting, lb..... 33 @ 37
Welt, doz..... 30 00 @50 00
Buff, ft..... 18 @ 20
Wax Side..... 17 @ 18

LUMBER.

WEDNESDAY M., September 11, 1878.

CARGO PRICES OF REDWOOD.

Rough, M	13 00
Refuse	9 00
Clear	23 00
Clear Refuse	13 00
Rustic	23 50
Refuse	18 00
Surfaced	20 00
Refuse	14 00
Flooring	20 00
Refuse	12 00
Beaded Flooring	23 00
Refuse	13 00
Half-inch Siding	16 00
Refuse	14 00
Half-inch Surfaced	20 00
Refuse	14 00
Half-inch Battens	16 00
Pickets, Rough	11 00
Rough, Pointed	12 50
Fancy, Pointed	18 00
Shingles	1 75

PUGET SOUND PINE.

RETAIL PRICE.

Rough, M	18 00
Fencing	13 00
Flooring and Step	28 00
Narrow	30 00
2d quality	25 00
Laths	3 50
Furring, lineal ft	½

REDWOOD.

RETAIL PRICE.

Rough, M	18 00
Refuse	14 00
Pickets, Rough	15 00
Pointed	16 00
Fancy	22 50
Siding	20 50
Surfaced & Long Beaded	30 00
Flooring	30 00
Refuse	22 50
Half-inch Surfaced	30 00
Rustic, No. 1	30 00
Battens, Bneal ft	
Shingles, M	2 00

Mining and Other Companies.

Persone intereested in incorporated sharee will do well to recommend the publication of the official noticee of their companies in thie paper, as the cheapeet appropriate medium for the eame.

The California Fruit Growing Association.

—Location of principal place of business, San Francisco, California. Location of property, El Dorado County, California.

Notice is hereby given, that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 9) of three (89) dollars per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, No. 641 Sacramento street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 30th day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Monday, the 21st day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco, Cal.

Gover Mining & Milling Company.—Lo-

cation of principal place of business, San Francisco, California. Location of works, Amador County, near Drytown, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the ninth day of August, 1878, an assessment (No. 37,) of fifty cents per share was levied upon the capital stock of the corporation, payable immediately in gold coin or legal currency of the United States, to the Secretary at the office of the Company, Room 8, No. 402 Front Street, San Francisco, Cal.

Any stock upon which said assessment shall remain unpaid, on Monday, September 23rd, 1878, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, October 21st, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

W. O. WILSON, Sec'y.

Office, Room 8, No. 402 Front Street, San Francisco, Cal

Keystone Quartz Mining Company.—Prin-

cipal place of business, San Francisco, California. Location of works, Sierra County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 30th day of August, 1878, an assessment of fifty (50c.) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary at the office of the Company, northwest corner Pine and Sansome streets, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the eighth day of October, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the twenty-eighth day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

LOUIS VESARIA, Sec'y.

Office, northwest corner Pine and Sansome streets, San Francisco, California.

Mariposa Land and Mining Company of

California.—Location of principal place of business, San Francisco, California. Location of works, Mariposa County, California.

Notice.—There is delinquent upon the following described stock, on account of assessment (No. 14) levied on the tenth day of July, 1878, the several amounts set opposite the names of the respective shareholders, as follows.

COMMON STOCK.

Names.	No Certificate.	No. Shares.	Amount.
Ambleman, Edgar M	1020	100	$100 00
Ambleman, Edgar M	1631	100	100 00
Brumagim, J H	1115	100	100 00
Brumaglm, J H	1120	100	100 00
Brumagim, J H	1351	100	100 00
Brumagim, J H	1352	100	100 00
Brumagim, J H	1356	100	100 00
Brumagim, J H	1370	100	100 00
Brumagim, J H	1376	100	100 00
Brumagim, J H	1382	100	100 00
Brumagim, J H	1383	100	100 00
Brumaglm, J H	1387	100	100 00
Brumaglm, J H	1388	100	100 00
Brumagim, J H	1390	100	100 00
Brumagim, J H	1391	100	100 00
Brumagim, J H	1392	100	100 00
Brumagim, J H	1393	100	100 00
Brumagim, J H	1394	100	100 00
Brumagim, J H	1395	100	100 00
Brumagim, J H	1396	100	100 00
Brumagim, J H	1397	100	100 00
Brumagim, J H	1398	100	100 00
Brumaglm, J H	1399	100	100 00
Bogert, Jas C	1683	100	100 00
Bogert, Jas C	1684	100	100 00
Bogert, Jas C	1685	100	100 00
Brumagim, J H	1189	100	100 00
Brumagim, Fred P	1191	100	100 00
Brumagim, Fred P	1195	100	100 00
Brumagim, Fred P	1270	100	100 00
Brumagim, Fred P	1274	100	100 00
Brumagim, Fred P	1280	100	100 00
Brumagim, Fred P	1301	100	100 00
Brumagim, Fred P	1302	100	100 00
Brumagim, Fred P	1300	100	100 00
Brumagim, Fred P	1307	100	100 00
Brumagim, Fred P	1309	100	100 00
Brumagim, Fred P	1311	100	100 00
Browne, George	1697	100	100 00
Browne, George	1698	100	100 00
Browne, George	1820	100	100 00
Browne, George	A 57	50	50 00
Birmingham, D Walton	1432	100	100 00
Birmingham, D Walton	1433	50	50 00
Birmingham, D Walton	1435	100	100 00
Birmingham, D Walton	1430	100	100 00
Birmingham, D Walton	1437	100	100 00
Birmingham, D Walton	1439	100	100 00
Birmingham, D Walton	1441	100	100 00
Birmingham, D Walton	1480	100	100 00
Birmingham, D Walton	1486	100	100 00
Birmingham, D Walton	1487	100	100 00
Birmingham, D Walton	A 47	50	50 00
Birmingham, D Walton	1702	100	100 00
Bernheimer, I & S	1601	100	100 00
Boody & Co, D A	A 25	50	50 00
Boody & Co, D A	1722	100	100 00
Brown, D	1240	100	100 00
Badger, Cco K	1723	100	100 00
Colbrcn, W T	473	100	100 00
Colbrcn, W T	474	100	100 00
Duesenbury, Caroline E	1219	100	100 00
Duffy, James J	1810	100	100 00
Dusenbury, E	A 53	50	50 00
Elston, W A	1586	100	100 00
Engler, Ad	1610	100	100 00
Fay, Fredk J	470	100	100 00
Clendenning, Davis & Amory	291	100	100 00
Harriott & Noyes	1102	100	100 00
Harriott & Noyes	1103	100	100 00
Harriott & Noyes	1104	100	100 00
Harriott & Noyes	1251	100	100 00
Hedges, Allen	1800	100	100 00
Hedges, Allen	1801	100	100 00
Hedges, Allen	1804	100	100 00
Hedges, Allen	1811	100	100 00
Hedges, Allen	1812	100	100 00
Hyman, Henry	1013	100	100 00
Hyman, Henry	1014	100	100 00
Henry, T L	1673	100	100 00
James, W H H	1100	100	100 00
Kent, Edward	1582	100	100 00
Kennedy, Hutchinson & Co	1640	100	100 00
Kennedy, Hutchinson & Co	1041	100	100 00
Kennedy, Ceo H	1157	100	100 00
Kennedy, Ceo H	1158	100	100 00
Monroe, E J	A 40	15	15 00
Monroe, E J	A 50	50	50 00
Maas, Frederick M	1627	100	100 00
McEwan, Wm	A 45	50	50 00
Morris, J C	A 54	35	35 00
Morris, J C	A 55	15	15 00
Noice, Edward H	A 37	10	10 00
Oppenheim Bros	1642	100	100 00
Oppenheim Bros	1748	100	100 00
Oppenheim Bros	1865	100	100 00
Post, Joel B	1264	100	100 00
Post, Joel B	1205	100	100 00
Post, W B	1708	100	100 00
Post, W B	1711	100	100 00
Post, W B	A 46	50	50 00
Parker, John W	1821	100	100 00
Rodwell, C M	115	100	100 00
Rathborne, R Wm	240	100	100 00
Rathborne, R Wm	314	100	100 00
Seyd, Alexander	1742	100	100 00
Strong, H H	1823	100	100 00
Townsend, W B	A 27	50	50 00
Townsend, W B	1623	100	100 00
Townsend, W B	1624	100	100 00
Townsend, W B	A 28	50	50 00
Panderhoof, H B	1500	100	100 00
Panderhoof, H B	1000	100	100 00
Panderhoof, H B	1604	100	100 00
Waldran, Albert	1667	100	100 00
Williams, B C	1720	100	100 00
Williams, Samuel F	1747	100	100 00
Brumagim, J H	unissued	200	200 00
Weed, Ed H	unissued	100	100 00
Towar & Learned	unissued	100	100 00
White, Morris & Co	unissued	100	100 00
Joslyn, Bach & Co	unissued	100	100 00

PREFERRED STOCK.

Bogart, James C	A107	35	35 00
Bogart, James C	1446	100	100 00
Baldwin, J C	13	16	16 00
Bernheimer, I & S	1350	100	100 00
Bernheimer, I & S	1351	100	100 00
Bernheimer, I & S	1352	100	100 00
Bernheimer, I & S	1353	100	100 00
Bernheimer, I & S	A 74	37	37 00
Bernheimer, I & S	A 75	50	50 00
Bernheimer, I & S	A 76	50	50 00
Brumagim, J H	1308	100	100 00
Brumagim, J H	1314	100	100 00
Brumagim, J H	1315	100	100 00
Brumagim, J H	1317	100	100 00
Brumagim, Mark	1305	100	100 00
Brumagim, Fred P	1184	100	100 00
Brumagim, Fred P	1185	100	100 00
Brumagim, Fred P	1276	100	100 00
Browne, George	A 63	20	20 00
Birmingham, D Walton	1329	100	100 00
Birmingham, D Walton	1339	100	100 00
Birmingham, D Walton	1344	100	100 00
Birmingham, D Walton	1350	100	100 00
Birmingham, D Walton	1470	100	100 00
Butterworth, Theron	1437	100	100 00
Butterworth, Theron	1438	100	100 00
Cutting & Co, R L Jr	1376	100	100 00
Cutting & Co, R L Jr	1382	100	100 00
Davidson, W S	1307	100	100 00
Doubleday, M	1457	100	100 00
Egbert, W W	A 61	47	47 00
Francis, H M, Atty	A 127	50	50 00
Homans, E C	1198	100	100 00
Homans, E C	1212	100	100 00
Hedges, Allen	A 67	23	23 00
Hengstler, Julius	A 111	50	50 00
Hengstler, Julius	A 112	50	50 00
Hollander, F	A 117	50	50 00
Haight, Henry M	A 132	50	50 00
Haight, Henry M	1571	100	100 00
Haight, Henry M	1572	100	100 00
Haight, Henry M	1583	100	100 00
Haight, Henry M	1574	100	100 00
Kennedy, Hutchinson & Co	278	100	100 00
Ludvigh, E	1453	100	100 00
Lansing, Edwin B	1579	100	100 00
Lansing, Edwin B	A 132	5	5 00
Monroe, E S	A 133	30	30 00
Monroe, E S	A 134	5	5 00
Monroe, E S	A 135	50	50 00
Rathborne, R Wm	139	100	100 00
Rathborne, R Wm	140	100	100 00
Rathborne, R Wm	197	100	100 00
Rochner, Edward	1330	100	100 00
Requa, F L	1321	100	100 00
Requa, F L	1322	100	100 00
Requa, F L	1326	100	100 00
Scott, Wm B	1110	100	100 00
Scott, Wm B	1491	100	100 00
Weed, Ed H	1267	100	100 00
Weed, Ed H	1272	100	100 00
Weil, Henry	242	100	100 00
Ward, A H	A 10	2	2 00
Ward, A H	1240	100	100 00
Ward, A H	1241	100	100 00
Ward, A H	1318	100	100 00
Ward, A H	A 318	50	50 00
Waldron, Albert	1430	100	100 00
Wills, A J	1451	100	100 00
Wills, A J	1452	100	100 00
Faitoute, H C	unissued	31	31 00
Kellogg, Chas	unissued	14	14 00
Litchfield, Edwin C	unissued	405	405 00
Brumagin, J H	unissued	100	100 00
Underhill, Frederick	unissued	100	100 00
Rathborne, R Win	unissued	200	200 00
Wollberg & Co	unissued	100	100 00

And in accordance with law and an order of the Board of Directors, made on the tenth day of July, 1878, so many shares of each parcel of such stock as may be necessary will be sold at public auction, at the office of the Company, oom 33, Nevada Block, No. 309 Montgomery Street, San Francisco, California, on Monday, the ninth day of September, 1878, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale. LEANDER LEAVITT, Sec'y.

Office, Room 33, Nevada Block, No. 309 Montgomery Street, San Francisco, Cal.

POSTPONEMENT.—The above sale is postponed until Wednesday, the twenty-fifth day of September, 1878, at the same hour and place.

By order of the Board of Directors.

LEANDER LEAVITT, Sec'y.

Orion Mining Company.—Location of Prin-

cipal place of business, San Francisco, California. Location of works, Iowa Hill, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the fifth day of September, 1878, an assessment (No. 3,) of seventy-five (75) cents per share was levied upon the capital stock of the corporation, payable immediately in U. S. gold coin, to the Secretary, at the office of the Company, 28 Sansome Street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the fifth day of November, A. D., 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the 20th day of November, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

P. CONKLIN, Sec'y.

Office, No. 28 Sansome Street (up stairs), San Francisco, Cal.

Pocahontas Gold Mining Company.—Lo-

cation of Principal Place of Business, San Francisco, California. Location of Works, El Dorado County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 14th day of August, 1878, an assessment (No. 14) of One Dollar and a Half ($1,50) per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, Room No. 9, 411½ California street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 23rd day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Wednesday, the 23rd day of October, 1878, to pay the delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors.

M. C. SOUTHARD, Sec'y.

Office, Room No. 9, 411½ California street, San Francisco, California.

South Comstock Consolidated Silver

Mining Company.—Notice.—A meeting of the stockholders of the South Comstock Consolidated Silver Mining Company will be held on Tuesday, the 24th day of September, 1878, at 2 o'clock P. M., at the office of the Company, Room 4, second floor, No. 309 California street, San Francisco, California, to adopt a Code of Bylaws for the government of said corporation and its officers.

J. M. BUFFINGTON, Sec'y.

San Francisco, September 9th, 1878.

Telegraph Copper and Silver Mining Com-

pany. Location of principal place of business, City and County of San Francisco, State of California. Location of works, Gopher Mining District, Calaveras County, California.

NOTICE.—There is delinquent upon the following described stock, on account of assessment (No. 1,) levied on the seventeenth day of July, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No Certificate.	No. Shares.	Am't.
Howland, W H	Not issued	1350½	$ 40 52
Jones, C C	Not issued	5040	168 20
McCrea, Wm	Not issued	4000	149 97
Bollinger, J C	Not issued	17,106	514 98

And in accordance with law and an order of the Board of Directors, made on the seventeenth day of July, 1878, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the Company, Room 2, 528 California street, San Francsico, California, on Monday, the ninth (9th) day of September, 1878, at the hour of 12 o'clock, M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

I. T. MILLIKEN, Secretary

Office, Room 2, No 528 California street, San Francisco, California.

POSTPONEMENT.—The above sale is postponed to Monday, the 10th day of September, 1878, at same hour and place above mentioned.

By order of the Directors. I. T. MILLIKEN, Sec'y.

Vigorit Powder Company.— Location of

principal place of business, City and County of San Francisco, California. Location of works, California City, Marin County, State of California.

Notice.—There are delinquent upon the following described stock, on account of assessment (No. 1) levied on the first day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. of Cert.	No. Shares	Amount
Louis McLane, Trustee	30	437½	$218 75
Louis McLane, Trustee	32	½ of 875	218 75
G W Grayson, Trustee	62	1312½	656 25
H H Shinn, Trustee	91	400	200 00
H H Shinn, Trustee	92	400	200 00
H H Shinn, Trustee	93	400	200 00
H H Shinn, Trustee	94	112½	56 25

And in accordance with law, and an order of the Board of Directors, made on the First day of August, 1878, so many shares of each parcel of stock as may be necessary will be sold at public auction, at the office of the Company, Room No. 1, 109 California street, on Wednesday, the second day of October, 1878, at the hour of 2 o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale. JAS. W BAKER, Sec'y.

Office, No. 109 California street, Room 1, San Francisco, California.

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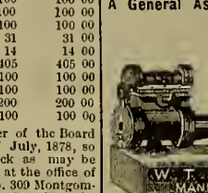

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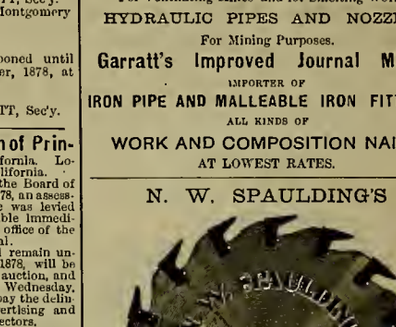

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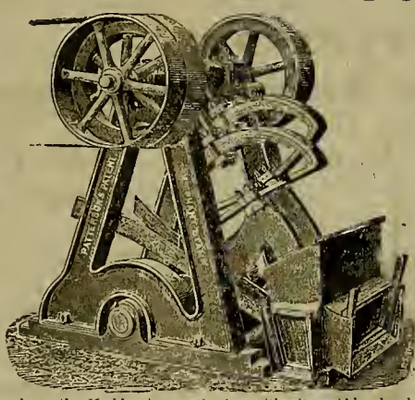
Some 14,000 out of 26,000 acres of the grant remain for sale at comparatively low rates, in quantities to suit purchasers, on easy terms. Prices range from $5 to $30 per acre. The tract is between two and three miles wide, with the Northern Division of the C. P. R. R. passing centrally through its entire length. Send postage stamp for an illustrated paper containing information about Shasta County and these lands, to the proprietor of Reading Ranch. EDWARD FRISBIE.

Anderson, Shasta County, Cal.

Elephant Ore Stamp.



We beg to call your attention to this engraving representing the Elephant Ore Stamp. The advantages claimed for this Stamp are as follows:

CAPABILITIES.—The "Elephant" is capable of crushing as much stuff as a 12-Stamp Battery of the present system, having crushed as high as 1½ tons of tough copper ore in one hour, through a No. 4 punched screen. The undersigned, however, will guarantee 20 tons per day of ordinary quartz through the same size screen.

WEAR.—The "Elephant" having only two pairs, Shoe and Dies, the wear in this instance is equal to one-sixth of a 12-Stamp Battery. There being no Cam Tappets, Cam Shafts or Guides, the consequent wear on these parts is done away with, the leather thorough-brace, uniting the lever with the spring, would only require replacing at most, once a year.]

POWER.—The "Elephant" only requires a seven horse-power engine to drive it, where a 12-Stamp Battery would require from 18 to 20 horse-power.

PORTABILITY.—The entire Battery, including Mortar, will weigh about six tons, thereby causing an immense saving in the way of freight to such places as Arizona, Mexico, Cariboo and Bodie. As no part of the machine weighs more than 1,800 lbs., the handling of the machine is comparatively easy, and in places where it would be necessary to pack the machine on mules, it could be easily made in pieces not to weigh over three hundred pounds.

The above engraving shows the Machine in exactly the position it would be placed in a mine; the reader will therefore see that all wood work is done away with, and that once the Machine is on the ground it will take but a few days to set it up and have it in full working order.

The "Elephant" can be seen working every day from 2 to 4 P. M. at No. 342 Main St, near Harrison, San Francisco. For particulars, apply to

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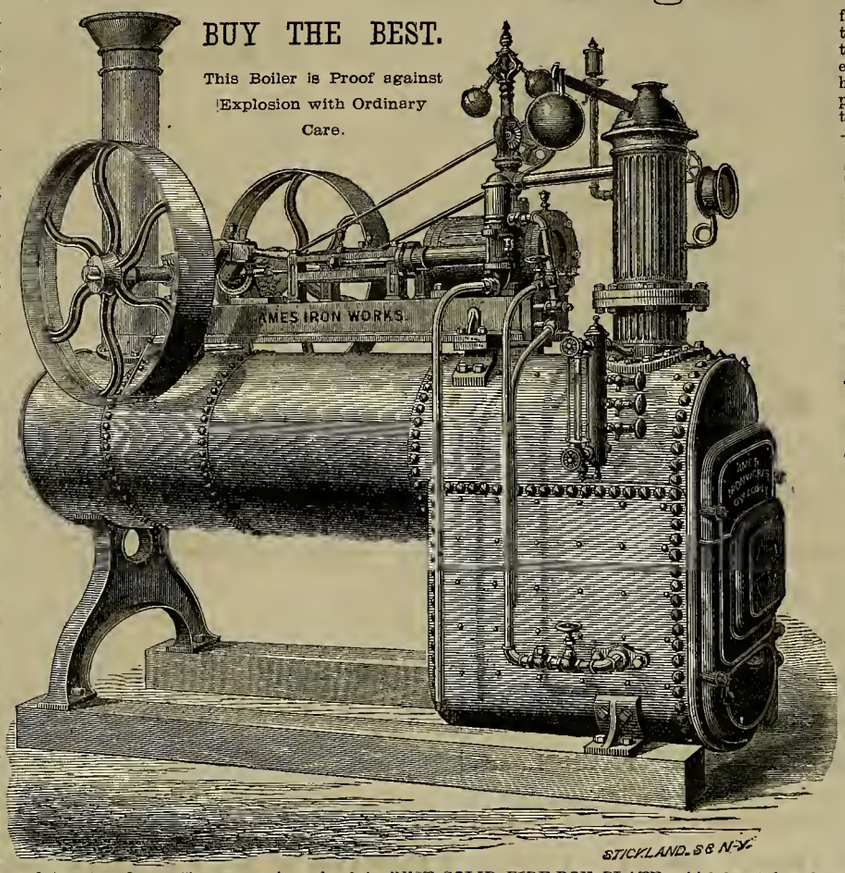
Particular attention is paid to boring the Cylinder accurate and smooth, and to fitting the Piston and Valve. The Piston is of the most approved locomotive pattern, fitted with metallic packing rings, which are adjusted by steel springs of proper proportion, regarding tension, elasticity and strength.

The Side Valve and its face are made perfectly true and steam tight, and it is constructed with the proper amount of lap to develop the most approved data of expansion that has been proved by numerous experiments to point the correct working of the engine, in relation to the use of steam, with greatest economy and efficiency.

This cut, taken from the "pump side" of No. 2 Ames Portable Engine, gives a good idea of the appearance of the size from five to 20 horse-power. Trusting that it will convey a favorable impression as to the style of our engines, we would say as to material, that we use only the best; as to workmanship, that we do not claim any extra polish for external show, but do claim accurate and fine finish to all the working or wearing parts; we also claim that the boiler, steam and exhaust passages, and other vital points, are scientifically proportioned in accordance with the best experience and the use of the Steam Engine Indicator; also, that as we make a specialty of Portable Engines, we can sell a better and larger engine for less money than those who do not confine themselves to any particular article of manufacture. We will not attempt in this space to enumerate the uses to which our engines have been applied, but assert that no engine surpasses them in adaptability to any work or location.



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NUMBER.	0	1	2	3	4	5	6	7	8	9	10	11	12
CYLINDER. Diameter in Inches.	3½	5	6	6	7	8	9	10	10	10	10	12	12
CYLINDER. Stroke in Inches.	6	10	10	10	10	10	12	12	12	12	12	16	18
BOILER. FIRE BOX. Diameter of Waist.	23	24	27	29	32	33	35	37	39	39	39	42	52
BOILER. FIRE BOX. Length in Inches.	23	34	36	36	38	38	52	52	52	52	52	52	52
BOILER. FIRE BOX. Width in Inches.	18	18	22	24	26	26	29	29	31	31	33	33	33
BOILER. FIRE BOX. Hight in Inches.	16	25	32	34	37	37	37	41	41	45	45	45	49
BOILER. TUBES. Number.	18	21	20	22	24	24	27	34	39	45	45	45	45
BOILER. TUBES. Diameter in Inches.	2	2½	3	3	3	3	3	3	3	3	3	3	3
BOILER. TUBES. Length in Inches.	41	61	60	60	68	68	83	100	83	112	112	112	124
FLY WHEEL. Diameter in Inches	9 & 20	24 & 40	30 & 42	30 & 42	36 & 48	36 & 48	40 & 54	48 & 60	44 & 54	48 & 60	48 & 60	48 & 60	60 & 72
FLY WHEEL. Faces in Inches.	3½ 6 & 6	6 & 8	8	8	8	8	10	8 & 12	8 & 12	8 & 12	10 & 12	12 & 12	12 & 15
Revolutions per Minute.	250	175	175	175	175	150	150	150	150	130	110	110	110
Estimated weight of Engine and Boiler in lbs.	1,700	2,700	3,900	4,000	6,800	6,800	7,700	7,300	10,000	12,300	12,300	13,850	35
Horse-power as usually rated.	3 to 4	5 to 6	7 to 8	9 to 10	11 to 12	13 to 15	15 to 18	20 to 25	25 to 30	30 to 35	30 to 35	35 to 40	
PRICE ON SKIDS.	$ 600	850	1,100	1,250	1,650	1,650	2,100	2,500	2,500	2,650	2,650	3,500	

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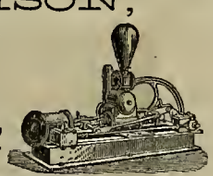

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S. P. BRESSLER, Elkhardt, Indiana.

Dewey & Co. { 202 Sansome St } **Patent Ag'ts.**

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Highest price paid for GOLD, SILVER and Copper Ores.

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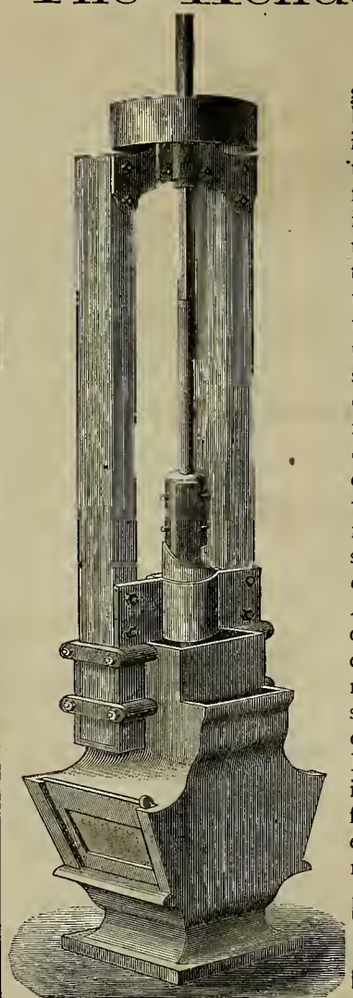
The Kendall Battery.

STEPHEN KENDALL, Patentee.



This Battery embraces the only genuine improvement that has ever been made in the process of reducing ores. The frame is all secured to the mortar, so that no extra framework is required. The stamp is rotated by a horizontal pulley on the top of the frame, and raised by the cam which is set horizontally on the girt timber. The upper end of the stem is made square, and works up through the pulley. When the stamp falls it crushes and grinds the ore fine by the continual rotary motion. The mortar has three discharge openings, and is adapted to either wet or dry crushing. A mill with an 800-pound stamp will crush five tons of average ore per day, shipping weight, 4,000 lbs., and requires about five horse-power. A 1,600 lb. stamp mill is in process of construction, which will give a capacity equal to any five-stamp mill. Several of them are now in successful operation in various parts of the country. For PROSPECTING PURPOSES this mill has no equal, as it can be set up and moved with such facility and operated at so small an expense. Address for further information,

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Publishers.

SAN FRANCISCO, SATURDAY, SEPTEMBER 21, 1878.

VOLUME XXXVII Number 12.

Mining Machinery and Portable Engines.

Messrs. Reynolds, Rix & Co., 18 and 20 Fremont street, exhibited at the late Mechanics' Fair several of the articles of which they are agents, or of which they are manufacturers. Among them were the Ingersoll rock drills, the "dry air compressor," the miners' and builders' horse-power, and the King engine and boiler. The Ingersoll rock drill is no new thing, having been in use here and elsewhere for many years, during which time its efficiency and economy has been practically demonstrated. The drills are made of different sizes and for different kinds of work, and are largely in use on the Comstock lods, Sutro tunnel, and many mines at various parts on this coast, as well as in railroad and mining operations in the Eastern States and elsewhere.

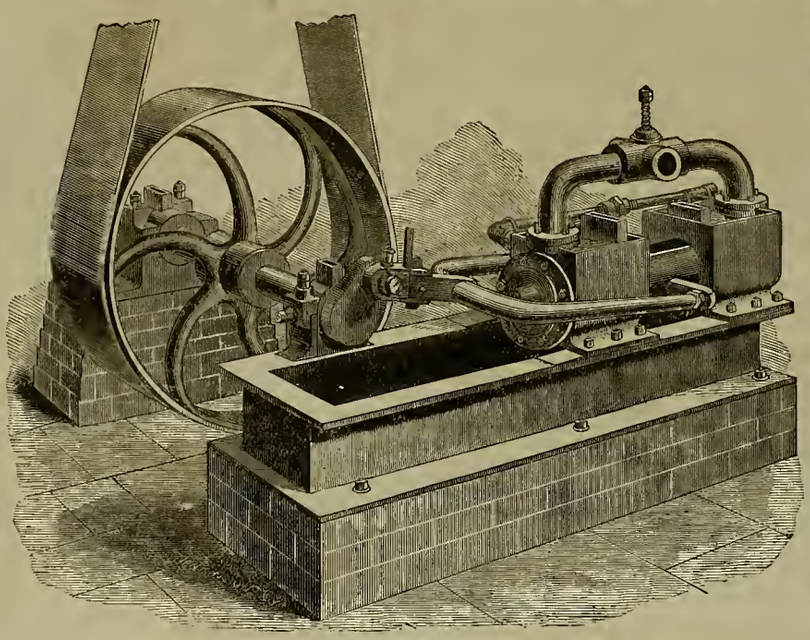
The firm manufactures an improved high-speed, dry air compressor, which is made on a new and very compact form. It is intended for driving rock drills, transmitting messages, forcing sand blasts, and general pneumatic purposes. Engravings of this compressor are shown on this page. In the sectional view, *N* is the cylinder; *J*, the plunger piston; *G*, outlet valve; *c*, coiled spring; *D*, air outlet; *f*, free air outlet; *g*, center for attached forked rod; *H*, enlargement of outlet valve; *I*, outlet valve in center of piston with stem surrounded by coiled spring; *C*, water jacket.

The perspective view, Fig. 1, represents compressor for water-power; Fig. 2 represents a section of compressing cylinders. Motion is imparted to a forked rod which is attached to the center, *g*, of the plunger pistons, *J*, in such a way that facility is afforded for the adjustment of said pistons relatively to the discharge valves of the compressor, in order to meet disturbances consequent on wear and for tightening up the driving connections.

It will be observed from the section, Fig. 2, that there is in reality but one piston, each end of which works in a separate compression cylinder. Each end is tightly packed, and in each end-face is a valve, the stem of which is surrounded by a coiled spring, *I*. At the compressing end of each cylinder is an enlargement, *H*, formed by the extension of the cylinder. This is constructed to form a seat for the outlet valve, *G*, which is held up to the shoulder by the spring, *e*, which surrounds its stem. At *d* is the air outlet.

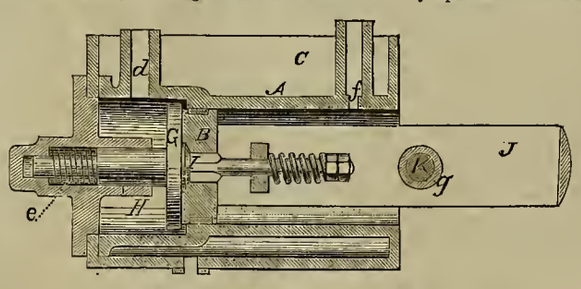
When the piston makes an inward stroke, its valve, *I*, of course closes, and the air is compressed before the piston and against the valve, *G*. As soon as the pressure of the latter exceeds the oppositely acting pressure of its spring, the valve opens; and all the compressed air then escapes through the outlet, *d*. As soon, however, as the pressure is sufficiently reduced, the valve spring reacts, and as the piston at the end of its path projects for about one-sixteenth of an inch into the enlarged portion, the valve comes back directly against it, and follows it until once more forming a flush joint with the shoulder. Meanwhile, the valve in the piston opens, and air enters between the same and the valve, the piston continuing its rearward stroke until past the orifice, *f*, which opens directly into the air, and thus a full supply is insured ahead of the piston, before it begins another compressing stroke. Of course the reverse operation is going on in the opposite cylinder, and in this way the action is rendered continuous.

It will be noticed that there is not only an absence of ports and passages, but that no water whatever is used in the air cylinder; so that the danger of wear from gritty particles in the same is entirely obviated. The water necessary for cooling is applied only on the outside in the jacket, C. Any kind of water may be used without injury to the compressor. As the area of opening in the inlet and outlet valves are very large, they require but a slight motion to admit or release the air, consequently the machines may be run at a high rate of speed, from 175 to 200 revolutions; and are made light in weight when compared with the amount of work they are capable of performing. By this construction and combination, not only is a free or full discharge obtained, and the entire volume of compressed air expelled from the cylinder, but whenever it is necessary to gain access to the outlet valves, which overlaps the working portion of the cylinder, or to remove and replace said valves, the same can readily be done by removing the end covers of the cylinder, and without breaking the joints in the connection, which carry off the compressed air from the enlarged chamber at the closed end of the cylinder. By referring to the section through the center of one of the air cylinders given above, it will be observed there are no ports or passages, and the compression of air must be absolutely perfect. These compressors are made to be run by water power or steam.



IMPROVED HIGH SPEED DRY AIR COMPRESSOR.

The miners' and builders' horse power is another article manufactured by Reynolds, Rix & Co., which we recently illustrated and described in the PRESS. It is quite simple, though combining the following requirements, viz: Power to hoist, a brake to hold at any point, or regulate it when lowering so as to lower at any speed, and means to stop the motion instantly at any desired point. It is completely under the control of the man in charge. It is built mainly of wrought iron, and



SECTION OF AIR COMPRESSOR.

is thus made with a view to secure the lightest weight compatible with necessary strength. The drum will wind five or six feet of wire rope, capable of a working strain of 1,500 pounds, without lapping or covering to exceed 14 inches of drum surface.

The King portable engine and boiler is for use in all industries where small engines are required. It is simple, compact and strong. The tubes in the boiler are arranged so that the maximum of heat is obtained from the minimum of fuel. So carefully is every unit of heat used, that the paint on the top of the boiler has never been known to scorch. It is said to be as safe as an ordinary stove, and may be moved about with equal facility, being provided with castor. The engine is separated from the boiler so that its moving parts cannot be affected by the heat. It possesses all the advantages arising from a vertical position. The exhaust steam is employed in a feed water heater of original construction, and then allowed to escape in such a manner as to furnish draft for the furnace. All the bearings are adjustable. An arrangement for carrying away all drip is attached Each engine is furnished with a Judson governor. In short, besides its own peculiar advantages of economy, portability, etc., it possesses all the requirements of any first-class engine.

MINERS' PROTECTIVE UNION.—The miners in the neighborhood of Angels, Calaveras county, organized last month an association bearing the above name. They claim that large tracts of mineral land are now being located under agricultural titles by speculators. These speculators, it is held, obtain the lands by false representations, their object being not to make agricultural homes for themselves, but to monopolize as many valuable acres as possible. The aim of this society is to watch the new locations made, and see to it that the land concerned is rightly described by the locators.

ALL sheep entering Victoria, Australia, are to be quarantined 21 days and dipped three times.

The Mines and the Courts.

Judge Daingerfield has sustained the demurrer of the defendant in the case of John H. Burke who sued for himself and all other stockholders of the Con. Virginia M. Co. *vs.* J. C. Flood *et als.* This suit is for an accounting relative to all the transactions of the several defendants who are named in the bill—and who have dealt with the Con. Virginia M. Co.

The allegations were that at certain specified dates, certain of the defendants named were stockholders and directors of that mining company, and that being such stockholders and directors, they conspired with certain other persons, also directors of different business enterprises, in which the aforesaid stockholders and directors were also interested, to trade with the Virginia Consolidated gold mining company, and that in so doing they made a profit out of the mining company. There was no allegation in the complaint of *actual* fraud in the transactions, or any of them, the nearest approach thereto being that the property sold from the one corporation or individual to the other was at an advance on the cost to the seller.

The Judge sustained the demurrer on the ground that the different causes of action joined in the complaint did not affect all the parties to the action. He thought that if the plaintiff could indeed recover without allegation of fraud in fact, he might do so by making separate cases for each set of defendants. The Judge went on to say: But it is by no means clear to my mind that such transactions as those mentioned in the complaint are *absolutely* void. Take, for instance, the allegation in references to the crushing of the ore taken from the company's mines. The allegation is that the Con. Virginia M. Co. had their ore crushed at a cost of $1.03 per ton, and that the expense of such milling was only $6, and that when that was done the Con. Virginia M. Co. had money enough to build its own mills and crush its own ore. There is no allegation that any one else offered to crush the ore for less, or that the stockholders or directors were willing that the Company's money should be appropriated in the building of mills and the reduction of ores. It would seem to me that very many of the enterprises of the country would be entirely checked, if under no circumstances the private fortune of individuals could be aggregated, and industries established looking for remuneration to other corporations with which the promoters happened to be identified as trustees or directors.

Some of the earlier decisions would seem to countenance the view contended for by plaintiff's counsel, but I doubt if our Civil Code intended to establish any other rule than that such contracts are voidable merely, and that they will be set aside by Courts of equity in the absence of the most perfect good faith.

BULLION SHIPMENTS.—Manhattan, Sept. 10th, $11,700; Standard, Sept. 9th, $25,139.50; McCracken Con., Sept. 11th, $8,158.06; 18th, $6,872.71; Northern Bells, Sept. 9th, $4,121.69; 11th, $4,151.58; Sept. 14th, $5,930.34; Independence, Sept. 9th, $9,984.67; Leopard, Sept. 9th, $9,101.46; Tybo Con., Sept. 9th, $8,373.78; 13th, $7,981.39; Extra, Sept. 16th, $3,525.17; California, Sept. 14th, $80,291.07; Con. Virginia, Sept. 14th, $52,205.03; Pittsburg, Sept. 14th, $2,153; Hillside, Sept. 17th, $6,300; total to date, $12,500; Ontario, total, for August $138,670; total for Sept. to 13th $54,012; Christy, Sept. 16th, $4,966.

THE Paris School of Mines and the Jardin de Plantes, both contend for Hank's duplicate collection of California minerals. Our Commissioner will leave them "to France" simply.

THE proprietors of all the steel and iron industries in and around Philadelphia, are contemplating a reduction of wages to their employies. The cause, competition.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—EDS

Legitimate Mining.

EDITORS PRESS:—When men mean business and not mere spsculation, it becomes a pleasant task to give some account of their operations. The following, all business men, with one excsption, of San Jose and vicinity, viz., H. Phslps, John Barry, M. Corcoran, Wm. Quinn, W. H. Hale, J. M. Thorpe, P. W. Reardon, J. T. Burkett, J. T. Pearl, and H. M. Herbert, of Prescott, Arizona, have recently formed a corporation known as the

Hayes G. & S. M. Co.,

Witb principal place of business at San Jose, for the purpose of mining in Arizona. Mr. Henry Phelps, present County Assessor, is the President. The capital stock is divided into 120,000 shares, of which 30,000 have been eet apart for a reserve fund and a working capital. The larger portion of 5,000 shares put upon the market has already been taken in and around San Jose. The ledge is silver-bearing and is situated on the Santa Maria river, 30 miles from Cullins' Station on the Ehrenberg and Prescott road.

A perpendicular shaft has been sunk to the depth of 55 feet, striking the ledge, which ehowe at the bottom a width of over four feet; the foot-wall not yet reached. It is repreeented to crop out boldly at many points for several miles.

The ore ie spoken of as the class known as free-milling, a few tons from the surface having, eame time since, been worked by mill process. Little is definitely known as to the results of this crushing. This much, I understand, is known. It gave a handsome margin after paying heavy transportation and all other charges. Numerous assays have been made. The first by E. Stahl, of Prescott, gave $377 per ton in eilver; the second, Messrs. Blake & Co., of the same place, $568.65; and the third, by Father Cichi, Professor of Chemistry at Santa Clara College, $394.43.

The following encouraging extract is from a letter of Mr. J. W. Clarke, of July 19th, 1878: "I have had several assays made of the rock. The lowest was $16, the next class $87.50, and the high grade went from $1,500 to $1,800. Mr. Blake, the assayer, took an average of the rock I brought from this mine, making his own selection. This went $1,222 per ton. The company design to extract 1,000 tons, have the ore accurately sampled and assayed, when a mill will be erected." A. C. K.

Hollisteria—A New Genus of Plants.

EDITORS PRESS:—The discovery of uew genera of plants, as the country is being more and more explored by sharp-eyed botanists, is not so common but what I may be pardoned for what follows:

I have the pleasure to announce that a plant found in Cholame valley, in the southeast corner of Monterey county, July 8th, and by me supposed to be an undescribed species, proves, upon sending to Dr. Gray, to be the type of a new genus. "Curious, beautiful and a good genus," Dr. Gray states.

The species by which the new genus is repreeented ie a pretty, white-wooly, yellow-flowered, sparsely-prickly plant, spreading flat upon the ground on a warm, sandy slope. The genus belongs to the *Eriogonæ* section of the order of *Polygonaceæ*, all sand and sun-loving plants, some of them of much beauty.

At my request the new genus has been named *Hollisteria*, and dedicated by Gray and Watson to Col. W. W. Hollister, of Santa Barbara, in recognition of his distinguished patronage of science. The specific name *lanata* is given on account of the wooly appearance of the present species, *lana* being Latin for wool.

J. G. LEMMON.

Yosemite, September 1et, 1878.

FERRO CHROME.—Chromium augmente the hardness and tensile resistance of iron alloys; but it has no "steelifying" properties, and cannot take the place of carbon. Boussingault fused chromic oxide with cast iron in such proportions as to burn all the carbon of the latter with the oxygen of the former; but the non-carboniferous alloy of iron and chromium thus obtained would not temper. Berthier is the real discoverer of chromized steel, or ferro chrome. It is manufactured in Brooklyn from Baltimore chromite, as follows: The pulverized ore, mixed with charcoal dust, is fused with a euitable flux, in graphite crucibles, to obtain a white chromium alloy, corresponding to that of Berthier, and called ferro chrome, after the analogy of ferro manganese. Chrome steel is as yet but little known, and is much restricted in its applications.—*Engineering and Mining Journal.*

Melville Attwood, in his paper read before the California Geological Society, states that our California iron ores, particularly magnetite, are well adapted for the manufacture of mining machinery, moce especially ore crushers. May uot our chrome ores play an important part, as the application of ferro chrome becomes more extensive?

New Mining Camps.

Lodi, Downeyville and Grantsville.

We had a conversation this week with a gentleman wsll verssd in mining matters, who has just returned from a very interesting trip into a comparatively new and unknown mining region. We give the rssult of our iuterview in our informant's own words. The country visited includes the three new and rising camps of Lodi, Downsyville and Grautsville. Neither of these places had an existence until a year or two ago; hut the discovery and opening of a good mine at each place has caused the formation of the three camps.

The first things in which your readers will be interested are the locations of the new districts, and the means of reaching them. They are situated within ten or twenty miles of each other, and within a few miles of the Reese river. A tri-weekly line of stages runs from Wadsworth, reacbing Downeyville in two days (distance a littlo over 100 miles). Either of the other places can be conveniently reached next morning, Lodi lying to the north, about ten miles by the road, Grantsville to the east, about twenty miles by the road. There are other camps in the neighborhood—such as Ellsworth and Ione, but they are on the decline.

The road traveled from Wadsworth runs rather to the south of east, over the regulation Nevada eage-brush desert, interspersed with occasional pleasant alkali flats, over one of which I had a nice moonlight walk of about eight miles, ankle-deep in mud at every step. The occasion of the aforesaid ramhle was the sinking of the stage in mud, beyond the power of the horses to extricate.

One might judge from this little adventure that the roads are generally bad; but such is far from being the case. Excepting immediately after heavy rains the flats furnish excellent traveling, and the road is almost level from Wadsworth to Downeyville. Indeed, so good are the roads in general, that one mine—the Alexander, at Grantsville—is now shipping extraordinarily heavy machinery, the teamsters taking it from Wadsworth to Grantsville for 2½ cents per pound, which, by the way, is the regular rate of slow freight. I may here state that the fare by etage to Downeyville is $20, and to Grantsville $25.

Downeyville, the first place of importanco, is a lively camp, contaiuing perhaps a couple of hundred men, and about thirty buildings; mostly, of course, log cabins, constructed miner-fashion, though some of the aristocrats indulge in the luxury of houses built of regular lumber. The place has great expectations—so great that the new-comer, unless he has friends and acquaintances, must sleep in the sage-brush, house-room being too valuahle to be wasted in furnishing lodgings.

In my judgment, however, the prospects of the place do not warrant so great a rush, for there is hut one good mine there; and although there may he undoubtedly more discoveries in the vicinity, yet the number who will "strike it rich" will he but a small percentage of the seekers.

The One Good Mine,

However, is one of the few which poor men can manage, and by which they can raise themselves to wealth without the necessity of begging from incredulous and selfish capitalists. It is called the Carbonate Point Consolidated, or more familiarly, the Downey mine, from the fact that it is owned by the Downey brothers, the original discoverers. Its history is euough to give encouragement to the disheartened prospector, who has so often seen other men grow rich from the results of his labors.

Less than two years ago one of the Downeys then prospecting in Cottonwood canyon, about five miles to the south of there, rode over this hill in one of his journeys for supplies. For years a stage road had run at the foot of the hill, and no one had ever thought of looking there for a mine. But he saw a small piece of ore, and a little prospecting showed more of the same kind. They removed their camp to this hill and went to work. They were poor; had to obtain credit for everything. But they had will and muscle, and went on.

Every mining man knows that a furnace can he obtained for but little money, while a mill is a costly affair. Hence a mine whose ore will smelt is a poor man's bonanza. Here was the secret of their success. The ore was an argentiferous galena, easily smelted. They brought it to the surface and stacked up ton after ton. The ore on the dump rendered their credit good, and they now have a furnace runningand reducing about 25 tons per day. The fact that the prospector has actually reaped the harvest, instead of being obliged to haud it over to the capitalist, is the cause of the rush to Downeyville.

Geology of the District.

The present of the Downey mine is assured. Its future is not so certain. It consists of a series of parallel veins in a limestone formation, dipping at an angle of perhaps 45° at the surface, hut soon flatteuing to half that iuclination. Some 12 inclines have been suuk on different veins, the deepest being about 250 feet. The ore veins follow the plane of stratification of the limestone. The hackbone of the country is an axis of upheaved and fractured granits, running iu a north and south dirccticn, and passing a short distance to the east of the Downey mine. The granite cannot be seen here, nothing but the supsrimposed limestone being visible. But a short distance to the south, a canyon presents a fins section of the country. Here the fractured granite is seen forming an anticlinal axis, with the limestone strata sloping away on both sides, and above the limestone a heavy slate formation. To my mind the manner in which the Downey mine was formed is clear. A series of fissures were caused by the tilting of tbe strata, and thess were subsequently filled with ore.

Now, as ths ore bodies follow the plane of etratification of the limestone, their depth manifestly depends on the distance to which the strata were separated by the upheaval. Experience has not shown that these hlankets hold to great depth, although they are frequently worked for years, and to great profit, owing to the proximity of the ore to the surface.

The next point of interest ie

Grantsville.

Here we meet an entirely different state of things from that at Downieville. The place is flourishing, owing to the fact that they have had a regular pay day from the start. Accommodations are good, and one feels that he has reached civilization agaiu. We have here no romantic story of how the honest miner has raised himself from poverty to wealth by pluck and industry, for the mines here are owned by men of means, prominent among whom is J. B. Cooper, of San Francisco. Still, these mines have a history, and an instructive history. A year ago Grantsville did not exist. True, there was a tunnel in the hill, and perhaps the remains of a deserted camp. But the gentlemen who now own both mines and town determined that a 50-foot vein ought to pay, even if the ore was low grade, and especially where fuel and water were so near at hand, and the ore close to the surface, worked by tunnel instead of by shaft. They went at the work and the result is a bandsomely paying property, even with the low-grade ore. But the ore is not all low grade. The south end of the mine carries a fine body of high-grade ore; ore that will average over $100 per ton.

I cannot give details of tbe formation of the country around Grantsville. I wae there only four days, and those four days were, hy request of the owners, spent underground, endeavoring to get a correct idea of the extent and value of the principal mines. But, though my examination in this respect was not thorough, I am satisfied that the Grantsville ledge is a contact vein, one side being in hard unstratified limestone, and the other in quartzite and porphyry.

The vein, as I have said, is very largo, with heavy clay walls. Where cut by the tunnel, the ore is low grade, say $50-rock on the average. Its beauty, however, lies in the fact that it is all ore, with very little waste; and this holds true in the upraise, clear to the eurface, as well as in the lower levels. I have already eaid that the south drift on the second level bas developed a large body of high-grade ore. This drift is 160 feet in length, and is being crosscut, to find the width of thc vein at this point. A winze also extende down about 70 feet from this level, in the foot-wall of the vein, and the cross-cut from the bottom of this winze is likewise in high-grade rock. The ohject of the winze is not only to develop the mine, but also to connect with a lower tunnel, which is being run from the base of the hill, and was, at the time of my visit, in a distance of 410 feet.

The Mill,

Which is now being built at tbo Miners' foundry, in San Francisco, will stand at the moutb of this tunnel. It will he at first a mill of 20 850-pound stamps, with pans and settlers, of course, and with two furnaces for roasting the ore. It will be run by a 20x48 engine, so that 20 more stamps can be added at any time.

Here I may mention a fact of interest to mill men. The ore of this mine contains no sulphur, so that it would naturally be considered a free milling ore, and so it is. It yielde a good percentage when worked raw. But it carries considerable lead, one of my assays, an exceptionally rich one, giving nearly 15%. Now, every mill man knows that where mercury takes up lead, it becomes more or less indifferent to silver. By roasting, however, the lead is oxydized, eo that mercury will not take it up. Hence, in this manner they obtain both a larger yield and a finer bullion. Moral: Thorough working pays.

They have not yet reached water in this mine. The lower tunuel is cxpscted to cut the vein at about the water level. When they reach this point they will find roasting furnaces not only useful, hut iudispeusable, for this vein has undoubtedly at some former time beeu charged with sulphur. The portion ahove the water level has lost its sulphur by the action of air and surface water, so that they are now working in decomposed rock, nature having done part of the roasting for them. When they strike water all this will change, the sulphurets will be found in their original condition and roasting will be a prime necessity. They are now hauling the ore 10 miles to a custom mill and are paying a round price for having it crushed. Still they are making a handsome profit. They anticipate great things when their own mill shall stand at the tunnel's mouth, when they can chute down the ore from the upper levels and run it direct to the mill. And I must say, I think their anticipations well founded.

This is the priucipal mine of Grantsville. It is called, in the sxpressive language of "the boys," the American Roostsr. In San Francisco they have adopted for it the more civilized name of Alexander, Mr. Cooper, to whom I have already referred, having named it aftsr his son.

Since my return I have seen an article in ths PRESS from ths pen of the State Mineralogist of Nevada, in which he gives a glowing account of the wealth of the Alexander mine. Now, the Alexander is certainly a first-class property, and will pay handsomely for years to come. But in my judgment no mine ever existed which could be calculated on for a yield of "millions of tons of ore." It may yield millions of tons with further development, but my estimate of it at present is as follows: Ore in the mine, from present lowest workings to surface, 150,000 tons; cost of mining and milling, $15 per ton; average profit, $30 per ton. This is sufficient to yield a handsome profit for the next five years, and ie the largest number of tons I have ever been able to report existing in any mine; but there is a vast difference between our figures.

And now for the

Instructive Portion of the Mine's History.

I mentioned that there was an old tunuel half way up the hill. Thie tunnel cut completely across the vein and ran into the hill beyond. Connected with it were upraises and winzes, and some stoping had been done by the original owners. They made up their minde that there was no great honanza there and ahandoned it. They were New Yorkers and wanted very rich ore. They knew nothing about mines, but had exalted ideas of the golden West. Now mining men have come along, taken up what they rejected and are making it pay. And after October, when the mill will strike its first blow, they are calculatiug on showing the New Yorkers what handsome returns they can get from this rejected property. The moral I wished to draw from all this is that people should learn mining before they go into it, aud never undertake a business they know nothing about.

The third place of which I intended to speak is

Lodi, and the Illinois Mine,

By means of which Col. Raymond ie seeking to retrieve himself. But I suppose most of your readers are more or less familiar with the history and prospects of this mine; for it is far better known than either of the others. The main difficulty here was in the smelting of the ore. This has, I believe, now been overcome, and the furnace is running far better than before. All who know "Uncle Billy" will sincerely wish him success.

In conclusion, there are one or two other points on which your readers will naturally look to you for informatiou.

Chances in the New Regions.

First, what are the chancee of finding new mines in these regions, and of what character are they likely to be? I would say in reply, that I think the chances good on both sides of the divide. On the west side, where the Downcy and Raymond are located, I should look for smelting mines. But I should advise prospectors to direct their attention some miles south of the closely prospected portion. As one goes south, timber becomes more ahundant. Water is ecarce throughout this section, but springs are found in tbe canyone, which eupply enough for the wants of the miners. (No one not familiar with the working of mines, knows how greatly their value is enhanced by the close proximity of fuel.) Still, men might do well in the vicinity of Grantsville. Tbe prospect of large aud permanent bodies of ore is better on that side than on the otber. But from what I have seen of the country, I should judge that it would be milling and not smelting ore. There will be one advantage to prospectors in that neighborhood. In October, when the "Alexander" starts its own machinery, the mill at Ione will bo glad to work ore for all comers; and this may be a help to men who have good properties there, but lack the money to put up their own machinery.

Second, what are the chances for commercial business in these places? As to this, the field is pretty well occupied. Certain special lines of business might succeed. A restaurant ie wanted in Downeyville. There was talk of putting up a lodging-house there. If this is not done, there is a good field in that matter. But there are stores in abundance throughout this region—plenty to eupply the wants of all.

SCHLIEMANN'S DISCOVERIES.—Dr. Schliemann is at Constantinople, and intends resuming his excavations in the Troad if he can obtain from the Porte 50 soldiers as a guard against robbers. A summary account of the German excavatione ot Olympia says that the number of marhle objects found during the last three winters is 904; of bronze, 3,734; of terra-cottas, 904; of inscriptions, 429; and of coins, 1,270. All the more important ruins have been photographed, and the third volume of the official account is about to appear. An exhibition of all the casts taken will shortly be opened at Berlin.

HARD GLASS IN LABORATORIES.—A. Lamek (*Polyt Notizblatt*) warns chemists against the use of beakers, alembies and other articles made of "hard glass." He was filtering a solution of phosphate of lime into a half-litre glass, when it suddenly exploded, without any perceptible cause. He had not heated the glass, neither was there any shock or change of temperature, but the glase was "shivered into a million fragments," and he was wounded in the back.

MECHANICAL PROGRESS.

The Care of Shop Tools.

The *American Machinist* has some important suggestions concerning the advantage of care and system in the treatment of shop tools. First cost of tools seldom represents their ultimate cost, whether it becomes necessary to repair them or not. If a good mechanic makes a tool last a year in constant usage, while his careless neighbor uses up one of the same kind in six months, the cost of the latter should be accounted twice that of the former. When repairs are made their value must be added in computing the whole cost of the tool.

One primary reason why some shops can show a greater profit on a given amount of work is because they get more service out of their tools. This is just as evident when tools are cheap as when they are dear, for the products of mechanical labor fluctuate the same as the first cost of tools; and if a large part of the income of business goes for working tools and repairs to the same, balances on the right side of the ledger are likely to be diminutive, if indeed they appear at all. It is the first requisite that tools and machines should be adapted to the work to be performed. Fine tools should not be used on heavy, coarse work. They must also be kept in good working order, cutting edges well sharpened and bearing surfaces lubricated, shafting kept well aligned, pulleys balanced, belts kept clean and pliable and at the correct tension, rust prevented, emery wheels and grindstones trued up and dirt kept out of all wearing parts.

Machines should be mounted on stable foundations and run neither above nor below the proper speed required to do the work. Small tools demand as much care as large ones, and a careless or inexperienced workman will often spoil more than the amount of his wages in files, drills, chucks, reamers, taps, dies, calipers, wrenches and the like, unless closely looked after by the master mechanic. It is therefore very essential, in order to insure proper care of tools, that workmen know just how to use them. All small tools should be laid away systematically in a dry place when not in use. In large shops a room should be set apart for this purpose, and a man detailed to take charge of it and keep the tools in good working order. There is no part of a large machine shop from which an outsider can form a better judgment of the general management than by an observation of the tool room. The best economy is established by securing none but the best tools at the outset, for in the long run they will be found the cheapest. As a rule it is expensive trying experiments by purchasing tools of new and untried patterns or material. New machines and tools are often constructed so as to leave no reasonable doubt of their successful operation, but this is not invariably the case. It is always safe to buy those about the working of which there is no doubt. Second-hand machinery can often be obtained in good order at very low prices, if the purchaser has extra time at his disposal to look it up, but when machinery is much worn, its value is questionable at any price. It is not only easier, but a greater satisfaction, to take care of good tools than of poor ones.

CALCULATING MACHINES.—In his address on the science of mathematics, from which we quoted a paragraph last week, Mr. Spottiswood made allusion to calculating machines. The idea of substituting mechanical for intellectual power has not long laid dormant, for, besides the arithmetical machines whose name is legion, from Napier's bones to Earl Stanhope's calculator, and the Schultz and Thomas machines, now in actual use, Prof. James Thompson has recently constructed a machine which, by means of the mere friction of a disk, a cylinder and a ball is capable of effecting a variety of complicated calculations which occur in the highest application of mathematics to physical problems. By its aid an unskilled laborer may perform the work of ten skilled arithmeticians. The machine is applicable alike to the calculation of tidal, of magnetic, of meteorological, and perhaps also of all other periodic phenomena. It will solve the different equations of the second and perhaps of even higher orders, and through the same invention the problem of finding the free motions of any number of mutually attractive particles, unrestricted by any of the approximate suppositions required in the treatment of the lunar and planetary theories, is reduced to the simple process of turning a handle.

AIR-BRAKE ON FREIGHT TRAINS.—The air-brake has been successfully tried on a freight train at the Veta pass, on the Denver & Rio Grande railway. On a down grade of 211 feet to the mile the experiment was made with a train of 12 flat cars, loaded with green lumber and weighing nearly 200 tons. The train was running at a good rate of speed, but by the application of the brakes was stopped short in a distance of 440 feet in 22 seconds, and with the throttle of the engine wide open. The air at the Veta pass only sustains a column of mercury of 21 inches, so that the pumps of the brake had to compress the air through 9-30ths of the strike to get air of the same density as the pumps take in the sea level.

Retarded Fracture in Tool Steel.

A paper was read before the late meeting of the American Society for the advancement of Science, by Wm. Kent, describing a peculiar case of fracture in tool steel. From this paper, as printed in the *American Manufacturer*, we take the following paragraphs: Mr. John L. Gill, Jr., of the Pittsburgh Car Wheel Works, Allegheny City, had occasion to use in a machine which he is building a cylindrical piece of tool steel, 10 inches long, and two inches in diameter, with a curved groove cut on one side and a rectangular groove on the opposite side, parallel to the axis. The steel was procured from a well-known firm, and stated by them to be the very best tool steel. It was supposed to contain about 0.9 % of carbon. That the steel was of excellent quality is shown by the fact that another piece from the same bar was made into a rose reamer, which has been in use for some time in Mr. Gill's shop without showing a flaw. The reamer and the piece which broke were tempered by the same blacksmith, an experienced hand.

After the piece was formed into the required shape, it was tempered by being carefully heated in a wrought-iron muffle, then plunged into water and cooled. It was then oiled, and held close enough to the fire merely to burn off the oil, the object being to have the piece extremely hard. It was then laid away on a shelf, to be used when the machine for which it was made was ready for it. The machine being delayed the piece was not needed as soon as was expected and it lay on the shelf for six weeks. One night, at the end of the six weeks, the watchman of the works heard in the shop a report like a musket shop, and on going toward the shelf on which the steel had been placed and from which the report sounded, he found that the piece had broken in two, one of the broken pieces falling on the brick floor, four feet in front of the shelf, the other having apparently recoiled against the board wall behind the shelf, leaving a deep dent in the board. The fractures are of a peculiar curved or concave and convex form, and the structure shows a fine grained and superior metal.

The various theories of internal strain will at once suggest themselves to those inquiring into the cause of this and similar accidents. It is almost certain that a condition of internal strain existed in the piece of steel during the whole six weeks that it lay on the shelf. It may be possible that the interior portion of the piece during all that time was compressed by the greater contraction of the exterior portion, and that it resisted this compression with a constant and uniform force, while the resistance of the exterior portion to this force gradually diminished, becoming weaker until it "let go" suddenly, and the piece broke with a loud report. Admitting this theory, however, the difficulty arises, "if the exterior portion 'let go,' why did the interior also break, its strain being relieved? The "shock of rupture" may be the answer to this query.

PICKING HOPS BY MACHINERY.—An ingeniously devised labor-saving hop-picking machine has been invented by a Waterville, N. Y., man. The following description is given of it: It consists of two rubber rollers, so constructed as to draw in the branch, while two steel rollers, having an opposite action, pick the hops from it. The machine is about the size of an ordinary clothes-wringer, is propelled by means of a treadle, and runs as easy as a light sewing machine. From the picker the hops run into a sack, which, when filled, is taken to the separator, which sorts the hops from all leaves or stems which may have gone into the sack, and thence to the hop house. It is estimated to pick from 20 to 30 boxes per day, and one separator is ample for a large number of machines. It is stated that the separator is not yet perfected, but works with moderate satisfaction.

ECONOMICAL VALUE OF SOLAR HEAT.—In experimenting with his solar heating apparatus, Mouchot has found that the most satisfactory material for mirrors is either silver or brass, covered with a thin layer of silver by galvanizing. The variations of solar intensity in Algiers, between 8 A. M. and 4 P. M., are generally slight. The quantity of heat gathered on a square meter per minute varies from 6 to 9.8 calories. A supply of seven calories enables a reflector of a meter square to boil in less than 12 minutes a liter of water at 20°, and produces hourly 778 grams or 1,322 liters of steam at the normal pressure. These results are only two-thirds as great as he anticipates from larger receivers. He proposes soon to present to the academy a description of his great receiver of 25 square meters, which is to be placed in the Universal Exposition.

STEEL TOWING LINES.—It appears from Eastern papers that steel tow-lines are becoming popular on the lakes. The Cleveland *Plaindealer*, in a recent issue, says. The steamer *Chamberlain* has had one during the season and found it to work well. Yesterday the propeller *Egyptian*, with her consort, the *Pelican*, left for Marquette, towing with a steel line. It is 660 feet long and weighs less than 800 pounds; is made of the best crucible steel, at the same factory that supplies the British navy. It left Liverpool 16 days ago, was imported and fitted by Messrs. Upson, Walton & Co. for the owner, Mr. R. K. Winslow, and is now on its way to Lake Superior. This may be considered quick work.

SCIENTIFIC PROGRESS.

Prof. Huxley and Anthropology.

At the recent meeting of the British Association we notice that Prof. Huxley gave a new statement concerning his belief of the age of mankind on this planet. He said: The greatest progress of our knowledge of man is the introduction of man in a fossil state. When any man broached the notion of a fossil man he would be laughed at. It was contrary to any of the preconceived ideas that man could have existed in a fossil state. That idea fixed itself so strongly on men's minds that they thought their eyes the plainest evidence. We have a most astonishing accumulation of evidence of the existence of man in ages antecedent to this. What the exact data is I do not think any one can say. It is beyond all question that man existed at a time when the whole physical conformation of the country was different to what it is now. Whether the evidence we have justifies in going backward still is beyond that question. That question would be regarded as something startling. But when it comes to a question of tracing back men further than that, I must confess that the evidence is to my mind of a very dubious character. We have not at present any positive knowledge on the subject. Then comes a very interesting question, whether with such evidence of the existence of man before us, it is possible to trace in that history any evidence of the human type essentially similar to that which exists at the present day. I am free to confess that my opinion on that matter remains exactly what it was some 18 years ago.

I did venture to put forth the opinion that what is common to all such human remains is that they present a most marked and definite trace of what are called the characteristics of a lower type. I must confess that the arguments brought forward to show that the skull is an abnormal skull have no weight whatever with me. From the remains that accompanied the skull of that human being, I must say that so far as all the fundamental points are concerned, they are the same as those of men of the present day, and that that being could wear boots just as well as we. I do not know that there is any more reason for believing that the man who existed in that day could not have been in all respects similar to the man of the present day, than to object to the evidence that the horse which existed in that day was in all respects identical with the horse of the present day. We know that the horse presents a series of modifications and evolutions by which he could be traced back, and it would be just possible to trace back man in the same way.

THE BOTTOM OF THE OCEAN.—At the late meeting of the British Association, Sir Wyville Thompson, of the famous *Challenger* expedition, made the following remarks: 'The average depth of the ocean is 2,000 fms., and it nowhere exceeds 5,000 fms. Within 300 or 400 miles of the shore formations are being laid down, derived mainly from the disintegration of shore rocks; but in the abyssal regions the sounding instrument brings up an extremely fine reddish clay, in great part amorphous, but containing, when examined under the microscope, a quantity of distinctly recognizable particles, organic and inorganic. The organic particles are chiefly siliceous, and for the most part the shells or spines of radiolarians, which are living abundantly on the surface of the sea, and apparently in more or less abundance at all depths. The inorganic particles are minute flakes of disintegrated pumice, and small crystalline fragments of volcanic minerals; the amorphous residue is probably principally due to the decomposition of volcanic products, and partly to the ultimate inorganic residue of decomposed organisms. There is ample evidence that this abyssal deposit is taking place with extreme slowness. The sharks' teeth brought up are of an extinct species. So far as we know, the deposit being formed at extreme depths in the ocean does not correspond either in structure or chemical composition with any known geological formation. During past geological changes it is probable that the abyssal beds have never been exposed.

OXYGEN IN SILVER.—Dumas has published in the *Comptes Rendus* some recent researches on the amounts of oxygen in metallic silver. A kilogram of pure silver developed in heating from 932 to 1132 degrees, 57 cubic centimetres of oxygen. If the silver was melted for 15 minutes with saltpetre and exposed to air, one kilometre yielded 158 and 175 cubic centimetres of oxygen. Dumas draws attention to the fact that in estimating the equivalent weights those chemists who granulated the metallic silver with an access of air, after melting with an addition of borax and saltpetre, necessarily obtained silver holding oxygen. This makes the proportion of silver to chlorine 108 to 35.50, instead of 108 to 35.47, as determined by Stass.

TRIUMPH FOR AMERICAN MICROSCOPES.—A signal triumph has been won by American scientific instrument makers at the Paris exhibition. Charles A. Spencer, of Geneva, New York, the manufacturer of the Hamilton College telescope, has received a gold medal at the Paris Exposition for his display of microscopic and telescopic lenses and fixtures. This is no small honor, when we consider the competition that naturally came from famous European manufacturers.

UNDERGROUND TEMPERATURES. — At the meeting of the British Association a report was read from the committee on underground temperatures. It described a series of interesting experiments, by which it was shown that the heat increased progressively, according to the depth beneath the surface of the earth, that the planes of heat were parallel when the surface of the earth was level but covered beneath the surface of high mountains. Having alluded to the great difficulties they experienced in finding the temperature of bore holes filled with water on account of the fluctuations of the heated water from the bottom, and the consequent disturbance of temperature, Prof. Everett described a new system for making observations in closed up bores by a thermo-electric method. Two wires, one of iron and the other of copper, each covered with gutta-percha, are to be joined at both ends, where a portion will be left uncovered. One junction will be buried in the bore, while the other will remain above ground available for observation. A current will flow through the circuit composed of these two wires, whenever the two junctions are at an unequal temperature, and the observer will immerse the accessible junction in a basin of water containing a thermometer, and will regulate the temperature of the water until he finds by a galvanometer that no current passes. He will then know that the temperature of the water, as indicated by the thermometer, is the same as the temperature of the buried junction.

A LECTURE EXPERIMENT.—Mrs. F. E. Nipher gives the following interesting lecture experiment in *Nature:* A glass flask of about a litre capacity is partially filled with water and closed with a cork, through which a tube passes which terminates flush with the lower side of the cork. Above, the tube is bent twice at right angles, the other extremity of the tube dipping below the surface of water of ordinary temperature. The water of the flask is now boiled, and as soon as the air has been driven from the flask remove the flame and allow the water of the vessel to recede into the flask. At the first entry of the cool water the steam will be so greatly condensed that a brisk ebullition will take place, which, for a few seconds, checks the inflow of the water, driving it down the tube; further cooling quickly causes more water to enter, when the same phenomenon is repeated. After two or three oscillations of this kind the water runs continuously, and with great velocity, into the flask, which should not be allowed to fill, as it is in that case usually broken by the shock, which terminates the experiment.

RIPENING GRAPES OFF THE VINE.—M. Pollacci has lately investigated the disputed question whether grapes separated from the plant undergo an after-ripening, as is the case with apples and pears. Several kinds of unripe grapes were cut off with scissors, and three portions formed of each kind. One portion was then taken, and its quantity of sugar and acid determined immediately. Of the two other portions one was placed in shade, the other in sunshine, and after ten or twelve days the same data were procured. It appeared that there was a small increase of sugar and decrease of acid, and the differences were greater in the case of the grapes exposed in sunlight than with those kept in shade.

INFLUENCE OF LIGHT ON CEMENT.—To ascertain the influence of light upon cement, Heinzel divided into three portions a lot of cement and exposed one of these (A) to the air and full light, another (B) to the air and diffused light, and secluding the third (C) in darkness from the air. After six months it was found that A made a weak mortar by absorbing 38% of its weight in water, and it had become friable; B with 33⅓% of water made a mortar too adhesive to the trowel, and it yielded up some of its water; C with 33⅓% of water made an excellent mortar, easily stirred and flowing, and it parted with some of its water. After setting for 28 days the relative strengths were A, 3; B, 37.9; C, 44.6.

PROPOSED TEST FOR COTTON.—A recent German scientific journal states that linen threads, when dipped in an alcoholic solution of the substance known in commerce as *aurine* or yellow coral, and subsequently washed in a concentrated aqueous solution of carbonate of soda, acquire a rose-red hue, the cotton threads remaining colorless. Accordingly, to detect cotton in linen fabrics, if a small piece of the suspected fabric is frayed at the edges and then treated, the presence of colorless threads will at once reveal the presence of cotton.

GERMAN MEETING.—The German Association of Naturalists and Physicians will assemble this year at Cassel, on September 18th, the sessions continuing for one week. Among the addresses promised, are the following: "Relations of Darwinism to Social Democracy," by Oscar Schmidt; "Symbiosis, Parasitism," etc., by Professor De Bary; "The Education of the Physician," by Professor Fick; "The Color Sense and Color Blindness," by Dr. J. Stilling.

INSECT VOICES.—One of the walking-stick insects, or *Phasmidai*, has been discovered by Mr. Wood-Mason to be a sound-producing insect. In *Pterinoxylus* he found that a stridulating noise was produced by a rasp on the hind wing in connection with a resonant swelling on the wing-cover, and this appeared in the females. This apparatus is much like that of locusts (*Œdipoda*).

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

CALIFORNIA.

AMADOR.

Preparations.—*Dispatch*, Sept. 14th: Extensive preparations are now being made by McLaughlin & Co., proprietors of the Volcano and Jackson ditches, under the Superintendency of Mr. L. McLane, to commence the miniug out of Grass Valley—which lies just below Aqueduct City—as soon as water is sufficient. The necessary channels are being cut and flumes laid for the conversion of their little valley into a gigantic deep gravel mine, this Winter.

Phenix.—*Ledger*, Sept. 14th: The 80-horse power steam engine is found to work admirably. The crushing, no longer dependent upon the water supply, can now be kept up throughout the year. The Burleigh drill has been introduced. The lumber used in the works is cut on the premises. The monthly output of bullion runs from $30,000 to $50,000. For over 400 feet the ledge is from 30 to 80 feet wide. The employes of mine and mill number 105.

Items.—Work has been resumed on the Alpine at Plymouth. Nearly, if not quite all the hoisting machinery for the Empire is on the ground. The Volcano tunnel is in something over 1,100 feet, a little more than half the required distance.

The Pennsylvania, California, (or Potosi) Talisman, Crown Point, Bonanza, and Kennedy mills are all idle, representing an aggregate capacity of 100 stamps.

EL DORADO.

Items.—*Mountain Democrat*, Sept. 14: The Gold Deposit company have purchased the Lyonsdale mill and machinery, which will be immediately transferred to its new site. The Ida Livingston is now working with a double force of hands. The ore is bigh grade and the body is widening. The Chaparral has a rich ore body which is widening. Full corps of hands is now working.

INYO.

Rex Montes.—*Independent*, Sept. 14: In tunnel No. 4, a streak of the very richest class of ore has been met. Good ore is coming from Nos. 2 and 3 in the old works. Ore is also coming from the old Silver Sprout. Preparations are being made for extending operations.

Lean Valley.—The old mill has been kept running quite steadily for a year past, by the proceeds of which a number of miners have been enabled to sink on their mines and thereby develop some very promising ore bodies at greater depths than were ever reached by the first operators in the camp. Among others giving good reports is Brown's Hope at 200 feet, and the Sewana. Two tons of ore from the latter were recently worked at the Silver Peak mill, yielding no less than $1,768, or $893 per ton. A new mill is expected, perhaps two. Reports from Gold Mountain district also are encouraging.

CALAVERAS.

Haskin's Mine.—*Citizen*, Sept. 15:—At present the ore is being crushed at the Carlton Mill. A clean-up will be made in a few days. From 12 to 15 men are now employed. The vein varies in width from 12 to 24 inches. The ore averages $100 per ton.

Secretary Mine.—This mine has been crushing refuse ore for several weeks. Its recent clean-up paid considerably more than cost of crushing. The mine is to be opened more extensively. A 10-stamp mill has been put up.

Granite Mine.—The ore in this mine is low grade, but can be obtained in sufficient quantities to pay for working. The 10-stamp mill will be kept constantly at work.

Items.—The Grasshopper Mine is again being worked. The Butcher John claim, recently purchased for $4,000 by Kellogg, Garland & Co., is being vigorously worked. The Valentine is idle, waiting for the issue of the patent. Wm. Lacy still holds the claim by keeping armed men upon it.

MONO.

Champion, *Standard*, Sept. 11th: The new hoisting works are giving satisfaction. The engine and reel will be suitable for a depth of 1,000 feet. There are 23 men employed.

Bulwer.—Connection will be made with the Standard new shaft about the 1st of October. The ledge on the south drift is two and a half feet wide and is looking well.

Goodshaw.—Repairs and hard rock have retarded progress. A change in the rock has taken place and progress will be better. Machinery for hoisting works is on the way.

Queen Bee.—The ledge at a depth of 90 feet. The vein formation is seven feet wide of gold bearing quartz, well defined.

Other Mines.—A ledge of 20 inches wide prospecting well, runs in the bottom of the Croesus two-week 25 foot shaft. The Flood and Hurley tunnel is now the Republic Con. Mine. The North Richer ledge has increased from four inches at the surface to four and a half at 50 feet. Assays have ranged from $2 to $2.50. Signs of near approach to a rich ore body in Bechtel. In Sitting Bull, at 70 feet in shaft, a fine body of rich quartz has been struck, which is contained in vein formation four feet wide. A 4-inch ledge, giving high assays, has been developed in the Bodie Bluff location. The Boh Ingersoll claim, west of the Goodshaw, has let contract for 100 feet more of shaft. Will soon be incorporated. The Lake district 20-stamp mill will soon be in operation. Ore has already been shipped for it.

PLACER.

Independence Hill.—*Forum*: J. B. Hobson is fitting up the Independence Hill claim. It was purchased lately by a San Francisco company. The ground prospects rich, and extensive hydraulicing is to be commenced.

Other Claims.—The owners of the Prichard claim were so much encouraged by the run of last Winter that they are making considerable expenditures in preparing for the coming hydraulic season. The same may be said of the Barter Entwhittle Mills, Philips and other claims on the Indian Canon side, a mile or two above Iowa Hill. Frazier's claim, at Bird's Flat, will be run this next season. The Orion Company have let a contract for fitting their claim for hydraulicing. Below the Iowa Hill mines a flume is being put in to catch the tailings. At Lucas Flat, a company in prospecting an old drift mine, have struck rich gravel. The Wisconsin Hill cement mill is proving a success. The Lehanon drift claim, located just south of Wisconsin Hill, which has lain idle for some years, is about to be started up again.

NEVADA.

You Bet.—Grass Valley *Union*, Sept. 14: The only washing being done is in the Spaulding claim and the old Neece & West ground, superintended by Geo. S. Powers. The tunnel that is being driven in the Brown claim requires 120 feet more before it can be utilized in working the ground. It will be completed in time for the working of the ground when the winter supply of water comes. This claim has heretofore been worked by drifting, but in future it is to be worked from surface to bedrock by the hydraulic pipes. A portion of the gravel, which is firmly cemented together, will be run through the stamping mill, as has been the custom at this mine.

Town-Talk Hill.—*Herald*, Sept. 10: In the ravine west of the New England mine, Thos. Bennett & Co. are running a tuunel which is expected to tap the Alta Hill channel.

New York Hill.—Sixty-two loads from this mine cleaned up, at the Omaha mill, $12,442. This without the sulphurets, which will bring the amount up to $14,000. Of late the mine has improved very much in appearance, carrying a fair-sized ledge, which is very rich, both at the bottom of the shaft aud on the north side, which promises to yield equally as rich rock as the above for some time to come.

Items.—The Yuba river miuing company, operating in the bed of the main Yuha, near Smartsville, is reported to have found a rich streak of pay dirt. The water supply for the Milton company is gradually lesscuing. The Sweetland Creek mine, drawing its supply from the Eureka Lake canal, will have sufficient water to last through the season. The Life Preserving mine, at Bald mountain, near Auburn, known here as "Doc. Wilkinson's honanza," was sold last month to A. G. Garnett, of San Francisco, for $2,000. Rocky Bar has a vein of good size in its lower level, and late crushing of trihute rock from different levels paid $30 to $40 per load. The new Deadwood ledge, 16 inches wide, will go from $80 to $100 per ton. Au improvement is reported in the Gold Hill mine. Experts have decided that it will pay largely to drift in the Blue Banks mine. The Magenta Con. mining company, Ophir hill, are applying for a patent to their ground.

NEVADA.

WASHOE DISTRICT.

Consolidated Virginia.—Gold Hill *News*, Sept. 18th: The daily yield of ore for the week has been 160 tons. The repairs to the main shaft have been completed to a point 25 feet below the 1,500 station. The heat is still very great. Tbe C. & C. shaft is now down 35 feet below the 2,050 station. The flow of water is still strong.

California.—A lateral north drift is about being started at a point 400 feet west of the C. & C. shaft on the 1,950 level. This drift will form a principal working thoroughfare and air gallery, and when completed will connect directly with the Ophir on that level. The heat on the lower levels is still very great.

Original Keystone.—The frame of the hoisting works is up ready to cover in, the boilers are in place, most of the machinery is on the ground and everything that is possible is being done to push the works to completion.

Mexican.—Sinking the joint Mexican Con. winze on the north line is making good progress, the bottom in good blasting ground. The hoisting engine is in place and will be ready to start up in a very short time.

Trojan.—The north drift at the second station level is steadily advancing, the face in quartz of a good character. At the distauce of 155 feet from the station a crosscut was run into the vein 25 feet, the car samples from which averaged $30 per ton, assay value.

North Con. Virginia.—Sinking the main shaft is making the best of headway, the bottom still in hard blasting rock. The manufacture of the spleudid new hoisting machinery has been commenced.

Ophir.—Sinking the main incline is going vigorously ahead, the bottom having passed through the hard rock recently encountered in a soft formation of clay, quartz and porphyry, which looks as if it were really going to make into a body of quartz and ore. This discovery is something entirely new and unexpected, and begins to look as if it might prove of considerable importance.

Scorpion.—This mine comprises 4,000 feet of ground lying in front of the Mexican, Union Con. and Sierra Nevada mines, on the east. The locatiou dates hack to 1859, and is one of the oldest on the Comstock. Preparations are now being made to sink a large working shaft and develop the property.

Lady Bryan.—The water is drained from the shaft and a station is being opened at the 600 level, 350 feet below the deepest level yet prospected in the miue. Crosscuts have also been started in the ore vein north of the shaft, on the 350 level.

Alta.—The 1550 station is opened and a drift started castward to cut the ore vein. This drift is iu a distace of 40 feet, the face in vein matter mixed with streaks of quartz carrying spots of good ore. A large amount of the ore vein is stripped ready for crosscutting on the 1250, 1350 and 1450 levels whenever it is desirable to do so.

Justice.—The hottom of winze No. 1 below the 1300 level is showing some very fine ore. At the depth of 100 feet a crosscut will be started in this winze to prospect the ore vein. That depth will be reached in a very few days. As soon as the south drift on the 1450 level of the Alta reaches the Justice line the drift will be continued southward by the Justice until a connection is made with the douhle winze now being sunk below the 1300 level.

Belcher.—The joint crosscut on the Crown Point line, on the 2360 level, is making good headway, not having yet reached the ore vein. Crosscut No. 2 is apparently just entering the ore vein.

Best & Belcher.—The joint east crosscut on the 1900 level from the hottom of the joint winze is steadily advancing, the face in very favorable vein matter. Sinking the new joint Gould & Curry shaft has been commenced and is making excellent headway.

Hale & Norcross.—A large working drift has been started from the 2000 station to connect with the Chollar combination shaft.

Overman.—The main south drift on the 1600 level is steadily advancing, the face iu soft porphyry, carrying streaks of favorable looking quartz.

Sierra Nevada.—Sinking the main south incline below the 2100 level is making good progress, the quartz and ore still showing at intervals in the hottom of the winze. The prospects of a big ore development, when the crosscutting of the 2200 level shall have been commenced, are steadily increasing.

Union Con.—The east drift from the main north drift on the 1500 level, running to connect with the North Consolidated Virginia shaft, is making the best of progress, the face in clay and quartz of a very lively character.

Caledonia.—The south drift on the 1400 level is passing through a fine, favorable quartz formation. The water in the joint Overman winze is gradually subsiding.

Savage.—A breakage of the pump boh on the surface during the first part of the week permitted the water to rise again to the 2000 station. The damages have been repaired.

Gould & Curry.—Sinking the Best & Belcher and Gould & Curry new joint shaft has been commenced and is making good progress.

Leviathan.—The north drift on the 750 level is being pushed ahead with speed. The small veins of quartz and ore encountered are of the most favorable character.

Silver Hill.—The water has been drawn from the shaft, and a full force of men are now employed in cleaning out and repairing the drifts on the 900 level, so as to resume the work of prospecting.

Succor.—Sinking the main shaft is making splendid progress, the rock in the bottom blasting out finely.

Senator.—Under the new management, work is soon to be resumed in this mine. Lateral drifts will be run from the Sutro Tunnel which passes through it, and its ore resources developed at the most eligible points.

Morning Star.—Cleaning out and retimbering and repairing the main tunnel to reach the ore vein is making good progress.

Julia Con.—Crosscut No. 1 on the 2,000 level is steadily advancing, the face in vein material of a very favorable character.

Bullion.—Sinking the main incline is making the best of progress, the hottom still in quartz and low grade ore.

Chollar-combination Shaft.—Excavating for the water tanks and pumps is making good headway. The north drift on the 1,600 level, running to connect with the Sutro Tunnel, is making good progress.

Solid Silver.—During the past week the crosscut west, 1,100 feet from the mouth of the main tunnel or adit of the mine, has been extended to the total distance of 25 feet. It has passed through the west ledge at that point, which is found to be fully eight feet in width. One half of this shows good ore with streaks of porphyry.

Con. Dorado.—The machinery is all in place, and will be ready to turn on steam in a day or two more.

Lady Washington Con.—The north drift now being run through the Benton ground on the 1,250 level will soon reach the south line of the Lady Washington Consolidated, when it will be continued through the entire lengtb of the claim, opening up the entire mine ready to crosscut at that depth.

In New Mexico they thresh wheat by driving sheep over it.

News in Brief.

The Denver, Colorado *Tribune* is one mass o politics.

Contract has been let for the ties of the Bodie railroad.

At the South the yellow fever has commenced to abate.

Mining in Victoria, Australia, is reported to he improving.

In Cyprus 307 meu are in the fever hospital, out of a force of 2,640.

A new crater had opened in V esuvius, in the bottom of the old one.

The air pipes and drilling machines are being used in the Julia branch.

There is question about the houndary between Butte and Plumas.

Another fire in San Bermardino. Total loss, upwards of $100,000.

Business with Tennessee, Louisiana and Mississippi is at a standstill.

An art gallery costing £25,000 is to he erected in New South Wales.

The Guatemala coffee crop is in excess of any previous year and is very fine.

A Steam wagon is to be put on the mail route hetweeu San Diego and Yuma.

The Treasury will exchange standard silver dollars for United States notes.

In New Orleans, Sept. 9th there were 325 new cases of yellow fever reported.

The Leadville, Colorado, mining excitement has injured the older mines of Alma.

Gold has been found in New Guinea. Shall Eugland annex what Holland claims?

Anxiety is felt for the safety of the Hayden surveying party in Yellowstone Park.

During August over 16,000 tons of coal were shipped from Seattle to San Francisco.

New Zealand is sending to New York for large numhers of hinders and reapers.

Fires on the Columhia have recently damaged settlers to the amount of $500,000.

The Sutro tunnel has been temporarily stopped at a point 20,500 feet from its mouth.

Two Chinese sluice robbers were killed at French Corral, Nevada county, Sept. 6th.

Deaths at Havana during August included 375 from yellow fever and 38 from small pox.

A malignant plague has been brought to Readville, Mass., in hair from Siheria and Poland.

The whole Bodie community justify the killing of the Blackhawk mine jumper, Jack O'Hara.

It is said that the remaius of Custer interred at West Point were those of a teamster selected at haphazard.

The Mountain Bright and Rough & Ready mines of Mount Posi district, Nevada, were sold for $35,000.

California and Oregon are the only States of the Union allowed separate exhihits at the Paris exposition.

During August 3,153,259 pounds of hullion and 2,823,666 pounds of ore passed over the Utah Southern road.

The deposits in the Carson mint during August amounted to $525,468.84; standard silver lars coined, $310,000.

On the Morris grant, near the Central Pacific Railroad, an artesian well 2,000 feet deep has not yet reached water.

It is now said that ahout 3,000 hop-pickers are wanted in Puyallup valley. Wages, ahout 25% hetter than last season.

Mining Share Market.

The Comstock market has been pretty steady, showing slight declines in some and noticeable advances in other stocks. The fall of Sierra Nevada from its place above $200 was attributed to reports of water in the mine. These reports were denied then and are, we believe, still contradicted hy good authority. Nevertheless, Sierra Nevada has not reached so high a point again. On the 13th a strike was reported in Bullion. On the 16th the strike was declared improving. Still, the market does not seem to have been ruffled on Bullion. Similar reports on Gould & Curry and Con. Virginia caused something of a rise in each of these. The Virginia *Enterprise* has published editorials on the Comstock worthy of notice. It says: For three years the work in the various mines has been to sink winzes and inclines, and now from the Silver Hill on the south to the Utah on the north it looks as though every mine with two or three exceptions was either just commencing to crosscut or just about to commence. This is so in the Justice, Lady Washington, Alta, Benton, New York, Caledonia, Overman, Belcher, Crown Point, Yellow Jacket, Con. Imperial, Alpha, Bullion, Julia, Hale & Norcross, Savage, Gould & Curry, Best & Belcher, the honanzas, Ophir, Mexican, Union Con. and Sierra Nevada. These explorations are at depths varying from 1,100 to 2,300 feet.

In the Bodie stocks there has been a marked decline. It is said that this is due to no fault of the mine. Slurring reports ahout this district are said to he unjust. The district is peculiar, and hence prophecies cannot he made for good or for evil, and parties interested should not show a disposition to believe the evil any more than the good. As a man in Virginia puts it, Bodie will come up when Sierra Nevada has cooled down.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending Aug. 29.		Week Ending Sept. 5.		Week Ending Sept. 12.		Week Ending Sept. 19.	
Alpha	17	13½	16½	13	16	13½	16	13½
Alta	18½	13½	24	17½	23	17	19	12½
Andes	80c	65c	85c	72c	95c	65c	90c	75c
Alpa								
Argenta	1.15	60c	2.35	13	21	2	2.90	2.05
Atlantic								
Aurora Tunnel					3	2	2½	2
Baltimore Con					2	1½	2	1.95
Belcher	15	10½	15½	13	16	12	12½	
Belmont	2.60	2	3½	2½	4	3½	3.85	3.90
Best & Belcher	28	18	25½	20	30	23	34½	26
Bullion	12½	10½	11½	7½	13	8½	14½	11½
Bechtel	2½	1.10	2	1.30	1.60	1.05	1.30	95c
Belle Isle					40c	35c	45c	40c
Bodie	52	37½	49½	33	37½	28½	37½	27
Bentou	5.90	4.90	7½	4½	11½	9½	10	8½
Bulwer					13	11½	13½	11½
Boyle								
Black Hawk					1.90	1½	1	75c
Belvidere					3	2	2½	1½
Booker					1.65	1	1	75c
Caledonia	5½	3½	4.95	3½	4.65	3½	4.20	3½
California	14½	11½	13	12	12½	10½	15½	11
Challenge	1.90	1½	2	1.40	1½	1½	1.80	1.40
Chollar-Potosi	40	36	40	34	50	36	48	43
Comanche								
Confidence	12½	8½	17	07	9½	6½	10	8
Con Imperial	1.40	1	1.20	1	1.10	1	1.15	1
Con Virginia	13	9½	13	11½	13	11½	18	12½
Crown Point	11	9	13	9½	12½	9	10½	8½
Con Washoe								
Champion							1½	1
Concordia					80c	40c	60c	40c
Dayton	45c	40c	55c	40c	55c	45c	60c	
DeFrees	30c	15c	30c	25c	40c	25c	40c	25c
Dancy							50c	40c
Day	90c	75c	95c	80c	80c	40c	75c	50c
Eureka Con	43	36½	41	40	42	40½	42	40
Exchequer	6¾	5½	5½	4½	5	4½	5	5½
Endowment	1.10	50c	75c	50c	70c	55c	60c	40c
Gen Thomas								
Grand Prize	6	5½	6½	5½	6½	5	6	5½
Gila	50c	35c	45c	40c	40c	30c	30c	25c
Golden Chariot	50c	45c	45c	40c	50c	40c		
Golden Terra							4	4
Goodshaw					1½	50c	90c	80c
Gould & Curry	14	9½	12½	9½	18	11½	21	16
Hale & Norcross	11	9½	10½	9½	16	6½	17	13½
Hillside					5	4½	4½	4
Highbridge					2.15	1.70	3.15	1½
Homestake					7½	7½	10	9
Hussey	1	65c	1	75c	80c	60c	1	75c
Independent					2½	2.20	3½	2½
Julia	17	9½	11	5½	8	6	7	5½
Justice	9½	7½	10½	7½	11½	9½	11½	9½
Jackson	6½	5½	5½	4½	8	6	11½	7½
Joe Bell								
K K Con								
Kentuck	6½	5	7	5	10	5½	9	7
Kossuth	25c	20c	40c	20c	30c	25c	75c	25c
Keystone					6	6	7½	6
Lady Bryan					3½	2½	5½	3½
Lady Wash	13½	12½	17½	15	5	2½	16½	
Leopard	2½	1½	2	1.60	2	1½	1.80	1.60
Leviathan	75c	65c	85c	70c	85c	65c	85c	60c
Leeds	1	90c	1	75c	1.10	95c	1.20	1
Lee					1	1	75c	50c
May Belle					2	1.70		
Modoc	70c	50c	70c	60c	60c	50c	60c	50c
Manhattan	7	6½	7	6	7	6	7½	7
Martin White					7½	7	7½	6½
McClinton					1.30	80c	1	70c
Meadow Valley	50c	40c	50c	35c	50c	40c	40c	
Mexican	31	22	47	24	59½	42	60½	55
Mides					2	2		
Morning Star					7	5	5	4
North Con Virginia	4½	3	4½	3½	12	8	17	7½
New York	2	1½	3	1.90	3	1	3	1.05
Northern Belle	10½	10	11	11	11	11	11	9½
New Coso	50c	30	50c	35c	40c	53c	40c	30c
Navajo	1.10	80	1.30	1	1.30	1.15	1.45	1.20
Occidental	1½	1	1.05	40c	1½	1	1.20	1
Ophir	50	43	54½	41	60	47	61	49
Oriental					3	1½	2½	1½
Overman	21½	15	21	10c	29	16½	19½	15
Panther	45c	35c	45c	2 c				
Phenix					2½	2	3	2½
Phil Sheridan					3½	3	3½	2.60
Prospect					50c	50c		
Raymond & Ely	3½	2½	4	3½	4½	4	6	5
Richer					2½	1½	2½	2
Rock Island			35c	10c	50c	25c	40c	25c
Rye Patch								
Rough & Ready					3½	2½	3	2
Savage	14½	12½	15	12½	15½	13	21	16
Seg Belcher	40	35	39½	32	44	36	48	35
Sierra Nevada	81	40	105	48	170	96	132	100
Silver Hill	4	3½	4	2½	4	3	3½	2½
Silver King								
Silver Prize					15c	15c	15c	10c
Succor	2½	1.80	2½	1½	2	1.70	2.60	1.70
Summit					2½	2	3	2½
Scorpion					15	9½	20	8
Solid Silver	6½	5	9	7	5	4½	5½	4.70
South Bodie					1	50c	1	50c
South Standard					80c	40c	85c	40c
Star	2		1½	85c	1	75c	1	90c
St. Louis					80c	60c	80c	70c
Syndicate					2½	2½	2	
Tioga Con					2.80	1½	3	1½
Tiptop					1.40	50c	1½	80c
Trojan	85c	62c	1½	50c	75c	50c	65c	40c
Union Con	27	22	87	25	115	77	115	102
Utah	38	19½	39	20	51½	34½	52	43
Vermont Con					9	8	15½	14½
Ward					2½	1½	1.80	1
Wells-Fargo	75c	45c	1	50c	90c	55c	75c	35c
Woodville	90c	80c	75c	60c	75c	60c	65c	60c
White Cloud								
Yellow Jacket	28	14½	23	17½	25½	21½	25	21

Sales at S. F. Stock Exchange.

Friday A. M., Sept. 13.

1020 Alta.....19c@18½
705 Alpha.....15c@16
1905 Best & Belcher.....35c@30
3375 Bullion.....14½@13½
3740 Belcher.....12½c@11½
360 Baltimore Con...2c@1.95
3630 Virginia.....12½@13
2390 California.....11½c@11
410 Chollar.....45c@48
3365 Crown Point.....10½@10
6745 Con Imperial..1.15c@1.10
1405 Caledonia.....4c@4.20
175 Challenge.....1.80
450 Confidence.....9½@10
100 Dayton.....40c
2135 Exchequer.....6c@6
1790 Gould & Curry.....19½@21
945 Hale & Nor.....16c@16
2325 Justice.....11½@11
1715 Julia.....6c@6
490 Kentuck.....8½@8
3345 Lady Bryan.....3½@3
1475 Mexican.....59c@60
440 Overman.....19½@18
1065 Ophir.....50½@51
50 Rock Island.....25c
885 Sierra Nevada...175@182
1040 Silver Hill.....3½@3.35
1420 Savage.....19½@21
805 Succor.....2.60c@2
75 Seg Belcher.....43c@48
1425 Union Con.....115@110
645 Utah.....60c@52
1130 Yellow Jacket.....23½@25
AFTERNOON SESSION.
1630 Argenta.....2.05@2.10
615 Aurora T.....2½@2
620 Andes.....90c@75c
1155 Benton.....8c@10
895 Bechtel.....95c@1
1250 Bodie.....27½@22
730 Belmont.....4½@4.85
905 Bulwer.....11½@13
1200 Belle Isle.....40c
520 Black Hawk.....1c@9c
375 Belvidere.....2c@2
940 Star.....90c@1
1270 S Bodie.....60c@65
825 S Standard.....50c@55c
380 St Louis.....70c@75c
20 Solid Silver.....5
400 Sitting Bull.....1
100 Syndicate.....2
1575 Tiptop.....50c@1
1025 Tioga Con.....1½@1½
1050 Tuscarora.....10c
850 Trojan.....60c@50c
485 Woodville.....65c@60c
350 Ward.....1.60@1.65
4140 Wells Fargo.....60c@75c

Saturday A. M., Sept. 14.

200 Alpha.....14½@14
1425 Alta.....15c@15½
1555 Argenta.....2½@2.15
1400 Bullion.....12½@11½
1130 Best & Belcher.....35c@30
2220 Belcher.....10½@9½
1190 Bodie.....22c@24
185 Belmont.....3.90c@4
1000 Belle Isle.....40c
1950 Con Virginia.....12½@13
1310 California.....11½@11½
145 Confidence.....9½
210 Chollar.....45c@47
1565 Crown Point.....9½@9½
2505 Con Imperial.....1.10@1
130 DeFrees.....30c
190 Day.....70c@50c
1045 Exchequer.....5½@5½
500 Endowment.....50c@55c
270 Eureka Con.....41
670 Grand Prize.....5½@5½
990 Gould & Curry.....17½@16
1850 Hussey.....80c@85c
1960 H & Norcross.....14½@14
125 Hillside.....4½@4½
1950 Highbridge.....2c@2.15
4590 Independent.....22c@3
1075 Justice.....10¼@11
1190 Jackson.....8½@8
2480 Julia.....6
210 Jefferson.....2½@2.10
270 Kentuck.....9½@8½
990 Gould & Curry.....17½@16
2415 Lady Bryan.....3½@3.90
225 Leopard.....1½
960 Mexican.....55c@55
250 Meadow Valley.....40c
1310 Manhattan.....7@7½
1130 Modoc.....55c@50c
350 Navajo.....1½@1.20
10 Northern Belle.....9½
645 Ophir.....50c@50
445 Overman.....18½@18
910 Raymond & E.....5@5½
755 Savage.....19c@18½
500 Succor.....2.40c@2
35 Seg Belcher.....42c@43
370 Star.....1
100 Silver Prize.....15c
955 Sierra Nevada...160@163
50 Stanford.....39½
100 Tuscarora.....10c
2720 Union Con.....104@102
150 Utah.....43c@45
1720 Yellow Jacket.....24@25

Monday A. M., Sept. 16.

1485 Alta.....16½@15
230 Alpha.....15c@14½
1550 Bullion.....12½@11½
1000 Best & Belcher.....26c@26
100 Baltimore Con.....1.95
2040 Belcher.....10c@10c
1000 Best & Belcher.....26c@26
100 Baltimore Con.....1.95
2040 Belcher.....10c@10c
485 California.....11½@11
2435 Con Virginia.....12½@1
285 Chollar.....45c@4
1035 Crown Point.....9½@9
2705 Con Imperial.....1.05@
235 Confidence.....8@8½
325 Challenge.....1½@1.6
1260 Caledonia.....3.95@3.8
500 Daney.....40
100 Dayton.....40
1305 Exchequer.....5½@5½
1460 Gould & Curry.....17@1
1335 Hale & Nor.....13½@13½
1810 Justice.....10½@10
680 Julia.....5½@5½
4135 Lady Bryan.....3½@3
1955 Mexican.....56@5
1310 New York.....2½@2
685 Ophir.....49@5
390 Overman.....17@16
200 Rock Island.....40c
2235 Savage.....16½@1
260 Sierra Nevada...170@16
640 Silver Hill.....2.90@3½
1230 Succor.....1½@2
700 Utah.....46@4
420 Union Con.....107@105
1900 Yellow Jacket.....23@22

AFTERNOON SESSION.

920 Andes.....75c@90c
825 Argenta.....2.30@2
110 Aurora T.....2
1280 Bodie.....18@21
185 Bulwer.....12½@13½
60 Bechtel.....1.10@1.2
715 Belvidere.....2@2
235 Booker.....95c@1
730 Belmont.....4c@4
1100 Belle Isle.....45c@40c
995 Benton.....8½@8½
625 Black Hawk.....75c@1
230 Brilliant.....2
100 O Pacific.....1½
380 Daney.....40c@45c
1290 DeFrees.....25c@40c
285 Eureka Con.....40½
950 Endowment.....50c@40c
350 Grand Prize.....5½@5½
10 Golden Terra.....4
265 Gila.....30c
410 Goodshaw.....90c@80c
3100 Hussey.....80c@1
455 Hillside.....4½@4½
1000 Highbridge.....2.05@2
1010 Homestake.....10½@11
3605 Independent.....3½@2.95
600 Jefferson.....2@2.10
1030 Jackson.....8½@9
2630 Kossuth.....50@75c
550 Keystone.....7
50 Lady Bryan.....3½@3
400 Leopard.....1½
720 Lady Wash.....3½@3.60
1405 Leviathan.....80c@70c
350 Morning Star.....4½@4
715 Modoc.....60c@50c
320 Manhattan.....7c@7
1300 Mono.....2@3
20 Martin White.....7½
550 McClinton.....80c@70c
50 New Coso.....40c
1115 Northern Belle.....11c@11
115 North Con Vir.....8c@7½
100 North Carson.....20c
1290 New York.....2.80c@3
1560 Navajo.....1.30c@1½
150 Ophir.....3
120 Occidental.....1c@1.20
1640 Oriental.....2½@2
2545 Phil Sheridan.....3½@2
80 Raymond & Ely.....5½@5
385 Richer.....2½@2
1000 Rock Island.....2
300 Santiago.....1
1275 Scorpion.....8@12
300 Solid Silver.....5½
550 Summit.....2½@2
1400 Seg Belcher.....44c@45
1405 Silver Hill.....3½@3
555 S Standard.....65c@50c
350 Silting Bull.....1
3225 St Louis.....80c@75c
600 Star.....2
445 Silver Prize.....15c@6
50 Syndicate.....2
1900 Tiptop.....1½
620 Trojan.....65c@50c
500 Tuscarora.....10c
2935 Tioga Con.....2@1½
480 Vermont Con.....14½@14½
50 Woodville.....65c
2350 Wells-Fargo.....75c@60c
340 Ward.....1½@1.30
Tuesday A. M., Sept. 17.
530 Alpha.....14½@14½
940 Alta.....14@12½
1270 Best & Belcher.....32c@34
825 Belcher.....10c@9½
380 Bullion.....12½@12½
20 Belmont.....3.90@4
7535 California.....14½@15
400 Con Virginia.....13c@14
2330 Con Imperial.....1.05c@1
1575 Chollar.....45c@46½
730 Crown Point.....9½@9½
500 Daney.....45c
1560 Exchequer.....5½@5½
1515 Gould & Curry.....13½@13
1715 Hale & Nor.....14½@13½
2245 Justice.....10c@9½
100 Kentuck.....7½
555 Mexican.....56½@57½
925 Ophir.....54@54½
1000 Overman.....18c@15
365 Savage.....18½@17½
10 Seg Belcher.....37
300 Succor.....1.70@1.80
535 Union Con.....10c@10½
190 Utah.....44½
1510 Bulwer.....13c@12½
605 Bodie.....18c@17½
630 Black Hawk.....75c
1105 Belvidere.....1.80c@1.6
250 Booker.....75c
350 Brilliant.....1.80c@2
300 Blue Jacket.....6
300 O Pacific.....1.35c@1½
190 Chollar.....44c@46
620 Caledonia.....3½@3.90
1250 Challenge.....1.40c@1½
550 DeFrees.....25c@30c
950 Day.....60c@50c
1165 Eureka Con.....40c@41
3500 Endowment.....40c@45c
1350 Belvidere.....1.80c@1.6
250 Booker.....75c
350 Brilliant.....1.80c@2
300 Blue Jacket.....6
300 O Pacific.....1.35c@1½
190 Chollar.....44c@46
620 Caledonia.....3½@3.90
1250 Challenge.....1.40c@1½
550 DeFrees.....25c@30c
950 Day.....60c@50c
1165 Eureka Con.....40c@41
3500 Endowment.....40c@45c
1445 Julia.....5½@5½
905 Jackson.....8½@8½
950 Justice.....10c@10c
600 Keystone.....7c@7½
1235 Lady Wash.....3½@3
1500 Leopard.....1½@1.70
150 Leeds.....1.20
1655 Independent.....3
600 Jefferson.....2
1445 Julia.....5½@5½
905 Jackson.....8½@8½
950 Justice.....10c@10c
600 Keystone.....7c@7½
1235 Lady Wash.....3½@3
1500 Leopard.....1½@1.70
150 Leeds.....1.20
1655 Lady Bryan.....3½@3
1440 Leviathan.....70c@75c
700 Mono.....2c@2½
40 M White.....7½
450 Meadow Valley.....40c
290 McClinton.....75c@1
90 Manhattan.....7c@7½
275 Modoc.....50c
90 Northern Belle.....10½
2040 New York.....1.90c@2.05
1420 North Con Vir.....8½@7½
1520 Navajo.....1.30c@1½
1525 Ophir.....54½@54½
455 Oriental.....2c@1.60
100 Occidental.....1
1575 Phil Sheridan.....2½@2.60
50 Phenix.....2½
125 Raymond & Ely.....6c@5½
100 Rock Island.....30c
580 Richer.....2c@2
110 Rough & Ready.....2½
460 Silver Hill.....3c@2½
230 Star.....90c@1
1000 Succor.....2.40c@2
750 S Standard.....50c@40c
725 Scorpion.....12c@10
2010 St Louis.....75c
110 Syndicate.....2
590 Summit.....2½c@2.90
1575 Silting Bull.....1
50 South Comstock.....1½
600 Trojan.....50c@60c
850 Tiptop.....1.40c@1½
850 Tuscarora.....10c@5c
5310 Tioga Con.....1½@1½
543 Vermont.....14½@15
475 Wells-Fargo.....65c@60c
125 Woodville.....65c
250 Ward.....1½@1

Wednday A. M., Sept. 18.

935 Alta.....13c@14½
200 Alpha.....14c@13½
180 Andes.....90c@85c
220 Best & Belcher...31c@29½
870 Bullion.....12c@12
1360 Con Imperial.....1c@1.05
675 California.....13½@13
1245 Con Virginia.....14½@14½
360 Confidence.....8½@8½
1000 Dayton.....45c@40c
885 Crown Point.....9½@8½
50 Challenge.....1.70
260 Caledonia.....3.80@4
50 Daney.....50c
1315 Exchequer.....5½@5½
1670 Gould & Curry.....17½@18½
1085 Hale & Nor.....14½@14½
955 Julia.....5½@5½
230 Justice.....9½
255 Kentuck.....8½@8½
1240 L Bryan.....4c@3½
140 Lady Wash.....3c@3½
975 Mexican.....57c@58
3020 Ophir.....54½@54½
1405 Overman.....18½@18
1545 Benton.....6½@9
415 Bechtel.....1.30c@1
140 Black Hawk.....80c@1
630 Bodie.....20c@19½
1000 Belle Isle.....95c@90c
850 Belle Isle.....45c
100 Blue Jacket.....6
260 Belvidere.....1½
250 Bulwer.....12½
250 Concordia.....50c@4c
100 Challenge.....1.80
150 C Pacific.....1.40c@1½
350 DeFrees.....30c
700 Day.....60c@60c
750 Eureka Con.....40c@40½
1000 Endowment.....45c@50c
310 Grand Prize.....5½@6
600 Cila.....30c
1100 Coodshaw.....80c@90c
25 Golden Terra.....4½
200 Homestake.....9
2370 Hussey.....35c@75c
775 Hillside.....4c@4½
880 Highbridge.....2
960 Independent.....3c@2.95
925 Jackson.....10½@11½
950 Jefferson.....2
550 Lee.....75c
730 Leopard.....1½@1.60
1000 Leeds.....1
340 Lady Wash.....15c@16½
20 Martin White.....7

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS—STOCKS ON THE LISTS OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business
Argenta M Co	Nevada	3	25 Sept 7	Oct 11	Nov 1	R H Brown	327 Pine st
Bullion M Co	Washoe	7	1 50 Aug 12	Sept 16	Oct 7	J Gruss	418 Californ'a st
Bechtel C M Co	California	2	50 Aug 14	Sept 19	Oct 10	W H Lent	309 Montgomery st
Belmont M Co	Washoe	18	40 July 29	Sept 2	Sept 24	J W Pew	310 Pine st
Boyle M Co	Nevada	1	15 Aug 1	Sept 4	Sept 23	Wm H Watson	302 Montgomery st
Crown Point G & S M Co	Nevada	35	1 00 Sept 13	Oct 23	Nov 13	James Nowlands	203 Bush st
Chollar Potosi M Co	Nevada	15	6 00 Sept 5	Oct 8	Oct 29	W E Dean	203 Bush st
Con Imperial M Co	Nevada	7	20 Sept 12	Oct 17	Nov 7	W E Dean	203 Bush st
Caledonia S M Co	Nevada	24	50 Sept 16	Oct 21	Nov 11	R Wegener	414 California st
DeFrees M & M Co	Nevada	7	10 Aug 5	Sept 6	Sept 23	Thos E Atkinson	310 Pine st
El Dorado South Con M Co	Nevada	13	25 July 27	Aug 30	Sept 23	C A Sankey	331 Montgomery st
El Dorado W & D G M Co	California	18	2 00 Aug 15	Sept 16	Oct 4	Thos Price	524 Sacramento st
Endowment M Co	Nevada	1	50 Aug 23	Sept 30	Oct 21	R H Brown	327 Pine st
Gila Con M Co	Arizona	2	03 Aug 8	Sept 28	Oct 15	P B Pettigrew	419 California st
Gila S M Co	Nevada	2	25 Aug 27	Oct 3	Oct 24	Wm W Parrish	328 Montgomery st
Hale & Norcross S M Co	Washoe	89	1 00 Aug 23	Sept 18	Oct 8	J F Lightner	58 Nevada Block
Julia Con M Co	Nevada	6	1 00 Sept 6	Oct 11	Oct 30	A Noel	419 California st
Justice M Co	Washoe	26	1 50 Aug 13	Sept 18	Oct 9	R E Kelly	419 California st
Kentuck M Co	Washoe	13	1 00 Aug 7	Sept 9	Sept 30	J W Pew	310 Pine st
K K Con M Co	Nevada	1	1 00 Sept 13	Oct 16	Nov 7	B B Minor	309 Montgomery st
McCracken Con M Co	Arizona	1	50 July 10	Aug 24	Sept 28	H Aug Whiting	211 Sansome st
Martin White M Co	Nevada	3	1 00 July 23	Sept 3	Oct 1	J J Scoville	308 Montgomery st
Mint G & S M Co	Washoe	22	20 Aug 8	Sept 11	Oct 2	D A Jennings	401 California st
New York M Co	Nevada	16	30 Aug 1	Sept 3	Sept 24	D L Thomas	419 California st
Northern King M & M Co	Arizona	3	10 Aug 17	Sept 21	Oct 9	G F Glover	318 Pine st
N Con Virginia M Co	Washoe	13	1 00 Aug 13	Sept 16	Oct 4	W M Helman	309 California st
Overman S M Co	Nevada	42	1 00 Sept 5	Oct 10	Oct 30	G D Edwards	414 California st
Ophir S M Co	Nevada	33	1 00 Sept 10	Oct 15	Nov 4	C L McCoy	203 Bush st
Panther M Co	Nevada	9	10 Sept 12	Oct 17	Nov 7	J W Pew	310 Pine st
Raymond & Ely M Co	Nevada	8	1 00 Aug 6	Sept 12	Oct 8	J W Pew	310 Pine st
Sierra Nevada M Co	Washoe	65	1 00 July 31	Sept 4	Sept 25	W W Stetson	309 Montgomery st
Succor M & M Co	Washoe	13	60 Aug 12	Sept 16	Oct 6	W H Watson	302 Montgomery st
Savage Co	Nevada	35	1 00 Aug 16	Sept 18	Oct 8	E B Holmes	309 Montgomery st
Wells Fargo M Co	Nevada	11	50 Sept 11	Oct 14	Oct 31	W M Helman	309 California st
Yellow Jacket S M Co	Nevada	30	1 00 Sept 12	Oct 15	Nov 14	James Nowlands	203 Bush st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Aurora T & M Co	Bodie	1	15 Aug 12	Sept 20	Oct 10	A Baird	301 California st
Benton M Co	Nevada	1	35 Aug 1	Sept 5	Sept 24	Wm H Watson	302 Montgomery st
Colorado River C & C M Co	Arizona	2	25 Aug 5	Sept 9	Sept 30	P A Whiting	211 Sansome st
California W Co	California	20	10 Aug 13	Sept 24	Oct 15	G P Thurston	315 California st
Cal & Arizona M Co	Arizona	3	05 Aug 26	Sept 30	Oct 18	T E Jewell	507 Montgomery st
Champion M Co	California	2	10 Aug 26	Sept 27	Oct 22	F X Simon	525 Commercial st
Eagle S M & M Co	Nevada	10	15 Sept 7	Oct 15	Nov 5	R H Brown	327 Pine st
Equitable T & M Co	Utah	8	05 Aug 29	Oct 3	Oct 22	C S Healy	45 Merchant's Ex
Hidden G & S M Co	Nevada	1	02 Aug 21	Sept 26	Oct 18	T C Winchell	302 Montgomery st
Gover M & M Co	California	37	50 Aug 9	Sept 23	Oct 21	W O Wilson	402 Front st
Golden Gate Con M Co	California	3	50 Sept 16	Oct 18	Nov 8	J T McGeoghehan	318 Pine st
Mono G M Co	California	1	50 Aug 28	Oct 21	Oct 23	W H Lent	309 Montgomery st
McClellan Con G & S M Co	Nevada	2	25 Aug 5	Oct 3	Oct 19	Otto Metchko	328 Montgomery st
Newton H & D M Co	California	1	08 Aug 21	Sept 2	Sept 20	G W Cummings	330 Sansome st
Nevada Gravel M Co	California	3	05 Sept 4	Oct 7	Oct 25	d Pentecost	511 California st
Oak Grove M Co	Arizona	1	05 Aug 6	Sept 10	Sept 30	R D Bogart	16 Leidesdorff st
Orion M Co	California	3	75 Sept 5	Nov 5	Nov 20	P Conklin	28 Sansome st
Richer M Co	California	1	50 Aug 28	Sept 30	Oct 22	W H Lent	309 Montgomery st
Summit M Co	California	5	05 Sept 10	Oct 22	Nov 19	J W Clark	318 Pine st
Selby Hill M Co	California	1	10 Sept 10	Oct 30	Nov 16	H A Whiting	211 Sansome st
S F Sulphur M Co	Nevada	10	10 Sept 8	Oct 15	Nov 12	P P McLaren	310 Pine st
Ward C & S M Co	Nevada	2	30 Sept 13	Oct 18	Nov 5	Jacob Stadtfeld, Jr	419 California st

MEETINGS TO BE HELD.

Name of Company.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Alexander M Co		A B Cooper	Safe Deposit Building	Annual	Sept 30
Baltimore Con M Co	Nevada	C A Sankey	331 Montgomery st	Annual	Oct 3
Golden Gate Con H M Co	California	J T McGeoghehan	318 Pine st	Annual	Oct 7
Gila Con M Co	Arizona	W J Pettigrew	419 California st	Annual	Oct 7
Eureka M & S Co	Nevada	A O Ryce	308 California st	Annual	Sept 30
Hackberry M & M Co		E B Partridge	306 Clay st	Annual	Oct 7
Industry C & S M Co				Annual	Sept 20
Niagara G & S M Co		W R Townsend	59 Nevada Block	Annual	Sept 24
North Star G M Co		D A Jennings	401 California st	Annual	Sept 25
Scorpion S M Co	Arizona	C O Sjoney	310 Pine st	Special	Sept 30
South Comstock G & S M Co	Nevada	J M Buffington	309 California st		Oct 10

LATEST DIVIDENDS—WITHIN THREE MONTHS

Name of Company.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Bodie G M Co	California	W M Lent	309 Montgomery st	3 00	Sept 14
Bodie G M Co	California	W M Lent	309 Montgomery st	5 00	Aug 31
Bodie G M Co	Nevada	Wm M Lent	309 Montgomery st	3 00	Aug 14
California M Co	Washoe	G P Gordon	Nevada Block	1 00	Aug 15
Eureka Con M Co	Nevada	W W Traylor	37 Nevada Block	3 00	Sept 30
Eureka Con M Co	Nevada	W W Traylor	37 Nevada Block	3 00	Aug 20
Excelsior W & M Co	California	Ceo P Thurston	315 California st	50	July 15
Excelsior W & M Co	California	G P Thurston	315 California st		Sept 16
Excelsior W & M Co		Geo P Thurston	315 California st		Aug 15
Eureka Con M Co	Nev	W W Traylor	309 Montgomery st	3 00	July 20
Independence M Co	Nevada	R H Brown	327 Pine st	25	Sept 20
Independence M Co	Nevada	R H Brown		25	July 20
Independence M Co	Nevada	R H Brown	327 Pine st	26	Aug 20
Nevada Gravel M Co	California	J Pentecost	511 California st		
Napa Con M Co	California	W W Parrish	Safe Deposit Building	10	Aug 15
Silver King M Co	Arizona	J H Boothe	309 California st	50	Sept 10
Standard G M Co	Cal	W Willis	309 Montgomery st	1 00	Aug 12
Standard C M Co	Nevada	W Willis	309 Montgomery st	1 00	Sept 12

SALES OF LAST WEEK AND THIS COMPARED

Wed'sday A. M., Sept. 11. Thursday A. M., Sept. 19.

645 Alpha	15@16	150 Alpha	14½
1805 Best & Belcher	27½@30	1715 Alta	16½@17
1950 Belcher	12½@13½	695 B & B	30½@30
4290 Bullion	13c@13½	1310 Bullion	12½@12
1035 California	11c@11	3705 Belcher	9½@9
1840 Con Virginia	12½@13	130 Chollar	44@45
1820 Crown Point	12@11½	2595 Con Virginia	14½@15
735 Chollar	50c@46	810 California	13½@13½
5320 Con Imperial	1.10c@1.05	700 Caledonia	4@3.90
345 Confidence	8½@8½	1025 Crown Point	8½@9
1000 Dayton	45c@40c	265 Challenger	1.40@1.45
2475 Gould & Curry	18@16½	180 Confidence	8½@8
1825 Hale & Nor	15c@15½	1275 Exchequer	5½@5½
1245 Justice	9½@10	1620 Gould & Curry	17½@17½
540 Kentuck	9½@10	1165 Hale & Nor	15½@16
1195 Lady Bryan	3½@3	1495 Julia	5½@5½
2765 Mexican	59½@56	2370 Julia	7@6½
910 Ophir	50@52	455 Kentuck	7½@7
630 Overman	20@19	3705 Lady Bryan	3.90@4
1820 Sierra Nevada	170@150	2605 Mexican	58½@59½
1610 Savage	19½@19	3020 Ophir	54½@54½
3500 Succor	2.25@2.30	1405 Overman	18½@18
40 Seg Belcher	43@44	870 Succor	2.25@2
1770 Union Con	115@105	890 Savage	16½@17½
605 Utah	45@51½	280 Sierra Nevada	166@168
2490 Yellow Jacket	25@25½	20 Seg Belcher	39½
AFTERNOON SESSION.		375 Union Con	106@112

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ALPHABETICAL CATALOGUE

—OF THE—

13th Industrial Exhibition of the Mechanics' Institute, San Francisco, 1878.

EXPLANATION.—The Pavilion is divided into 26 sections, indicated by the alpbabet, viz.: A, B, C, D, etc. Also into nine divisions commencing with one, which embraces all exhibits along the Eighth street side wall. Divisions 2, 3, 4, 5, 6, 7, 8 and 9 range through the Pavilon from west to east, each section and division being separately indicated by the letter, whicb may be found uear the ceiling on eacb side of the Pavilion, and under the galleries.

THE FIGURES are at the ends of the Pavilion and galleries.

THE ITALIC LETTERS denote that the articles described are located in the galleries.

PICTURES and articles in Rooms 1, 2 and 3 in the Art Gallery are enumerated in another Catalogue.

NAMES AND EXHIBITS. LOCATION.

Ackerman Bros., Vienna Bent Wood Furniture. 3 *V*

Adams, A. P.. Compressed Coffee. 4 L

A patent process hy which browned and ground coffee is rendered impenetrable to air, thereby retaining its aroma and strength in full, besides being so readily prepared for use, and clearing itself at once without adding anything for that purpose. Manufactured of the best herry the market affords, it is pure coffee, and its use is never discontinued, when once commenced. Uniform strength and flavor is obtained hy using it according to directions, and its economy is testified to by hundreds of large establishments that now use it. Depot, No. 51 Fremont street, S. F. Send for circular.

Adams, L. D., Patent Car Coupler Model. 7 O

Ainsworth, D. H., Fire Kindlers. 1 J

For economy, neatness and dispatch, this little wooden invention is as much to he applauded as its simplicity is to he admired. It consists of nn arch or grate of little pine slats, about 8x6 inches in size and two inches high, the under edges of which are soaked in a resinous substauce. Placing this in your grate it holds the coal or wood up nicely, so as to allow free draft, and the resin takes fire at once from a match or other flame, and your fire is as surely huilt as tbough it had been started by an incendiary with coal oil rags. It is put up in crates of 100 kindlers each, and sold at $1.25 per crate, by D. H. Ainsworth, manufacturer and sole agent, No. 770 Bryant street.

Allen, Mr. (Allensdale), ass't of Grapes. 4 V

Appleton, Mrs., Spray Work. 3 *F*

Arnold, N. S. & Co., Spiral Pipe, Adjustahle Elhows, Files, Nuts and Bolts, Pipe Cutting Machines, Decorated Toilet Work. 6 G

Armstrong & Smith, Ale, Porter and Cider. 6 K

Arsher, J. M., (San Diego) Cal. Bananas. 4 V

Atkinson, G. T., Turning Lathe and Fancy Turned Articles. 6 W

Bachelder Mnfg. Co,, Napa "Iron Clad" Self-regulating Windmill, Iron Tray Wheelharrows. 4 Y

This self-regulating wheel is one of the most valuable among the many improved windmills. It is simple and compact, and of great power, as the whole of the face of the wbeel is filled with fans, and tbe slats composing the fans are of unusual width at the outer circumference, and built on what is called the "gain twist" principle. Tbe oil fountains are protected from dust, and the stroke is adjustable. It is a very light, free-running mill, running in wiuds that are insufficient to start many others. In a gale the wheel adjusts itself to the force so as to present less surface to the wind, thus regulating themselves to an even rate of speed. Address Bachelder Manufacturing Co., Napa City, Cal.

Bailey, Thomas & Co.. ass't of Wool. 4 V

Baluy, A. J., Ostrich Feathers. 3 *B*

Baker & Hamilton, Champion Mower, Jackson's Light Weight Horse Fork. 2 Z

Beamish, P., Gents' Furnishing Goods, Mfrs. of White Shirts. 5 L

Bequette, D., Plans for Mill Building. 7 M

Behreudt, H. & Co., Trunks, Valises, Satchels and Bags. 2 *X*

Benjamin, Henry A. & Co., Seltzer and Congress Water. J 4

These springs are situated in the Coast Range of mountains, eight miles southwest of Santa Clara. The analysis of these waters sbow them to possess wonderful curative powers, not excelled even by their celebrated Saratoga, N. Y., namesake, or imported German seltzer. Physicians of Sau Francisco prescribe them to their patients in preference to any other mineral waters. They are in constant use as a beverage in all first-class saloons. Depot, No. 162 New Montgomery street, cor. Howard, S. F.

Bidwell, Gen'l. John, Apples, Peaches, Pears, Plums, Figs, Wheat, Barley and Oats, Dried Fruits, Almonds, Corn, Squash, Watermelon, Chinese Polo Qua Oranges, and Egg Plant, etc. 4 V

Biglow, A. T., first Rice raised in Cal. 4 V

Black, H. M. & Co., Coupe, Family Carriage, Rockaway, 3 Top Buggies, 2 Buggies, open; 1 Child's Coupe. O 2

Blakeley, Edward, S. F., Mixed Dyes. 7 N

Blockman & Cerf, I X L Limestone and Lime. 4 V

Bloom, Samuel, Tanned and Colored Sheep Skins. 1 *H*

Blowers, R. B. (Woodland, Cal.) Black Hamburg, Zinfindal, Flame Tokay, Rose Peru and Blk Malvoisie Grapes; Muscatel Godo Blanco Raisins, Dried Pears and Apples. 4 V

The very excellent display made by Mr. Blowers, of both green and dried fruit, deserves special mention. His raisius have taken the place of the imported article, and are preferred hy all families; and he is still further improving his dried fruit products by the use of the fruit drier invented hy him, whicb bas taken premiums without number. Mr. Blowers has recently experimented with the Mefford process, and the beautiful specimen box of dried or preserved prunes is the result, whicb is very flattering to his skill as a first trial.

Boca Brewing Co.. Boca Beer. 6 J

Berry & Place, Douhle-Acting Steam Pumps, Self-Feeding Rock Drills, California Windmill and Model. 8 J

Berryman & Doyle, Wellington Coal. 4 X

Best, Daniel, (Alhany. Ogn.) Pat. Adjustahle Washing Machine and Clothes Wringer. 6 R

This machine consists of an endless slotted helt, running around two rollers, with a series of smaller rollers above to press the clothes down upon them. These latter nre retarded hy a hrake, which causes them to ruh the clothes ns they pass through, very much as they would he on a wasb hoard by hand. The water is alternately pressed from one part of the clothes while the other parts are again being wet, and they finally leave the machine drier than wrung hy hand.

Bofinger, J., Metal Spinner. 8 X

Bowdoin, L. M., Vermin Fumigator Kitchen Cabinet. 4 *Q*

Borkheim, H., Gents' Patent Drawers. 2 *B*

Bothin, H. E., Mrs. Mills' Cream Yeast Powder. 5 V

Boudoin, L. M., Rotary Top Kitchen Cahinet Tahles. 4 *Q*

Bowen Bros.. Premium Yeast Powder. 5 V

Bradford, J. B. (Courtland, Sac. River) 3 Bottles Port Wine. 4 V

Brehm, R. W., Turning Lathe, Fancy Turned Articles. 6 V

The beauty of these articles cannot be described. It is only by seeing them, after having passed tbrough the turning and polishing at tbe skillful haud of Mr. Brehm, that the beauties of the grain of our Pacific coast woods can he appreciated. Nearly every article of *virtu* that can possibly be made of wood, is turned nnd exhibited by Mr. Brehm, such ns sleeve buttons, napkin rings, bouquet cups, thimble cups, vases, cane-heads, breastpins for pictures, etc. At his factory, on northeast corner of Mission and Main streets, be does a general wood-turning business, and other wood ornamentation.

Brown, G. T., Improved Hay Carrier. 6 Z

The above entry gives but little idea of what this machine is capable of. It is a hay-fork and carrier combined. Most of the hay-forks have to be attached to several different places during tbe operation of filling a barn, but this inveution is a carrier, and when once up runs from end to end of the barn like a thing of life. It travels on a five-eighth iron rod, and drops the bay at any desired point. It can also be used to take hay out of the harn or for stacking and loading in the field. They are furnished on trial to responsible farmers, or sold, by G. T. Brown, Stockton, Cal.

Bryant, Dr. F. G., Pat. Fire Escape. 5 *C*

Briggs, J. W. (San Jose) Hungarian Plums 4 V

Britton, Mrs., Patch Work Quilt. 1 *P*

Britton, John (San Jose) Dried German Prunes. 4 V

Brown, Chas., Ranges, Stoves, and Tin ware. 2 C

Brown, Dora, A. (San Leandro) Silk Bed Spread. 1 *U*

Browell, John., Pat. Chimney Flues and Tops. 9 E

Burr, C. H. & G. W., Weather Strips. 7 U

It is claimed hy all the leading arehitects in the United States to he the hest and cheapest, and the only weather strip that will keep out the dust, drafts or rain, and stop the rattling of the sash. It is used instead of the old parting-stop in the windows, the ruhher side pressing against the sash—thus making it perfectly air tight, the strips heing out of sight. It does away with nailing, and does not interfere with painting, oiling, varnishing, or putting in your window screens. No. 667 Mission, near Third st.

Burton, W. H.. Awnings. 2 *A*

Burton, Mrs. W. H., Bird Cage Awning. 3 *K*

Bush & Scudder, Sanitary Good Sinks, Water Closet Filters, Bath Tubs, etc. 3 *Y*

Burrage, C. R., California Root Tea. 3 N

California Furniture Co., Parlor, Bed-room nnd Settee, Window Drapery, etc. 2 *Z*

The parlor and bedroom sets shown as above are peculiarly neat and substantial, and indicative of an ability to turn off auy kind of work desired. Running a large force of hands and possessing peculiar facilities for economical working, and being a pioneer in furniture manufacturing on this coast, this company can fill orders for large or small lots of furniture, plain or ornamental, at the shortest notice. Office and factory, Nos. 220 and 226 Bush street, and 649 and 651 Market street.

Cal. Bellows Mlg. Co., Sides of Leather and Bellows, assorted sizes. 8 G

Cal. Paint Co., Averill Mixed Paint, Copper, Plumbago, and China Gloss Paint. 3 R

The whole secret of the superior excellence of the Averill mixed paints, manufactured by this company, lies in the superior qualities and absolute purity of the chemicals used, lead, oil and zinc, and the fact that they are thoroughly ground and incorporated with water glass, or sillicate, which has tbe effect of more closely uniting the lead and oil, or rather enabling the oil to hold the lead in solution, and making it less liable to be affected by weather. Tin, coated witb tbis paint, can be repeatedly bent back and forth without cracking or loosening tbe paint. It is economical and durable. Salesroom, No. 329 Market street, San Francisco.

Cal. Paper Co., Print Paper, Straw Wrapping Paper, Hardware Paper, Straw Board and Barrel Board, Butter Paper. 7 S

This compauy make a fine showing of homemade paper that is competing in our market with the Eastern article. The factory is located at Stockton and turns out four tons straw wrapping paper, and ahout eight tons printing paper per day. They also make about two tons straw hoard and tar hoard for harrels and book binders' use. Egbert Judson is President, and E. T. Cooper, Secretary. Office, No. 10 California street, San Francisco.

Cal. Spring Bed and Mattress Factory, Crandall Spring Bed and Mattresses. 4 *L*

Cal. Wire Works, Wire Goods of every description. 3 F

California Raisin and Fruit Company, Apples, Pears, Plums, Prunes and Peaches, preserved hy Mifford Process. 4 V

California Electrical Works, Telegraphic Instruments, Fire Alarm Apparatus, Electric Bells, Burglar Alarms, Electro-Medical Apparatus, Induction Coils, Geissler Tubes, Samples of Gold, Silver, Nickel and Copper Plating and Electro-Bronzing. 5 K

Attention is specially recommended to Nickel plating, a patent process, the exclusive rigbt for which on this Coast being held hy this compauy; also, silver plating copper plates for mining uses. The specimens exhibited, 4x6 feet, being the largest single plate ever turned out on the Coast. Another article worthy special note is the Magnetic Blasting Apparatus. The office and works of the company are at 134 Sutter street, San Francisco.

Camphell, W. H., Eucalyptus (Rheumatic) Oil, Preparations of Eucalyptus. Garden

Cantel, Mrs. H., Laces Cleaned. 2 B

Carvill Man'fg. Co., Hacks, Coupes and Buggies. 2 R

Church & Co..Horsford's Bread Preparation. 4 E

Choynski, I. N., Schcol Furniture, Old Books and Stationery. I 3

Chronicle, S. F., Stereotype Plates. 1 *E*

Cillegan, W., Large Mushrooms. 4 V

Ciphers, D S, Pop-corn. 6 D

Clock, A. (Napa) Hops. 3 V

Clark, G. W., Paper Hanging and Wall and Window Decorations. 1 B

Clark, T. S., Iron Bedsteads and the Union Wire Mattrasses. 4 *P*

Mr. Clark also exhibits Bowdoin's patent rotary top kitchen table, that is a lahor saver for the cook and housewife, and even old bachelors would find it the next best thing to a wife in the kitchen. The top rotates upon a pivot in the corner, swinging around, supported by a hinged bracket that folds into the end when not in use. As the top moves around the molding board is exposed to view, and sliding it to one side or the other exposes the flour or meal. All the partitions can be taken out to clean it, and it has a shelf nbove for lamps, etc., and one below for pots, bread-pans and kettles. The legs are detachable for convenience, in case of moving household goods. No. 767 Mission st.

Coe, O. R., Mann's Reactionary Lifter and Fairhanks' Scales. 3 *J*

Coldwell. Mrs G. W., 2 Rag Mats. 1 *Q*

Collier, W. B., Camp Folding Stoves. 1 *Q*

Colombo (Italian) Market, Vegetables. 4 V

Conrad, D., Peanuts, Walnuts, Hard and Soft Shell Almonds. 4 V

Cook, H. N., Belting and Hose. 7 W

Cooper, & Co., Floroscopes and Optical Goods. 3 *F*

Corville, Emerson & Co., Canned Salmon. 3 U

Cotter, Mrs F. G., Chemically Preserved Fruits. V 4

Covert, H. M., Single and Double Sack Holders. 8 R

Cox, T. &. W., Bird Feed and Gravel, Gold Fish Food. 3 V

Crosly, G. S., Self-Raising Bread Preparation. 4 E

Cunningham, G. L., English Bicycle. 6 X

Curtaz B., Upright Pianos, Square Pianos and Organs. 1 *V*

Cutting & Murray, Falk's Milwaukee Beer, Swan Ale. Woman Suffrage Stove Polish, McLaren Mills Oatmeal. 7 J

Camphell, W. H., Boiler Composition and Eucalyptus Oil. 9 S

Carlson & Currier, assortment of Sewing Silks and Embroidery Silks. 3 *E*

Carlson & Currier are successors to W. S. Brown & Co., agents for Belding Bros. & Co.'s machine twist sewing silk, etc., and Warrin's needles. At number 569 Market street, San Francisco.

Cattarini, E. J., Watermelon. 4 V

Daggart, John, Klamath Mine Quartz. 6 L

Daniels, John, Granite and Marble Mantles. 1 H

Danicheff Glove Factory, Glove Material, Gloves and their Manufacture. 2 *Y*

Dannenbaum, M. R., Millinery Goods. 2 *C*

Davis Bros., Fancy Goods, Plated Wares, Leather Goods, Clocks, etc. 5 J

Davis, Geo. A., Agricultural Implements, Plows, Rakes, Cultivators, Mowers, etc. 2 Z

Davis, Horace W. & Co., Crushed and Hulled Wheat, Flour 4 brands and Graham Flour 4 V

Davis & Crowell, Lime and Limestone. 4 V

Day Bros. & Co., Incuhator. 6 V

Deaves, C., Wood Engraver. 1 *I*

De Courcy, E., 2 Ironing and Polishing Machines. 8 L

An immense iron, heated hy gas or otherwise, and heing reversihle, having only an oscillating motion, while hy an ingenious combination of mechanical appliances the hoard carrying the garment travels back and forth or is stationary at will under the iron. Depot, 140 Sixth st., S. F.

Delisdiwere, Mme., Hair Restorer and Cosmetics. 2 *B*

Denniston, E. G., Silver Plated Wares, Large Amalgamating Plates, Copper—Silver Plated. 5 O

Unless expressly so stated upon the exhibit, visitors would he loth to believe that the replated ware in Mr. Deniston's display was aught hut new. That he is an adept in his husiness of plating, we can aver, as we have had his work. The large copper plate he exhihits, silvered for amalgamating purposes, shows what he can do in that line. and his amalgamating plates are favorites with all the mining superintendents. At 653 and 655 Mission street, he does a large husiness, and has ware of all kinds on sale.

Detrick, E. &. Co., Tents, Bags, Awnings, Awning Goods, and Sewing Machines. 4 *E*

The displny as above, in the fair, is very fine, and embraces both their useful and ornamental manufactures. Nothing can he hetter adapted to out door life than their camp equipments of tents, tahles, chairs nnd heds; and their establishment on Clay street is a surprise to any farmer or aristocrat, for utility, heauty, comfort and luxury are all in turn served in the manufacture of their goods. Manufactory and depot 123 Clay street, San Francisco.

Dewey & Co., Mechanics' Fair Daily, Bound Files of the Mining and Scientific Press and Pacific Rural Press, Samples of Pat. Elastic Newspaper File Holders, Bound Volumes of the Mechanics' Fair Daily. 6 R

Dewey, Mrs R. E., Hand Knit Counterpane. 1 *T*

Dinsmore, Mrs. Samuel, Bouquet of Paper Flowers. Art Gallery

Dohle, H., Steel and Cast Steel Tools, and John Wright's Picks. 9 G

Dodge, C. H., Oriental Pearl Renovator and Cement. 3 Q

Dodge & Pierce, Amateur Printing Presses and Sample Cards. 5 P

As a matter of amusement to those who can afford it, and to others as a matter of convenience, the printing presses and accompaniments, exbibited by this firm, are invaluable. Such improvements have been made in the amateur presses of late as to render them quite efficient, and those exhibited possess peculiar adaptability for their work, being simple, cheap and effectual. This firm import nnd keep on hand elastic ruhber printing stamps, card stock, printing presses and material, and all kinds of note paper, envelopes, tags, etc., at No. 22 Kearny street.

Donoghue, Mrs., Cosmetics and Toilet Articles 1 *Y*

Doran, Mrs, Log Cabin Quilt. 1 *N*

Deppen, Mrs., Fine Embroideries. 1 *V*

De Ronceray, L., & Co., Display of Pictorial Advertising Cards. 1 *L*

Dreyf, oosProf. H., Penmanship. 3 *E*

Duffy, T., Rustic Work. Garden.

Beautiful in design and excellent in workmanship are the rustic articles in wood and concrete exhibited by Mr. Duffy. His grotto is fancifully decorated and would be an ornament in any garden, and a comfortable retreat on a hot day. Of shell-mounted vases and pillars he shows several unique and pretty patterns, and for rustic wood work, comprising chairs, settees, flower stands, arbors, trellises, etc., he has few equals. His aquariums and ferneries are solidly built and ornamental in pattern. He has built up quite a business since his first exhibit three years ago, and the encouragement he receives has had its effect in the increased beauty of his work. He is also an upholsterer, and has his place of business at the corner of Leavenworth and O'Farrell streets.

Dunn. H. D., Students' Lamps, Students' Slide Lamps. Students' Hanging Lamps, and Glass Night Lamps. 7 N

Eaton, Chas., Estey and Holmes Organs, Hazelton Bros. Upright and Square Pianos. 4 *W*

Engine, The Pavilion. 9 R

The great engine that runs the machinery of the fair, is now the property of the Mechanics' Institute, but was built by the Fulton foundry, which has special facilities for work of this kind. It is of 128 horse-power, 18-inch cylinder, 36-inch stroke, 16-foot fly wheel, making 65 revolutions per minute, and fitted with Hendy governor and Meyer's adjustable cut-off. Messrs. Hinckly & Co. are noted for large work of this kind, and for marine engines, mining and mill machinery, sugar machinery, etc. Their works are on Fremont and Howard streets; office 213 Fremont street.

Falkner, Bell & Co., 8 kinds of Wool. 4 V

Finley, R., Dr. Wolcott's Pain Paint, Catarrh Annihilator. 3 P

Wolcott's Pain Paint and Annihilator has no equal for the cure of catarrh and colds in the head, nervous headache, toothache, etc. It relieves almost any kind of pain, no matter where seated, in a few minutes, and freely applied is exceedingly heneficial in palpitation of the heart, dyspepsia, affections of the kidneys, neuralgia, rheumatism and asthma, and has effected some remarkable cures in these as well as female complaints. It is composed of herbs, barks and gums. Send for circular or the medicine to R. Finley & Co., 1023 Market street, S. F.

Fenn, F. G. W., Gold Dust Polish. 3 P

Fenn, F. C. M., Beef Cutter and Vegetable Slicer. 9 W

Fenn's improved dried beef cutter, vegetable slicer and bread cutter, superior to anything before the public for a century back. Indispensa-

NAMES AND EXHIBITS. LOCATION.

ble for families, lunch saloons and hotels for economy and convenience. Though in the market but a few years, a favorite with every one. No family should be without one. For sale at the Fair until it closes. Depot, 423 Washington street, San Francisco, Cal.

Fish, A. L. & Co., Apple Grinders and Cider Press, Steam Fire Engine. 6 A

Boomer and Boschert Wine and Cider Press, the simplest, most economical and powerful press in use; Knowles' Patent Steam Pump, for pumping water for farming, mining and all purposes where water is used; Clapp and Jones Steam Fire Engine, Waters' Steam Engine Governor. Ferris' and Miles machine tools, Rider Pat. Cut-off Engine, Union Rock Drill, Air Compressors, Stationary and Portable Engines and Boilers, new and second hand, for sale by A. L. Fish & Co.. 9 and 11 First street, S. F.

Fischett, Mrs. S. D., Turkish Rug. 1 Q

Flynn, John, Horse Shoes and Spurs. 9 J

Follansbee, Geo. S., Follansbee Pump Co.'s Patent Double Propeller Pump. 8 M

DOUBLE PROPELLER PUMP.—The attention of visitors at the Mechanics' Fair has been directed to the Follansbee Double Propeller pump by the enormous and continued stream it pours forth. It is one of the most powerful lifting pumps ever put before the people, and is so simple that any one can see at a glance what its capabilities are. It requires no oiling, and any one of them over six inches in diameter can have an engine attached direct and thus avoid the use of belting, which makes invaluable for wrecking purposes, pumping water ont of vessels and irrigating and draining work. It will be on exhibition at the State Fair also, and the agent or the Follansbee Pump Company, Boston, Mass., will send circulars and furnish pumps of any size. Manufactured at Golden State and Miners' Foundry, First street, San Francisco.

Foster, S. & Co., Condensed Eggs and Mince Meat. 5 Q

Forest, C. T., Glass Ball Castor (Parent's Patent). 4 U

Freeman, Mrs. M. L., Rag Rugs. 1 *W*

Fromberg, E., Toy Telephones. 4 E

Fruling, W., Gang Plow. 2 V

Garratt, W. T. & Co., Bells, Globe Valves Steam Gauges and Whistles, Oilers and all kinds of Brass Goods, Steam Traps, Hooker Patent Steam Pumps, Water and Gas Gates, Portable Engine and Boiler, Brass Cannon. 8 L

But brief mention is made of the full and fine display of brass work, etc., by this firm. Agents for Lonergan's patent oilers and lubricators, they exhibit a fine show case of the many different styles of these valuable inventions. They are also agents for S. L. Jones steam traps, without which no engine is complete. The iron shell flanged Globe and Chuck Valves exhibited are finished to such a degree of perfection as to lead many to suppose them to be nickel plated. Steam whistles, gauges. low water alarms. Hooker's pumps, and everything in the line of brass foundry and fittings is furnished by this firm, at their establishment, Nos. 138 to 142 Fremont street, San Francisco.

Getz-Lucas, Madame Anna, Wax Fruits. 1 *K*

Georgiani, A, 3 kinds of Pears, 4 kinds of Apples, Oranges, Cocoanuts. 4 V

Giaat Powder Co., Hercules and Giaat Powder. 4 I

Gilbert & Moore, Eureka Kitchen Tables, Patent Foldiag Table, Iroa Bedsteads, Morton's Patent Desks, Writing Tables and School Furniture. 4 *T*

Giovani, Daniel, Charcoal. 1 K

Given, John. Wheat Samples. 4 V

Gladding, McBean & Co., Sewer Pipe, Chimney Pipe and Tops. 8 F

Gladding, McBean & Co., manufacturers and dealers in vitrified iron stone sewer pipe, terra-cotta chimney tops and fine pipe, fire brick, fire clay, etc. San Francisco—213 Market street, 1310 and 1312 Market street, 15 and 17 McAlister street. Oakland—1170 and 1172 Broadway. Manufactory at Liacoln, Placer county, California.

Globe Gaslight Co., Globe Gas Burner, Shaler's Patent Safety Cans, Shaler's Self-Generating Carbureters. 7 Y

Goldmaa, A., Cements, Lucine Oil, Laundry Liquid Blue. 3 T

Golden Gate Fruit Packing Co., (San Jose) Preserved Fruit. 4 V

Goodrich, Taylor, Raages, Stoves, Oil Stoves etc. 2 M

Goodnough, A. M., Bradbury Pianos, and Smith's American Organs. 3 *I*

Gordon, James E. & Co., Show Card Handles, Weather Vanes, Locks and Axes, Chain Forge and Tools. 5 P

No more interesting exhibit has ever been made in the fair than that of this firm. The chain forge has always attracted much attention and every one leaves satisfied that the chain is first-class as to quality of iron and workmanship, and its use demonstrates the correctness of the verdict. They also make a fine display of other goods as above mentioned, besides many ornamental weather vases. Their exhibit, though large, gives no adequate idea of the manner and variety of the hardwate kept by them at Nos. 254 and 256 Market street, and 8 and 10 Front street.

Gordon, Mrs. H. E., Crochet Bed Spread. 1 V

Grave & Co., Coupe, Oppenheim Buggies finished, Oppenheim Buggies with Tops, Oppenheim Buggies inlaid Cloth, Business Wagon. 2 T

The interesting exhibit of vehicles made by this firm deservedly received many flattering eucomiums, and attracted much interest from visitors in general. The Oppenheim buggy is the most convenient form of carriage the man of moderate means can possibly have, as it can be instantly transferred from a single seated buggy to a double seated carriage, and back again at pleasure. All styles of buggies, phaetons, carriages, hacks, couches and wagons are manufactured by them, and their exhibit hardly samples their stock. Excellent work, good material, and fine finishing are specialties at their factory, Nos. 421 and 423 Pacific street.

Grant, D. W. & Co., Tubular and Angular Harrows.

Gray, M., Steinway Pianos, Grand, Square and Upright, Brass and Stringed Instruments. 1 *Y*

Gump, S. & G., Mirrors, Pictures, Easels, Frames, Tables, etc. 4 *N*

Gutta-Percha Rubber Co., Hose Belting and Packing. 7 Q

Hager, Mrs. J., Specimens of Hand and Machine Sewing without Attachments. 1 *U*

Hammam Baths, Turkish Kiosk. 4 *Q*

Hallidie, A. S., Wire Ropes, Cloths Netting, Wire and Wire Goods, etc. 3 D

Halpruner, Dr. W. S., Patent Healing Salve. 3 *R*

The day is past for hiding one's light under a bushel, hence Dr. Halpruner exhibits his healing salve for corns and bunions with good effect. It has wonderful healing properties, and is guaranteed to be a sure cure for corns and bunions, those toothaches of the feet and excruciating inquisitors of the nineteenth century. The specimens of excrescences removed by the doctor, which he exhibits, are sufficient proof of his skill, and once in his possession it is hard to see how they will ever get back upon human feet again. At his office, No. 906 Market street, he operates painlessly on hundreds daily, to the neglect of his stand in the gallery.

Hammer, L. K., Chickering Pianos. 3 *E*

Hansen, J., Patent Railroad Grip. 8 N

Hansen, Richard C. & Co., Blocks, Lignum Vitæ, Patent Sheaves, Steel and Brass Patent Bushes. 7 U

Ship captains and mining superintendents seem specially interested in the exhibit made by this firm of double strap blocks, sheaves and bushing. They make a specialty of all steel point bushes for mines and mining pumps, and from the specimens of work exhibited, understand their business. They import all kinds of bushings and gearings and manufacture them, and blocks and pumps, and put them up at short notice. Manufactory and office, No. 9 Spear street, near Market, San Francisco.

Hartman & Freese, Oscillating Swings. 2 *B*

Hause, R. W., Photographs. 1 *N*

Haver, P. J., Band Saw, Fine Sawing. 8 Q

Haverside, John, Silver Plating and Cleaning Fluid. 3 H

Hall, E. L., Rustic Work. Gardea

Hawkins & Cantrell, Patent Elevator. 8 O

Hawley, D. N., Agent, Upright Monitor Engine, Archer Rake, Meyers' Gang Plow, Newton Wagon, Howe's Dormant Scales, assortment of Scales. 7 Y

In addition to the above, Mr. Hawley is agent for Howe's Standard scales, Myers' Excelsior gang plow, Archer's O. K. and Reiadeer Sulky rakes and a general assortment of agricultural implements, Nos. 201 and 203 Market street, San Francisco.

Harvey, Mrs. Julia, Beaumondaire. 3 R

Hall, C. R., Upright Pianos. 2 *Z*

Harlow, Mrs.. Crochet Bed Spread. 1 *U*

Hartshorne & McPhun, Window Shades, Opaque Shades, Holland & Hartshorne's Self-Acting Shade Roller. 4 *G*

At their large factory on the corner of Bluxome and Fifth streets, this firm manufacture every variety of window shades and opaque goods for similar uses, and sell to the trade at Eastern prices. Their line of dwelling house shades, either plain, stick or with fine gold border, lettered or plain, store shades and general opaque cloths cannot be excelled. House fitting a specialty with them. At their store, No. 112 Fourth street, they have on hand a fine and well selected stock of carpets, oil cloths, mattiags, cornices, window lace, shades and shade material, etc.

Hawley, Marcus C., Taylor Rake, Cider Press, Separator, Corn Sheller, Subsoil Plow, Deere Plows, Reapers, Wagons, Scott Engine, Lawn Mowers. 6 Y

Hayes, D. D., Fire Escape Truck and Hose Clamps. 7 W

Heald's Business College, Telegraphic Instruments and Apparatus. 4 D

Hermann, P. A., Improvement on Carriage and Wagon Wheel. 2 W

This improvement consists in a metal clamp enclosing the felloe at the point of junction of the spoke. The clamp is perforated to admit the passage of this spoke tenon, and is riveted through the felloe, and streagthens it and prevents its splitting, also. The wood of the spoke, receiving the jar and strain of all shocks endwise of the grain presents greater resistance to such pounding than the felloo, which receives this pounding crosswise of the growth, and consequently the latter gives to the shock. This metal clamp protects the felloe from this action. Address Peter Hermann, 35 Post street, S. F.

Heinz, Mrs., Bed Spread. 1 *P*

Heinze, L., Blowing Table, Blown Glass, etc. 3 *S*

Hendy, J., Ore Feeders. 8 L

Hemme & Loag, Upright California Manufactured Pianos. 3 P

Hepburn, Ward A., Proctor & Gamble's Soaps and Candles, Dooley's Yeast Powder, J. J. Gilbert's Starch, Fields & Evan's, Day & Co.'s Oysters, Frazer's Axle Grease, Lima Beans. 5 U

In addition to the above entered articles, Mr. Hepburn is agent for Lunt's avena, or oaten grits, Troxell's soap, American condensed (Alderney) milk, Allen's tintag cavendish tobacco, Arbuckle Bro.'s Arioso coffee. He is engaged in a general forwarding and commission business, and purchasing agency, for which he has unusual facilities and advantages, having an extensive and long acquaintance with sources of supply and avenues of consumption on this coast and foreign ports. Office, Nos. 309 and 311 Sacramento street.

Hermua & Sexton, Self-Supporting Sewer. 7 N

Hess, Lewis, Damiana Bitters, Fluid Extract. 7 M

Hill, Samuel, White, Florence, Peerless, New Home, Weed, Hill, Wardwell, Dauntless and California Sewing Machines, Florence Oil Stoves. 3 *H*

For nearly 20 years in the sewing machine business on this coast, Samuel Hill knows more about them than any other operator in the State. Of late years he has been concentrating the trade, and now controls several of the best machines to be had in the market. Among these are the improved Florence, New Home, Dauntless, White, Weed Improved, Peerless, California, Wardwell, and one named after himself, The Hill. Perfectly fair and honorable in dealing, patrons can rely on his recommendations in purchasing machines, as his judgment and experience are invaluable. Office, No. 19 New Montgomery street, Grand Hotel Building, San Francisco.

Hill, Mrs. M. E., Rugs made from Rags. 3 *P*

Hinckley, C. D. & E., Star Clipper Spring Beds. 4 *M*

Hickson, Justi & Co., 2 kinds of Peaches, Hungarian Prunes, Coe Golden Drop Plums, Petite Prune de Agen. 4 V

Hickey, Mrs.. P. W. Sea Moss, Shells, Skeleton Leaves, Wool and Wax Work. 1 *L*

Holbrook, Merrill & Stetson, Ranges, Stoves, Japan, Graaite, Perfection, Nickel-Plated and Tinned Wares. 2 J

Hook, E., Dining and Kitchen Tables. 3 *J*

Hopkins, Taylor & Co., Atmospheric Copying Press. 3 P

Hottua & Hanson, Buggy. 2 X

Hume, R. D. & Co., Magnolia Hams, Aurora Beer and Salmon, Canaed Goods, etc. 5 S

Hutchinson, James, Plants and Flowers. Garden

Huntington, Hopkins & Co., Exhaust Fan and Cupola Blowers, Rider Compression Engines, Forge Blowers. 8 Q

Hutchings, J. M., Cabinet made of California Woods, Cones and Seeds of Big Trees, Bark and Chips of Big Trees, Picture of (Dead Giant) Tree. 4 V

Jackson, R. W., Abalone Shell Jewelry. 4 P

Among all the beautiful shells that have from time to time been utilized for purposes of ornamentation and adornment, none can equal the abalone of the Pacific coast. Looking through the beautiful collection shown by Mr. Jackson, one can find almost every shape that may be appropriately worn; leaf, bird, fish, my lady's hand, cross, heads, and even the famous shamrock, are all there found in this beautiful shell, glistening with all the colors of the rainbow, bound or tipped with gold or silver. Cuff, shawl, and breast pins, brooches, bracelets, ear-rings, and cuff buttons, dress buttons, card cases, are all unique and beautiful, rich and durable. His store is located at No. 614 Market street, opposite Palace Hotel.

Johns, H. W., Asbestos Paint and Roofing. 8 H

The display of asbestos materials by this firm embraces asbestos roofing, paints, boiler and pipe felting, asbestos steam packing, asbestos cement, lining felt, board, hair felts, non-porous felts, etc., from their establishment, No. 5 First street, San Francisco. A valuable fire-proof article and non-conductor for steam pipes and boilers, and for inside surfaces. The cement is unsurpassed for stopping leaky roofs.

Johnson, J. C. & Co., Manufacturers of Harness Leather. 4 V

Jones, A. L., Patent Self-Regulating Steam Trap. 8 O

Jones, Wm., Enameled Tiles, Hand Painted Art Tiles, Encaustic and Plain Floor Tiles, Flooring, Hall and Wainscot Tiles. 9 H

Joseph Bros., Youths' and Boys' Clothing. 2 *Y*

Journal of Commerce, general display of the Products of California. 4 V

The San Francisco Journal of Commerce Stand is without question the leading object of attraction at the Fair. It has been arranged at the special request of the Board of Managers by the Business Manager of that journal—and *multum in parvo* contains in a comparatively restricted space more objects of interest and importance to the coast than has ever been seen in any similar collection. Cereals of all kinds, Corn 18 feet high, Minerals of all kinds, Fruits and Vegetables of the best varieties and of remarkable size and beauty, manufactured and natural products, such as bees making honey, etc., etc.—in succession interest and delight the spectator. We can safely say that more people visit it than any other stand in the Fair.

Juag & Utz, Camele Bay Coal. 1 L

Kelly, P., Boots and Shoes. 4 O

Kelly, James, Improved Grunsom Adjuster 4 W

Keogh, John, Moss, Feathers, Curled Hair and Upholsterers' Tow. 4 *L*

Ketchen, J. E., Rubber Printiag Stamps. 7 P

King, D. J., & Co., Automatic Fountain Pens. 3 *Q*

King, Mrs. M. J., Worsted Work Mats 1 *S*

Kitzmuller, M., Rockaway, Cabriolets, Side Spring Buggies, Side Bar Buggy, Baker Wagoas. 2 V

After considerable expense Mr. Kitzmuller has succeeded in inventing a cabriolet for physicians' use particularly, that is certainly the neatest, handsomest and easiest riding carriage of its kind in the market. The body is low so as to give little trouble in entering or dismounting, and at the same time the wheels are high to make it run easy to horse and man. He has on hand several styles of reckaways, buggies and wagons, all of the best quality as to material and finish, and warranted at reasonable prices. Office and workshop No. 850 Howard street.

Knowlton, J. J., Inks and Mucilage. 4 F

Koehler & Ritter, Silverware. 5 O

Kohler & Chase, Decker's Grand, Square and Upright, Fisher's Upright, Emerson's Square Pianos, Mason & Hamlin's Organs, Musical Instruments and Strings. 1 *Y*

Kruttschmitt, Annie, Bed Spread and Pillow Cases. 1 *P*

Kuhling, A., Bedsteads and Wire Mattresses. 4 *O*

Lake H., & Co., Blacking (Shoe). 3 W

Lancaster & Northon, Custom Made Clothing. 2 *Y*

Landers, R. R., Model of Windmill, Self-Regulating. 7 M

Lansberger, I. & Co., Dr. Healey's IXL Bitters, Dew of the Alps; Champagne. 7 I

Larkins & Co., Coupelets, Ladies' Phaeton, Extension Top Rockaway, Side Bar Rockaway, Sulky, Single Buggy, Piano Box Buggies, Thoroughbrace Wagoa. 2 V

Lejeal, J. J., & Co., Steck's Square and Upright Pianos, Sohmer's Square and Upright Pianos. 2 *B*

Levy, Oscar S., Ranges, Stoves and Glory Reservoirs. 2 L

Lewis, Oscar, Iron Vases and Pedestals. Garden

Liddle & Kaeding, Guns, Pistols and Fishing Tackle. 5 J

Liesenfeld, P., Billiard, Bagatelle and Pool Tables, Billiard Goods. 4 *F*

The billiard salesrooms of P. Liesenfeld, at 585 and 589 Market street, corner of Second, are brilliant with the many beautifully finished tables of different kinds manufactured by him. Sole agent for Phelan & Collader's patent cushion, and the latest patent steel plate and combination cushions. The new Centennial bevel billiard table is unsurpassed, and a full assortment of billiard balls and trimmings always on hand and furnished to order.

Light, W. W., (Sacramento city) Bee Hive and Bees. 4 V

Linforth, Rice & Co., Enterprise Windmill, Perkins' Patent, "Blymyre Bells"—Church and School, Fire Alarms. 8 I

Lipman, Mrs. M., Turkish Tidies, Turkish Table Covers, Crochet Tidies, Crochet Spreads. 1 *X*

Logan, M. H., Hops. 1 U

Lorquin, E. F., Taxidermic specimens. 4 R

Low & Chartrey, Patent Washiag Machine. 8 P

Lyon, Mrs. W. J., Log Cabin Quilts. 1 *R*

Mahoney, W. H. & Co., Haad Painted Tile Flower Box. Marble Top Table.

Mackey, Lillichio M., Patch Work Quilt. 1 *R*

Mackey, Alex., Cocoa Matting and Fiber, Rag Carpet and Carpet Warps. 4 *K*

In addition to the above mentioned articles Mr. Maekey is an importer, manufacturer and large dealer in tapestry and ingrain carpets, oil cloths, mats, rugs, window shades, lace curtains, cornices, etc. Everything in the carpet line can be found at his large and elegant establishment, No. 1110 Market street, where purchasers will find low prices, good articles, polite and immediate attention. Being an old and experienced carpet weaver, Mr. Mackey brings to bear upon his business an amount of practical experience that but few in the trade possess, and can therefore discriminate carefully in selecting his stock.

Maio & Winchester, Bridles, Saddles, Whips, Harnesses, Robes, etc. 1 C

Mallon, John, Curved Mirrors, Stained, Bent, Cut and Embossed Glass. 3 L

Manon, Mrs. S. S., Crochet Buggy Robe. 1 Q

Man, Albert & Co., Teas, Soap and General Ass't Groceries. 3 F

Marioa, Henry, Folding Tables. 3 *W*

Martin, W. H., California Roofing Slate. 4 V

Marwedel, C. F., Mechanics' and Moulders' Tools, Set Screws and Cast-steel Dogs, Foot Lathe. 8 I

Maguire, Mrs. F. M., Tatting and Crochet Work. 1 P

Matthai, R., Turning Lathe and Printing Press. 8 I

McFarland, J. M., Model of Stamp Mill. 7 M

McGuire, Arthur, Ornamental Posts. 4 K

McKibbin & Pettison, Iron Wheelbarrows. 3 Y

These wheelbarrows are very superior in their construction, being made of No. 12 iron, one-eighth of an inch thick, and made on an iron block. while the ordinary patterns are only of No. 16 iron. This firm manufactures railing, stairs, vaults, doors, locks, beams, liatels, bolts, anchors, bedsteads, safes and all kinds of house-work, besides a great variety of other wrought iron work of the best quality and improved patterns. The Eureka Iron Works, Nos. 317 and 319 Howard street, between Front and Beale, are very complete in equipments, and work is turned out promptly on orders.

McLean, A. A., Perforated Frictional Belts and Abdominal Support; also, California Elastic Truss. 6 M

Perforated Frictional Belt. It cures rheumatism, lumbago, paralysis, kidney and liver complaints, female weaknesses, etc. Dyspepsia and all diseases of the bowels permanently relieved. The Abdominal Belt is valuable to ladies in a delicate state, and recommended by physicians and can be had at all druggists or at the general agency, 605 Sacramento street, S. F. California Elastic Truss is the best. Send for price-list of belts and trusses.

McDonald & Johnson, Stylograph. 6 U

McNalley, T., Sacramento River African Musk-

Continued on page 186.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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Our latest forms go to press on Thursday evening

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SAN FRANCISCO:
Saturday Morning, Sept. 21, 1878.

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The Week.

Certainly times are changing. Suddenly the papers of our hydraulic mining counties begin the talk of claims prepared for the winter supply of water. Cleaning up time is almost over for the season, and many mining men are counting up the bullion that their industry has extracted and are resting quietly "on their ores," as the papers put it now, waiting for the next season. Among our southern counties, Mono increases day by day in activity, while Inyo and Fresno, sympathizing with their neighbor, are beginning to wonder if they too cannot find Bodie bonanzas.

A most important epoch has been reached in the history of the Comstock. Reference to our report of the state of the mining share market will show that if human experience can be depended upon as a prophet, great developments will surely soon be reported from Nevada. Arizona, too, is giving voice to sanguinary prophecies, and feels a little hurt that San Francisco papers have not sufficiently noticed that in August, Vampire and Mohave counties shipped to the city of said papers, $130,000 in silver bullion. In Tombstone district, Gird & Co. handed their mine to San Francisco parties for $90,000. These parties did not come to time, whereat Gird & Co. greatly rejoice, for one of those cool calculations, which may be entirely believed or not, according to individual experiences, makes out that in one of their mines alone, surface workings, to a depth of 10 feet and for a distance of 400 feet, have exposed to view $455,000!

The State Fair at Sacramento is entertaining its thousands, and all reports indicate a success in point of exhibits, attendance and money receipts considerably in advance of anything attained before.

On File.—"Improved Apparatus for Mounting Theodolites in Mines," E. Koch; "Virginia City," W. G. A.; "The Stonewall Jackson Mine," J. D. E.

Accidents to Miners.

There was a time when mine-owners were declared to be entirely void of feeling. They were accused of getting work out of their men just as they would out of mules, and in many cases it was time that the safety of miners was seldom looked to, and an accident which injured a mine was deplored far more than one that killed a man. That time is over now. The miners themselves have revolted against such indifference. Science has discovered means of avoiding many classes of accidents. Inventive genius has been exerted in improving machinery and methods. And finally the laws of some countries have come in to compel mine-owners to avail themselves of every means to secure the lives of their employes. Still, accidents continue. Every day limbs are broken and lives are lost in mines that are near enough to cities to be furnished with every appliance.

A few weeks ago it occurred to us that it would be interesting to keep some account of accidents happening to miners on this coast, with a view to determining their frequency and general causes. Without making any special search, we collected accounts of accidents which occurred in the space of a little over two weeks, and which jeopardized 23 lives. Of these, nine or 39% were endangered by caves or falling rocks, seven or about 30% by falls, and the remainder by various causes. In considering the different causes we have concluded that only four lives out of 23 or about 17% were put in danger by faults in apparatus used; that six or about 26% were endangered unavoidably; and that the remaining 13 or about 56% were jeopardized by culpable carelessness, in most cases to be charged to the victims themselves. In one case three men worked a new tunnel up under an old one, so close that the partition broke and the foolhardy miners were overwhelmed by an immense flood of water, and saved themselves only by most desperate efforts. In another case, in the Keystone mine at Amador City, a miner, after finishing his work in a drift, sat down on the edge of the shaft to await the coming of the cage to take him up. He fell down upon the ascending cage, striking a fellow-miner, who was knocked senseless, and injuring himself so badly that he soon died. Two men in the Bodie mine put up a scaffolding so carelessly that a falling rock carried both it and them down a distance of 45 feet. Two men stood in the bottom of the Boston shaft, at Moore's Flat, while a heavy block tied to a wet rope was being hauled to the top. The block, loosed from the rope, fell back, striking one of the miners upon the head and instantly killing him. A man at the Martin White mine ran a car into a chute so carelessly—it must have been so—that he went with it to the bottom. He was not seriously injured.

Among the accidents caused by, probably, defective apparatus, may be mentioned the breaking of the monitor at the Hatbaway hydraulic claims. The lever governing the nozzle had a flaw in it, which allowed it to break. The stream of water flying about in every direction killed one man and broke the leg of another. In the Sierra Nevada mine an unclosed valve in an engine—this is one theory given—led to the premature dumping of a giraffe. A piece of iron on the apparatus struck and broke open the skull of an employe at work near at hand. In the Mexican mine a cartridge that had remained unexploded in a blast was afterwards struck by a miner's pick. The miner was horribly mangled by the explosion.

Judging from this by no means careful, but nevertheless very interesting little investigation, the miners themselves are to blame for most of the injuries they receive "accidentally." When every precaution for their safety is taken by their employers, the miners certainly should exercise due care themselves.

During the time in which the above facts were collected, two coal mine explosions have been reported; one in Pennsylvania, prostrating seven men, the other in England, by which 250 or more lost their lives. The cause of the latter has not yet been fully published, if indeed it has been ascertained.

Boat Building.—Martin Vice, the well known boat builder of this city, exhibited at the recent Mechanics' Fair a very handsome six-oared barge which is up for raffle. She was built for a ladies' crew, has handsome fittings and two sets of light oars. Mr. Vice has been in the boat building business in this city for many years, and in addition to building fancy boats, builds numbers of them for hard service, such as ship boats, yachts, surf boats, etc. He has also made a specialty of steam yachts and steam launches. The well known, fast little steamer "Elaine" is one of his models. A visit to Vice's shop, at No. 22 Mission street, is always interesting to those of a nautical turn of mind, as there is always something in the stocks worthy of examination. The barge that was exhibited at the Fair was the handsomest specimen of naval architecture we have seen for a long time.

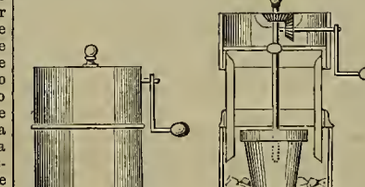
A New Portable Ice Machine.

Mr. Wm. H. Mansfield, of this city, has recently applied for letters patent through the Mining and Scientific Press Patent Agency, for a machine for the manufacture of ice in quantities small enough for family use. The freezing operation is conducted in a metallic cylinder, formed of three parts, the inner lining being of lead and the outer of heavy sheet metal, the space between being filled with asbestos or similar non-conducting material. In this cylinder are peculiarly-shaped molds, placed in a vertical position, so that the refrigeratory substance entirely surrounds each mold on all sides, although the molds are formed together in a circle. They are made somewhat tapering, being smaller at the bottom than at the top, so as to facilitate the removal of the blocks of ice formed therein. By their peculiar oblong shape and their arrangement side by side in a circle around the central cylinder, the refrigerative solution is enabled to reach the outer surface of each side of the mold. A glass cover shuts the top of the molds. So by taking off the cover of the metallic cylinder, it is possible to look into the molds without uncovering them and see how the operation of freezing is going on.

Stirrers are arranged on a shaft, to stir up the solution between the molds and side of the cylinder, so as to keep the solution agitated. This is only necessary occasionally, however; say every 10 minutes until the ice is formed.

The molds are filled with water, and a peculiar refrigerative solution, made by the manufacturers of the machine, is poured into the cylinder around the mold. The dashers are moved by means of a handle projecting through the cylinder, which serves to agitate the liquid, and bring fresh portions in contact with the sides of the mold. When the water in the mold has become ice, the cover may be lifted off, the molds taken out and reversed, when the blocks of ice formed in the molds will drop out into suitable receptacles.

This machine makes small cakes of ice, and one or more may be removed and the others left ready for use in the molds. The machine is portable and is intended mainly for family



use, where small quantities of ice are to be made at one operation. For families residing at places where ice is difficult to procure, from one to twenty pounds of ice can be made in 30 to 35 minutes. A machine of this kind has long been needed and the manufacturers intend rapidly introducing it, furnishing a refrigerative substance at the same time. This substance can be sold cheaply and used over and over again by simply evaporating it either in the sun or by the heat of a stove, an operation any one can superintend. The whole machine will only weigh from 10 to 75 pounds, according to size, and can therefore be moved about as conveniently as an ice-cream freezer. It is called the "Arctic Portable Ice Machine."

Electric Lighting.

We acknowledge the receipt from E. & F. N. Spon of "A Practical Treatise" on the above subject, translated from the French of Hippolyte Fontaine, by Paget Higgs. It is a new, complete and interesting work. It is partly a history, partly a philosophical treatise, and partly a practical guide for electricians and all others to whom the electric light may prove of any probable use. In its historical parts, its exposition of principles and statements of probable applications of the light, it is a popular book. In the comparison of machines, details, application and estimates of costs, it will prove of service to specialists and those who attempt to use electric lighting in practice.

"The work is divided into 12 chapters. The first six are devoted to the study of the voltaic arc, the lamps or regulators, the carbons, and some magneto-electric machines. The last six treat of realized applications, the comparative costs of several sources of illumination, of lighting by incandescence, and of the division of the electric light."

The work is fully illustrated, the explanations on the whole are clear. Every inventor seems to have received his due. Faults are pointed out where they exist, merits are fairly displayed, and the author's own conclusions seem to be unprejudiced and sustained by clear arguments. It shows scientific research and fairness. The sources of information of the author were very extensive, and he seems to have laboriously availed himself of all of them.

The book is published by E. & F. N. Spon, 46 Charing Cross, London, and 446 Broome street, New York.

The University Lectures.

We understand that it is now definitely determined to inaugurate the course of lectures on Special Cultures at the State University, by the appointment of Mr. C. H. Dwinelle as lecturer on Field Cultures. Mr. Dwinelle is well fitted, both by study and practice, to lecture upon these themes. He graduated in the course of agriculture in the Sheffield Scientific School of Yale College, in 1871. Returning to this State, he devoted some time to agricultural writing, and then embarked in the practice of agriculture. He is a close observer and an entertaining speaker. The course will begin about the 21st of October, after the mid-term recess, and continues through the present session.

There will probably be three lectures per week, on such days and at such hours as will accommodate the greater number of those who attend.

It is hoped, by a careful discussion of the natural history and value of plants of economic importance, and of methods and implements used in this and other countries in their treatment, to present facts of real importance to those who are now or who intend to be farmers.

The following heads will indicate in a general way the subject to be treated of, and the probable order in which they will be taken up, though that may be varied to suit circumstances, namely: farm implements and their uses; tillage, mechanically considered; irrigation; field and fruit cultures.

If sufficient interest is shown, it is intended to secure the services of competent specialists to treat of viticulture and dairying later in the year.

Although there are but two regular students prepared to attend these courses this year, a number of practical farmers have given their names as wishing to attend all of the lectures, or those bearing upon their specialties. All who wish to follow their example should write immediately to Prof. E. W. Hilgard, Berkeley. We trust that this effort to meet the wants of practical farmers will have encouraging support.

There are many young men and young women, graduates of excellent schools and colleges on this coast, who wish for a more thorough knowledge of the sciences bearing upon agriculture, but cannot afford the time and money required for a full university course. If these would spend a year at the University as special students, taking, in addition to these special lectures, enough of Botany, Zoology, Chemistry and Geology to fill up their time, we are sure that they would find it a profitable investment.

For the benefit of those who have lately come here, we will state that tuition in the University of California is free to all citizens of the State. Students from outside of our borders are charged a moderate fee.

Pump Manufacture.

Mr. W. C. Wilcox has recently established himself at No. 417 Mission street, between First and Fremont, where he is manufacturing the Wilcox steam pump, and patented hand and windmill pumps. He has in his shop machinery of the most approved kind for cutting, threading and fitting all sizes of iron pipe. Mr. Wilcox is also prepared to manufacture all kinds of steam and other machinery. He is making a specialty of a newly patented hand-pump, which is now being rapidly introduced. The same pump is also adapted for windmill purposes, and its simplicity of construction and operation is a guarantee of its staying in good order much longer than ordinary hand-pumps. He is also making a steam deep well pump, which has only lately been introduced. The engine is fitted so as to swing from over the well when it is necessary to draw the pump-rod out. The pump itself may be put down the well two or three hundred feet if necessary. Mr. Wilcox has been experimenting in deep well pumps for several years, and a number of them are in use in this city. The one referred to, however, is an entirely new device, very effective, durable and economical. He is now about to make the pump business a specialty on a large scale.

A Bottomless Well.—A man named Neff, near Alexandria, Huntington Co., Pa., found one day in August, that the bottom had tumbled out of his well. After making numerous experiments by letting lights and animals down the hole thus opened, he concluded that the air below was pure and ventured to explore the newly-discovered region himself. He found a cave extending for miles in different directions. Stalagmites and stalactites were numerous, and at intervals small streams of water ran over stony beds. Many bats fluttered in the cavern, and petrified sea shells abounded. A vein of nickel ore was also discovered, samples of which have been analyzed and found to be superior to the nickel of either Lancaster, Pa., or Germany, the only places where the metal is mined. Query: Who tells this story?

Williams, Colusa county, is to have a $10,000 flour mill.

Mines and Works of Almaden.—No. 1.

[Translated for the PRESS from "ANNALES DES MINES."]

Through the kindness of Mr. J. B. Randol, of the New Almaden mine, we are enabled to present our readers with an interesting memoir from the first number of the *Annales des Mines*, for 1878, upon the "Mines and Works of the Almaden Mine in Spain," by M. H. Kuss, M. E. The article has been partly translated by Mr. Ferdinand Fiedler, and it is our intention to give the translation in full, as many of our readers are interested in the subject. The article covers 100 octavo pages (in the original). The illustrations, some 16 in number, will be reproduced, and it will be well to preserve the copies of the PRESS containing it, as the whole comprises a monograph of much value to quicksilver men.

The present memoir will be divided into four parts:

1. Geology of the mines of Almaden.
2. Exploitation of the mines.
3. Metallurgy of mercury as practiced at Almaden.
4. Administration and history.

First Part.—Geological Description of the Deposits at Almaden. I.—Introduction.

The exploitation of the mines of Almaden dates back certainly to a remote antiquity; but the first notions at all accurate date from the middle of our century, and are due to a great extent to Casiano de Prado, of the corps of engineers of the Spanish mines. First, in 1830 he made a petrographic plan of the principal mine, he remarked the lines of stratification, and commenced to distinguish the different rocks. When he became, in 1841, director of the establishments of Almaden, he consecrated himself to this heavy task with indefatigable zeal, recollected even yet by some old mining captains, and did not abandon it until his health, undermined by the mercurial vapors, against which his zeal permitted no precautions, obliged him to renounce a post so dangerous.

After having occupied this place for two years, "without being able to think of the geology," as he himself says, and charged henceforth with duties less absorbing, he could, in 1846, publish upon the mines of Almaden a first work in which he described the deposits, ascribing them without other distinction to the rocks of transition *(terrains de transition)*.

Beudant said, about 1830, that the mercury of Almaden was found in the tertiary (*trias*). A little later, M. Leplay recognized in the Sierra Morena two rocks of transition, but without succeeding in establishing precise lines of demarcation.*

It was M. de Verneuil who was the first who seriously occupied himself in 1850 with the paleontological study of the Sierra Morena. After having collected a certain number of fossils, he did not fail to see that there had been two epochs. He could distinguish those which belonged to the silurian rocks and those which belonged to the devonian. A facile task, says M. de Verneuil, since in spite of the dislocations of the ground the silurian and devonian fossils are never found in the same beds.

There remained to be known the order of superposition of the beds and the disposition of the two rocks with regard to each other, to see if they existed there alone, to study the plutonic rocks, to find the epoch of the appearance of the cinnabar, and to look for the greatest possible number of fossils. It is this task to which M. de Prado devoted himself.

The researches that he made in 1852 to 1855, and which are recorded in the "Bulletin of the Geological Society upon the geology of Almaden, a part of the Sierra Morena and of the Mountains of Toledo, (Vol. XII., 1855), were undertaken to prove that the upper silurian system was only represented in the center of Spain, as an exception, and only by the schists of *Cardiola interrupta*, while for the most part the devonian beds rest immediately upon the lower silurian system, contemporaneously with the sandstone and schists of Lundeilo.

If the great space occupied by the ancient rocks in Spain give much interest to the fossils that M. Casiano de Prado has discovered there, one can say that the difficulties that present themselves in the way of stratigraphic study in this region add still more to this interest. In fact the foldings, the faults and dislocations which the crust of the globe has here suffered make it often very difficult, if not impossible, to render an account of the original order of superposition of the layers. Certain devonian strips seem to be intercalated in the lower silurian rocks, but as the fossils which they contain are the same as those in the devonian beds regularly superposed upon the silurian rocks, and as there is never a mixture of the fossils of the two epochs, the paleontologist pronounces without hesitation where the stratigraphist remains uncertain. In the presence of the convulsions to which Spain has been submitted, we can affirm that paleontology has furnished to geology an instrument more necessary than in any other part of Europe.

This extreme complication of the ancient rocks of Spain enables us to understand why their study has not been more advanced than it is to-day. The means of communication are so insufficient, the material conditions of life are so difficult in the Sierra Morena that geological researches are necessarily limited.

The engineers who have succeeded each other at Almaden were not all geologists, and besides were too absorbed in discharging their special duties to be able to occupy themselves much with scientific researches. On the other hand, the resources were for a long time deficient. The amount allowed the commission charged with the preparation of the geological map was very small, and it is only during some few years that they have been in a position to carry on regular work.

The actual state of knowledge then of the geology of Almaden is about the same as 20 years ago. M. I. de Monasterio, Inspector-General of Mines, published, in 1871, an account of the mines of Almaden in the *Revue Universelle des Mines*. This account, which has been resumed by M. Henry, M. E., in the bulletin of the *Annales des Mines* (seventh series, Vol. I., p. 443), was to have been completed by a study of the metallurgical processes, but it remains unfinished in consequence, no doubt, of the death of the author. It limits itself with regard to the geology, to the reproduction, in an abridged form, of the preceding note of M. C. de Prado. The development of the works has no doubt made known something new, but many questions are still in uncertainty, and without doubt will remain so for a long time.

We do not make the pretension, in the present work, of elucidating all the obscure points; our object is simply to expose the state of acquired knowledge of the deposits of Almaden. We have endeavored to extend it a little by an attractive study of the rocks which accompany the veins, and to arrive in this way at an approximate determination of the epoch of the advent of the mercury.

II.—Geological Situation and Constitution.

The town of Almaden is situated on the borders of La Manch and Andalusia in the Province of Ciudad Real, in the midst of a wild territory sparsely inhabited, upon the northern slope of the Sierra Morena. In traveling from Ciudad Real to Almaden by the railroad of Badajoz, one traverses at times long stretches of 15 or 20 kilometres (1 kilometre = 3280 feet, or about three-fifths of a mile) in the midst of mountains or hills covered with a meager vegetation, without encountering any habitation. The railroad stops at Almadenejos, where formerly were found mines of mercury, and from which a passable road runs to Almaden, situated 12 kilometres to the West. One cannot fail to be impressed with the sterility of the country. Valleys separated by little hills 100 to 200 meters (one meter equals 3.28 feet) in hight, a very sinuous stream with a slow current, dry in summer, but swollen during great rains. These are the principal features of the landscape.

The most notable character of the country, one that imparts to it a certain originality, is the presence of a great number of dykes of quartzite, which have resisted more than the other rocks the corrosive action of time, and which are formed in nearly vertical layers, resembling, from a distance, enormous walls, very high and capriciously carved.

The town of Almaden is situated in a valley, formed on the east by an insensible elevation of the ground, bounded on the north by the quartzite mountains of Chillon and of Peñarrubia, to the south by those of the Virgen and the Castilseras.

In the middle of the valley rises an elongated steep ridge, upon which the town is built; two rivulets, one north and the other south of the ridge, unite to the west, then run towards the south to escape by the depression existing between the chain of the Virgen and that of the Castilseras. (See Fig. 1, *Environs d'Almaden.*) Five kilometers to the north is seen another chain of greater length, but constituted like the preceding ones. Beyond that the same thing is repeated continuously. A section passing through Almaden north and south would give nearly the profile represented by Fig. 2. (See issue of next week.)

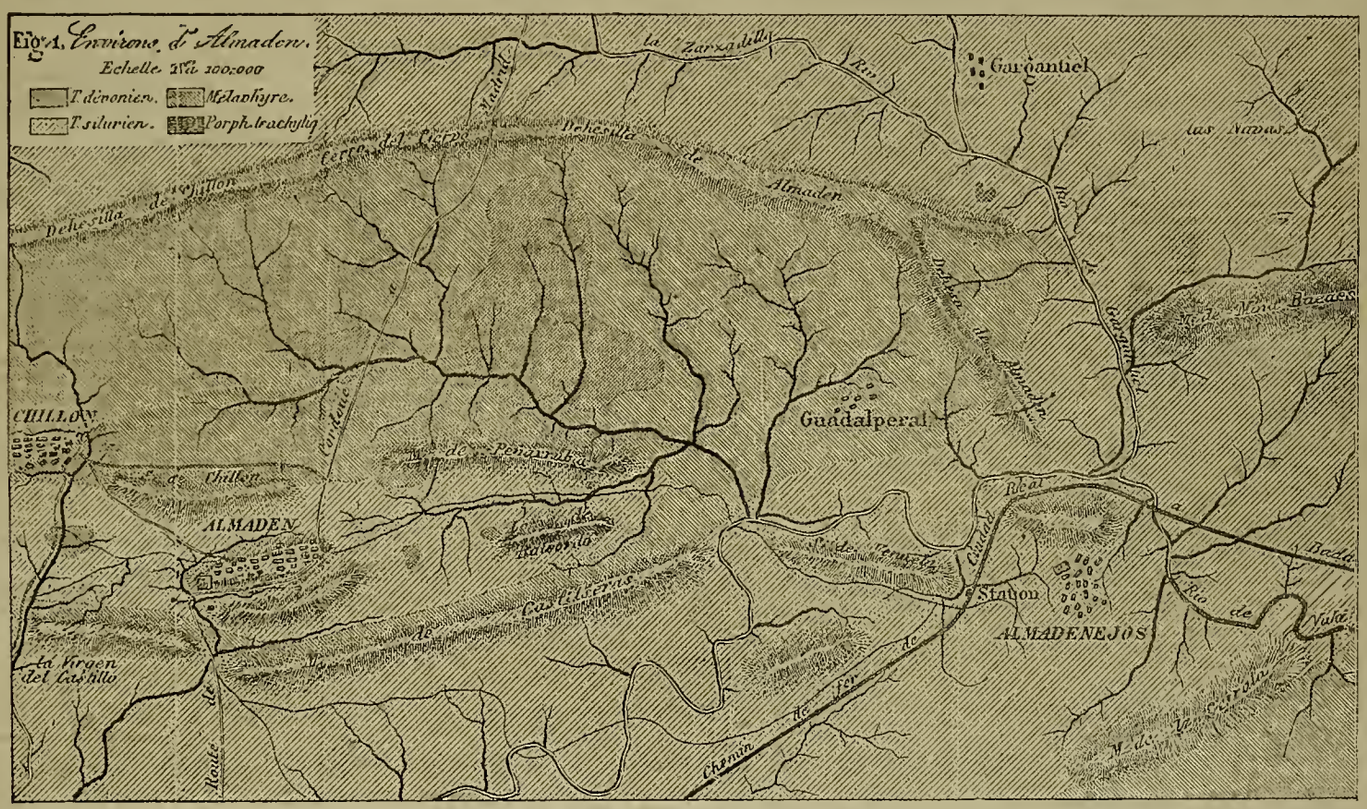
With regard to the rivulets which the map seems to indicate as abundant, it must not be forgotten that they represent slight undulations of the ground, and possible lines of drainage in times of abundant rains, rather than ordinarily existing rivulets. In summer there is hardly enough water for the mules and donkeys employed in transportation. The soil is not very productive; wheat is cultivated in the valleys, when the rocks are covered by a thin layer of vegetable mold, otherwise there is nothing but brushwood on the schists; the quartzite is absolutely barren.

Geological Constitution.

We reproduce on a reduced scale in Fig. 1 a manuscript map taken from the archives of the mine, on which we have marked the indications of the geological map of the environs of Almaden, published in 1855 by M. C. de Prado. This map shows that the predominating formation of the neighborhood of Almaden, as well as the rest of the Sierra Morena, is silurian. It rests on the south of the Sta-Enfemia on a massive granite, that of Pedroches, and is only interrupted from time to time by some devonian strata which are enclosed therein. Finally, diverse eruptive rocks, principally melaphyre and porphyry, appear at some points level with the surrounding country, which they do not seem to have disturbed.

To be Continued.

*See *Annales des Mines*, 3d series, Vol. V. p. 175, etc., and 3d series, Vol. VI., p. 297, etc., particularly p. 340. A set of the *Annales des Mines* can be found at the library of the University of California at Berkeley.



THE ALMADEN QUICKSILVER MINE.

A Worthy Project.

When a man feels called upon to aid some charitable work he naturally chooses that method which will accomplish most. For instance when a man buys a ticket to a concert to be given for the benefit of the yellow fever sufferers, he not only sends his money to the South, but in doing so he cultivates his own taste and encourages the art of music. It is this desire to kill as many birds as possible with one stone that has led to the following project:

At the request of the committee appointed to manage the Centennial celebration in San Francisco, a history of the city of San Francisco and incidentally of the State of California was prepared by J. S. Hittell. This book contains six chapters, dividing the history into as many eras, beginning with the times of the aborigines and extending down to the "hard times of 1877;" a seventh chapter devoted to "generalities"; and an appendix. A. L. Bancroft & Co. are to publish this book by subscription, the profits of the subscription sale to be given to the yellow fever sufferers and to the Catholic, Protestant and Hebrew Orphan Asylums of San Francisco, each object to receive the proceeds of subscriptions intended for its benefit. The book will be a large octavo volume of 500 pages, and the subscription price will be $5.00.

AT Bradford, Pennsylvania, Sept. 15th, a magazine containing 70 pounds of glycerine and 100 pounds of dynamite, exploded, killing four men.

SEPT. 4th, seven villains raided the mining camp of Cariboo, Idaho, securing $16,000 in gold dust, carrying off the good horses and killing the poor ones.

THE Russians have at last occupied Batoum.

Continued from page 183.

NAMES AND EXHIBITS. LOCATION.

melon. 4 V

Meat & Fish Packing Co. "Ochsenmaul Salat," (preserved heeves' heads, tongues and palates). 3 T

Public attention has of late been directed to the ornamental pyramid on the main floor of the pavilion, composed hy the nicest glass harrels containing "Ochsenmaul Salat" (preserved heeves' heads, tongues and palates), exhihited hy the above named company, whose place of business is No. 736 Montgomery street. This fine delicacy and relish, has hut lately heen introdnced to our State, and already obtains the highest approbation of epicures and housekeepers. No family should he without it, for its convenience in emergencies more that compensates its cost.

Mendenhall, James M., Patent Gnte and two Models of Gates. 8 Y

This most ingenious and simple, self-shutting gate is npon the principle of an inclined plaue. The upper coruer of the front of the gate, and the lower corner at the hack or heel are supported by sheaves running upon iron tracks fixed on parallel inclined planes above and helow, so that the weight of the gate runs it down the inclined planes and closes it. The heavier the gate the quicker it shuts, and the more hoys elimh on it the closer it sticks to its track. It cannot sag nor stay open unless fastened so. His invention is also applied to douhle large gates, with levers and pulleys so arranged that a team driving through opens the gate as easily as a man can take his hat off. The invention was patented through the MINING AND SCIENTIFIC PRESS Patent Agency. Address James M. Mendenhall for county rights or information, Livermore, California.

Meild, R., Case Dulcimers. 1 *N*

Merrill, P., Model of Carpet Beating Machine. 7 V

Myers, S. E. B., Koumiss, Consumption Cure. 6 J

Koumiss, as it name implies, is of Russian, or rather Tartaric origin, and is that form in which mare's milk is most commonly used by that wild people, among whom no diseases are known, and who recover from wounds that are generally considered fatal in civilized countries. Its valuahle qualities as an antidote or conqueror of dyspepsia, liver eomplaints, and diseases of the lungs, has brought it into great repute in Russia, where it is now generally made of cow's milk, and has turned attention to it here. Mr. Myers undouhtedly possesses the secret of its manufacture, and his factory at No. 825 Capp street is daily being increased to accommodate the demand.

Miller, Mrs. M. A., Millinery Goods. 3 B

Miller, J. F., Plants and Flowers. Garden

Miller, J. M., Side Plated Show Case. 4 R

Mœser, J., Instrument Strings. 1 N

Mohr, G., Rustic Fountains. Garden

Moore, Mrs. H. A., Hair Restorative. 3 P

The theory advanced hy Mrs. Moore that the human hair is vegetable and only wants the proper cultivation to promote its growth, and that its reproduction by the use of her restorative is certain, seems fully horne out by the photographs of "men we know" taken before and after using her preparation. Usiug no mineral or deleterious drugs in its manufacture, it is the safest hair restorative in the market, and its efficacy is certified to hy the numerous ones who have used it. Depot, 108 Stockton street, S. F.

Morning Call, Stereotype Plates. 1 *O*

Montague, W. W. & Co., Ranges, Stoves, Marhleized Iron, Mantels, Japan, Granite, Plani-h Copper, Nickle Plated Tinware, Fire Grates, Irons, Perfection Oil Tanks, etc. 2 H

Morris & Son. Pneumatic Bells, Bronze Lock-Ware and Hinges. 8 M

This invention consists in using air tubes instead of wires for ringing signal bells. By different modes a ruhher receptacle ot air is compressed, which torces the air through the tubes to another ruhher receptacle, which being distended by the incoming air, causes the clapper to strike the hell. Used on the big hell of the Stock Exchange nnd over a hundred residences in this city and they have heen placed upon the the steamer "Mary Garratt." Morris & Son are also fitting up the City Hall with these tubes and hells, as also the locks and hinges for the entire huilding. Factory, 1045 Market st., S. F.

Morris, Thomas B. & Co., Seattle Coal. 7 D

Nathan & Dreyfuss, Brass Injectors and Brass Ejectors. Engine Room

News Letter, S. F., 80 Pictures (Men we Know) and "News Letter." 6 U

Newell, Mrs., Braided Mats. 1 T

Newton, G., Stylograph and Day's Automatic Incubator. 6 U

Nicoll, A., Cloths and Custom Made Clothing. 3 *T*

"Cloths and clothing" expresses a great deal, but when applied to such a display as that made by "Nicoll the Tailor," is entirely inadequate to do justice to the exhibit. It is very unfortunate that this should be the "off year" of the fair, *i. e.* the year in which no premiums are giveu, for Nicoll's display of goods in the fair deserves something more than mere entry in the catalogue. Were it otherwise, no mention would he made here of it more than that accorded to other exhibitors at the tair.

A careful examination of his stock, both at his place of business and in the fair, dcvclops the fact that it is all new goods, and of the finest quality of its hrand, of course heiug of different degrees o f fineness and price to suit the purchasing capacity of his customers, and yet all manufactured of the best raw material to he ohtained.

Speaking of raw material reminds us of the fact that experienced judges, like Nicoll, only can tell whether the best wool has really been used in the cloths they use. The wool may be fine and long, yet have a weak place in its center that makes it no better than short wool ot equal fineness. From his long experience in cloth weaving and working, Nicoll can at once detect this defect, and returns to first hands any goods sent him possessing this damaging material.

Importing from the hest toreign and domestic factories all the cloths he uses, and having a branch house in London to watch the markets, gives him the advantage of the newest goods, less the profits of two or three intermediate dealers, so that he can afford to sell his goods cheaper than most establishments of a similar nature in this city.

Now, coming to Nicoll direct bimself, it may be said that if he had not been hred a tailor he would have been a sculptor or an artist, for it requires the same faculty to measure, cut and fit, that it does to shape up in stone or plaster the beautiful rounded limbs of a Venus, or the massive sinewy form of an Hercules. Form is the phrenological term for this faculty, and its possession in a greater or lesser degree is what constitutes the difference in ability in the business we have under consideration. Ot course "color" has much to do with it, as assisting the artist either in oil or cloth to harmonize his effects, and suit the complexion of his customers. These two faculties possessed in a large degree, coupled with business talents and enthusiasm for his calling, is what has given Nicoll such a justly wide reputation in the higher circles of the community.

His fits are superh, and by skillfully lining the garments lighter or heavier, he corrects defects in form, or peculiarities of structure, so as to make a mau more of a man than he ever deemed himself to he hefore he submitted his shape to Nicoll's haud. Worth himself never had a harder task, nor acquitted himself with greater laurels than has Nicoll in some of his wrestles with round shouldered, crooked hacked, uneven humanity; and it is this ability to fit, no matter what the shape, that gives his work prominence in every gathering of well dressed citizens in this metropolis.

Employing only white help, and intelligent, skillful labor at that; and carefully superintending every operation, he is enahled to turn out suits at low prices that are the wonder and envy of his competitors. "How can he afford it?" say they. It all lies in just what we have said and may he summed up in short meter as, buying direct, selecting carefully none hut the best goods and employing none hut honest, skillful employes, selling at a moderate profit and giving just what you profess to on every order.

Leaving his exhihit at the fair, go to his es tahlishment, No. 505 Montgomery street, and see the extensive stock of cloths he gives his customers to select from: Scotch Cheviot that will turn the heaviest rain, English and French heavers that are as fine and soft as the down of the eider, Doeskins, douhle and single, that will outwear rawhide and always look nice, Diagonals that time has no effect upon, and are dressy from the first to the last, Broadcloths that seem to he made of the cloth of gold sheep of Spain's proud monarchs, all at prices that stagger dealers who don't know the secret of his purchasing.

"A man's a man for a' that," hut good clothes help every one in any walk of life, from courting to counting, from preaching to practicing, and to go with a cheap, poor suit on your hack to sue for a youug lady's hand, will nt once settle your case if she knows that "Nicoll the Tailor" is still in the trade.

The leading tailor of San Francisco for style; the most successful tailor in the State for business; the cheapest tailor in the city for good suits; the hest fitting tailor known to the world, and the hest stocked tailoring establishment on the coast, ensures Nicoll the best trade of any one in the business that can he named in a reasonable period of time. His large trade forced him to open a hranch at No. 18 Kearny street.

Nutting & Son, Scotch Tubular Iron Harrows, Iron Harrows on Wheels, Gang Plow with Slip Shear, Pat. applied for, Seed Sower. 4 Z

The harrows exhibited hy this firm are one of the practical improvemeuts in agricultural implements. Beside the advantage gained hy having the teeth inserted in a nou-shrinking substance, either wing of the harrow may he turned up to avoid and pass obstacles, and when on the road the whole harrow is raised hy crank levers upon wheels. The self-sharpening, slip-share gang plow is a new invention and will probably be a favorite. Fire-proof windows, girders, hank vaults, gratiugs and geueral iron work are also done hy this firm, who are sole manufacturers of patent metallic tubular wheelbarrows, at No. 121 Fremont street.

Oakley, A. D., Ruhher Printing Stamp, Printing Wheels, Movahle Ruhher Type, Pocket Fountain Stamp, Black Ink for Ruhher Stamps. 3 *P*

Okerlund, P., 5 models of Fifth Wheel. 2 V

Osborn & Alexander, Mechanics' Tools, John Barnes' Foot Power Saws. 8 G

Barnes' foot-power machinery comprises 13 different machines for carpenters, cahinet makers, wagon makers, jewelers, dentists and farmers, consisting of scroll saws, combined scroll and circular saws, turning lathes, mortising machines, band-power circular ripping saws and shapers. Send for 64-page catalogue. Mechanics' tools of the latest improvement and hest quality a specialty. Amateur scroll sawyers' supplies, fancy woods, etc. Send for catalogue. Osborn & Alexander, 628 Market street, opposite Palace Hotel, San Francisco.

Owens, J. B., Pacific Pottery, Chimney Pipe, Sewer Pipe, Stone and Earthen Ware, and Fire Brick. 9 C

Mr. Owens exhibits a fine assortment of the excellent pottery ware manufactured by the Michigan Bar Pottery, nf which he is agent. Jars, crocks, jugs, stone kegs, churns, immense flower vases for garden use, and stone stumps, with cushions on them ot the same material, are among the collection. This pottery is all very smooth and exceedingly well glazed nnd has the peculiar "ring" that indicates the best quality of ware. Office and salesroom, No. 24 California street, San Francisco.

Pacific Fruit nnd Vegetable Drying Co., Frui and Vegetable Drier and Fruits. 8 F

Pacific Lamp and Reflector Factory, Lamps and Reflectors, Ornamental, Stamped, Spun and Cast Zinc. Metal Spinning. 3 I

Pacific Boring Co., Great Western Well Auger. Yard

Pacific Oil Stove Co., Oil Stoves. 6 W

Pacific Rolling Mills, Bolts, Nuts, Screws for House Raising, Merchant, Railroad, Square, Shafting and Beam Iron, Turnhuckles, Switches, Safety Clutch, Chains, etc. 4 & 6 X

Pacific Saw M'f'g. Co., Circular, Mill, Muley, Drag, Crosscut, Pit, Felloe, Scroll, Butcher-Compass, Hand Pruning Ice and Band Saws, Saw Mandrels, Fleshing Knives, Plastering Mitering Rods, Reaper and Mower Sections, etc. 7 F

Pacific Vinegar Works, display of Vinegar. 7 E

Paillard & Co., Musical Boxes. 1 *X*

Palmer, H., Cal. Port and Sherry, Cal. Wines of all kinds. 6 L

Parson, W. D., (Colorado) Wind Engine. 8 J

Parke & Lacy, Direct Acting Plunger Pump from Sutro Tunnel, Hoisting Engine, Hot Air Engine. 8 Q

Paul, A. B., Knight's Water Wheel. 8 J

Pease, C. F., Model R. R. Grip. 7 O

Pedler, Thomas C., Empire Coal. 1 L

Pendergast & Smith, Propeller. 8 S

Pfister, J. J. & Co., Knitting Machines and Goods. 2 *B*

Phillips, J. S., Prospectors' Assaying Apparatus nnd Specimens. 4 O

Is the author and inventor of the following: Explorers', Miners' and Metallurgists' Companion, 672 pages, 83 cuts, 2d edition, price $10.50; the prospectors patent "Wee Pet" Assayer, $100; the Testing Machine for Gold, Silver and Lead, $40.00; Cahinet of Fluxes, etc., for these machines, $20; Pocket Lahoratory for testing nnd assaying, $50; Blowpipists' Sample and Buttou Weigher, $25; Vest Pocket Blowpipe, $3. This hook on mining is uuequalled. The "Wee Pet" received a gold medal trom this institution in 1869, and the other more recently invented tools for prospectors are as meritorious.

Plummer, C. B., Family Fruit Drier Case Samples. One model Factory Drier. 8 X

The ahove invention does away with the old style of fruit drying and inaugurates the reign of fast work and fine eatable fruit. A heavy iron furnace furnishes heat to several flues, which enter the hottom of the drier, and hy their heat creates a draft of cold nir, which passing up through the consecutive sieves of fruit, dries it out in ahout an hour, ready for boxing for market. Testimonials without limit certify to the capacity nf the family drier to he all it is claimed, nnd one old lady of 72 years tells ot running one herself to great profit. Its product has taken several premiums, as well as the invention itself. Address W. S. Plummer, East Portland, Oregon.

Plum, Chas. M., Carpets, Rugs, Window Drapery and Furniture. 2 *A*

Poheim, Joe, Cloths and Custom Made Clothing. 2 *Y*

At his establishments, 203 Montgomery and 103 Third street, Mr. Poheim has just received a large assortment of the latest style goods, which he is making up in first-class style for his customers at the low price ot $20 for suits, $5 for pants and $15 for over coats; and to the ever present and leading question "where can he found the best goods at the lowest prices," Joe Poheim the tailor, stands ever ready to say, "Here!" An examination of his display in the fair establishes his reputation for good work, and no more experienced or uhle tailor has ever clothed our citizens than he. Unexceptionahle fits, and excellent material and workmanship distinguish his clothing. Rules for self-measurement and samples sent free to any address.

Potrero Distilling Co., Compressed Yeast. 4 I

This valuable article is fast coming into general use, now heing kept at nearly all groceries, as a matter of course. In a cool place it will keep for a week, though the supply is sent around daily to all the depots. No hetter recommendation need he given it than the fact that all the principal restaurants use it. Each morning their train may be seen supplying the first-class establishments nlong Kearny and other principal streets. Always of uniform quality and strength, the hread cannot be otherwise than good, made with it, and has not the taste of hops, usually imparted hy hrewer's and home-made yeast. It is kept hy all grocers, and at the depot, No. 745 Market street.

Prescott, Scott & Co., Union Iron Works, Bahy Hoists and Engines. 8 U

The works of this firm are located at the corner ot Mission and First streets, and are very complete nnd extensive and well fitted for all kinds of casting and engine work. Among the machinery manufactured and on sale by them are Vertical and Horizontal, Cut-off and Compound Condensing engines, shafting, rock breakers, stamps, pans, settlers, retorts, self-feeders, etc., at remarkable low rates, of extra quality.

NAMES AND EXHIBITS. LOCATION.

Office, No. 61 First street, San Francisco.

Prehle & Co., Pitcher & Palmer Axle Grease. 3 V

Progne, G. M., Water Tanks. 8 J

Protron, Chas., Gas Stoves. 2 D

Randall J., Eucalyptus trees and Extracts. 3 *R*

Randolph Saw Co., Circular Saws, Saw Teeth. 7 X

Ransome, Ernest L., Artificial Stone Fountains, Vases, Cemetery Improvements etc. 8 F

Ransome, E. L., Head & Sims Threshing Machine Engine. 8 Z

Renling & Seyd, Refrigerators. 4 L

Renton Coal Co., Redwood Pierced hy Woodpeckers, Renton Coal. 4 V

Reynolds, Rix & Co., Ingersoll's Rock Drill, Dry Air Compressors, King Engines, Miners' Horse Power. 8 U

Rhodes & Wason, Borax and Salt. 4 V

Ridgeway, C. W., Single and Douhle Spring Mattrasses. 4 *O*

Rieger, P. & Co., Flavoring Extracts Sodas and Lemon Sugar. 5 R

Roach John, Mathematical Instruments. 6 M

Robbins, F. A., Canners' Press nnd Set Jewelers' Rolls. 8 N

Roberts, Geo. F., case French and Fancy Candies. 3 Q

Rochicioli, R. F., Statuary and Ornamental Bronze work, Gold and Silver Plating work, Patent Champagne Faucet, Nickle Plated. 5 I

Roman A. & Co., Books, Cards, and Stationery. 3 O

Ross M., (San Jose,) Triple Plow. 4 Y

Rosenstein's Band. Music Balcony

The headquarters of this celehrated band are at the Lindell House, corner of Sixth and Howard streets, and as at present constituted and so acceptably performing each day nt the Mechanic's Institute Fair, can he engaged for concerts, serenades, picnics, halls, etc., at short notice and reasonable prices. A first-class string hand is connected with this organization, and therefore theaters can be furnished with any number of musicians for special or regular service. Theodore Rosenstein, conductor.

Rottanzi., G. Long Life Bitters 7 I

Russell J. J., Galvanic Appliances. 6 M

Rustic Factory, Hall's, Rustic Work. Garden

S. F. Gaslight Co., Preparations of Ammonia. 3 M

S. F. and Pacific Glass Works, Newman's Improved Box Demijohns, general assortment of Bottles, all kinds and colors. 5 Q

The pyramids of Egypt are of less importance to us than the pyramid of glass ware exhihited hy this company. Composed, as it is, of necessary and useful articles, interspersed hy a few of ornamental character, it is an exponent of the progress of art and manufncture in our State. Using the hest material obtainable and skilled workmen, these works turn out any desired quantity of blue, green and amher glass ware. Fruit jars and Newman's patent hoxed demijohns are specialties with them. The worka are on King street, foot of Fourth.

Sabatie P. S., French Corporal Perique Smoking Tobacco, 4 V

Sahatie Suich & Co., Geo. F. Hooper's assorted Wines. 7 P

Sadler & Co., Case Novelties. 3 *Q*

Salt Co., Union Pacific, Sun Brand and Banner Brand Salt. 4 V

Samuels, D., Laces. 2 *A*

Sanborn, S. H., Express Wagons. 5 Y

Sanders & Co.. Brewer's Kettle, Copper Still. 8 K

The enormous size of the still and hrewers' boiling kettle exhibited by this firm, as well as their fine finish, excite the admiration of every one who has any knowledge of either heer or hrandy making, or of copper smithing. Messrs. Sanders & Dettman are prepared to execute all kinds of copper smith work at shortest notice, such as stills, kettles, kitchen utensils, water heaters, force pumps, alcohol apparatus, steam engines, and also re-tin old cooking utensils Their shop is between First and Fremont, No. 421 Mission street.

Sanger, Mrs. L. P., Knitted Work. ——

San Jose Fruit Packing Co., Pres'd Fruits. 4 V

Schultz & Fischer, Silver Ware. 6 N

Scholtz, S., Stain Decoction. 3 *N*

Sciallero, Mdme. Artificial Flowers, Bouquets, Wreaths and Baskets. 2 *B*

Selby Lead & Smelting Co., assorted Lead Pipe, Shot, Sheet and Pig Lead. 6 E

Shepman, W. E., Silver Plated Ware. 4 M

From the exhihit made by this firm it is easy to see what they can do, and commendation in this connection is unnecessary. The Pacific Gold, Silver and Nickel Plating Works do the following kinds of work in first-class style: Old table ware replated and silver plated amalgamating plates furnished to order; watches and jewelry of all descriptious gold or silver plated. Repairing done on all kinds of work. No. 769 Market street, between Third and Fourth, San Francisco.

Sheldon, Mark, Davis Sewing Machines and Work. 2 C

Shew, Myron, Madame Demorest's Cut Paper Patterns. 3 *C*

Madame Demorest's cut patterns are more stylish, nrtistic and reliahle than any others made. A large and complete assortment always kept on hand hy Myron Shew, general agent for the Pacific Coast, No. 109 Dupont street, San Francisco. Patterns sent hy mail to any address on receipt of price in stamps. Send for illustrated catalogue free.

Shuster Bros., Mann's Pat. Chimney. 8 O

Small, I. H., Planers. 8 H

Smith & Burkhart, Skeleton Wagon, and Buggy. 2 W

Smith, Osborn & Co., general groceries—Starch, Corn. Tobacco, etc. 5 U

Smith, Mrs. Emma, Quilt. 1 *P*

NAMES AND EXHIBITS. LOCATION.

Solly, S., Cement. 3 Q
Sornin A., assorted Gas Stoves. 2 D
Souther & Co., J. N., Green Ginger Brandy, Bennett's Bitters. 7 K
Speer, Meade & Co., Los Angeles Honey. 4 V
Spaulding, N W., Circular Saws with patent Inserted Tooth. ——
Sresovich Luke G. & Co., Fruits, Apples, 5 kinds Pears, 3 kinds Mazatlan Limes; also Bananas and Cocoanuts. 4 V
Standard Soup Co., Soaps, Toilet and Staple 4 H
Starr & Mathieson, samples Regulus Antimony. 4 V
Standard Oil Co., Pearl Oil. 2 W
Steiner, A. J. (Yolo). samples of Wheat. 4 V
Sterling, W. A., Model of Quicksilver Condensers. ——
Stivers, H. F., Pacific Coast Woods of all kinds. 4 V
Stockton. E. A., Kitchen Tables. 3 R
Storey Bros., St. Helena, Hops. 4 V
Stout, A. A., Poulett's Atmospheric Letter Copying Press. 3 R
Sweetser & DeLong, Cider and Vinegar. 3 N

Those who have tasted the cider of the above mentioned exhibit in the Fair, know that it is pure and unsurpassed, and we can vouch for the extent of the orchard from which it comes. Very few care to sample the vinegar on exhibition hy them, but if housekeepers would only try it, they would at once order some for home use. It is the first-class article, pure and warranted to keep in any climate. Their boiled cider is just the thing for mince pies and sauces, and is sold by the gallon for family or saloon use, as well as cider and vinegar, at No. 117 Pine street.

Sweepstake Plow Co., Hill's Improved Eureka, Sulky, Grange and Steering Gang Plows; also Sulkies, Buggies and Wagons. 2 Y

The display of this company is one of the best and most instructive in the fair. Their iron wagon with Duval wheels, is something new and evidently strong. What a contrast would it make, having no wood about it but the pole and coupling, with an old-fashioned wagon having no iron about it but linch pins and tire! They also show a few other articles of their manufacture, including Hill's Eureka sulky plows, Grange and Steering gang plows, sulkies, buggies and wagons, in which latter industry they have lately embarked. Like all of their work, these are first-class, durable and well finished. The factory is located at San Leandro, Cal.

Strozynski, Stanislaus, Human Hair and Hair Dressing. 2 B
Swan & Brook, Illuminating Letter and Sign Painting. 1 D
Tatum & Bowen, Albany Lubricating Compound and Cups, Pat. Chisel Tooth Saws. 7 D

Their display of Hoe's patent saws, teeth and points is particularly fine and illustrative of the progress in this direction in the past decade. These teeth are the *sine qua non* of sawyers, and indispensable in mills that run for profit. The Albany lubricating compound was used on the crank pin of the driving engine of the fair, and was the only lubricator that would not heat on that place, They are also agents for Hoe's presses, country and city styles, drum and cylinder, with valuable recent improvements. All sizes of which they will keep in stock. Office, No. 3 Fremont street, corner Market, San Francisco.

Tay, Geo. H. & Co., Ranges, Stoves, Granite, Japan, Plauished and Tin Ware; Copper Boilers, Sewing Machine and Jig Saw Motor Power, Cheese Vat, etc. 2 F
Taylor, M. C., specimens of Chromite and Magnetite. 4 V
Taylor. S. P. & Co.. Printing, Blank, Hanging, Manila, Tissue Paper, etc. 7 R

Paper, in these days of cheap printing and many books, has assumed as much importance among civilized nations as with the Japanese, where it is used for building purposes and clothing. The above firm makes a fine showing of their capability in the line of paper making, and are competing successfully with the Eastern made article in our markets. Being pioneers and owning the Pioneer Mill, they have benefited by experience, and turn out a superior article in every line of their manufacture. A large stock of all sorts is always on hand at the warerooms, No. 416 Clay street.

Taylor, A. C., Excelsior Range and Gas Stoves. 8 Z

An inspection of Mr. Taylor's exhibit convinces any one that he is an ingenious mechanic, and knows what he is about. His Gas Stove is upon a new principle, economic and healthful in action. The ranges are provided with special connecting pipe, running from the outside around the lower part of the furnace up into the hot closet. The cold air enters this pipe, is heated in passing the furnace, heats the hot closet, and is released at will by means of a damper. His new broiler is an excellent article for saving the juices of steak, and his cake griddle is an achievement for the benefit of womankind. All should order these improved articles from his store, No. 816 Montgomery street.

Taylor, F. B. & Co., Cal. Coal Oil, Sapolio and White Lead. 3 G
Teuhner & Hoffman, Silver Plated Show Cases and Aquarium. 3 N
Thornton, John, Fancy Gaiters. 4 O
Thompson, Geo. C., Soda Fountains and Apparatus.

For several years Mr. Thompson has acceptably provided this beverage for the frequenters of the fair, and always an excellent article. He has been established in the business over since 1850, and has kept pace with all the improvements of the day both in fountains and soda, until now he is the largest manufacturer of mineral and soda water on the coast. He is a large importer of and dealer in soda machines and fountains, soda stock, twine, corks, counter ornaments, etc., a good stock of which is always kept by him on hand at No. 526 Union street, San Francisco.

Toohey, C. & Co., Coffee, Tea, Spices, Extracts and Oils, general assortment of Groceries, Noble's Whiskies, and Liquors of all kinds 5 U
Tracy, J. P. & Co., Printing Press and Material. 3 W
Tracy, Mrs. F. P., Rag Mats. 1 Q
Trumbull, R. J. & Co., Garden Seeds, Antique Pottery, Fancy Flower Pots and Trellises. Garden
Truworthy, F. M., Stencil Plates and Rubber Stamps. 1 I
Tustin, W. I., Irrigating Pumps. 8 J
Tyler, Mrs. Mary, Patch Work Quilt. 1 R
Van Blarcom, A. L., Southwick's Turbine Windmill. 8 S

The many claims of excellence made by the proprietor of the Turbine mill are certainly worthy of investigation. That they cannot be blown down is self-evident. That the fact of their being built upon the same principle as the Turbine water wheel, which we know to be the most economical use of water in a wheel, would establish their claim for light running or running on a lightsr wind than most others. Protected from the effects of the weather, they cannot but be more durable than any other in use. They are manufactured by A. L. Van Blarcom, Second street, between Washington and Broadway, Oaklnnd.

Vandenberg, Dr. J. P.. Tape Worms. 1 J
Van Wart, Wm. (Butte Co., Cal.) samples of Wheat. 4 V
Vogeley & Bro., J., assorted French Mixed Candies. 4 M
Vulicevich, M., Alligator Pears. 4 V
Wskeling, Mrs. L. P. & Co., Blood Purifier, Elixir of Life, and Magnetic Oil. 3 Q
Wangenheim, Sol., Mixed Pickles. 4 V
Ward, W. M. & Co., Gilt Edge Tonic. 6 K
Wakefield Rattan Co., Rattan Furniture. 2Z

Including a magnificent display of rattan furniture, this company also exhibit an immense variety of rattan baskets and door-mats, chair-cane, carriage mouldings, etc., also a large exhibit of the famous Kurrachee rugs. These rugs are fully equal in appearance and durability to the best Persian and Turkish, but sold at less than one-third the price of the latter. They are made entirely of wool, and patterns to match any carpet are exhibited. The unprecedented favor with which they are meeting, warrant the assertion that they are the most popular rugs in the market. Kept by all carpet dealers. Salesroom, No. 38 Geary street, San Francisco.

Warren, Col., Elephant's Grinder, First Sack of Flour made and exhibited in Cal., 1853; first Broom exhibited in State Fair, won Silver Medal of Ten Dollars, 1852; Piece of Ship "Cadmus," in which Lafayette first came to the United States in March 6th, 1777, Rice, Flax, Hemp. 4 V
Warren & Co., Eucalyptus Tree Preparations. Garden
Washington Irrigated Colony, (Fresno Co.) Fruits, Grains, etc. 7 W
Waterhouse & Lester, Carriage Material. 2 N
Webster, J. R., Model of Wave Power. 7 M
West Coast Furniture Co.., Bed-room, Office, Dining Room and School Furniture. 4 Y

The beautiful furniture shown by this company elicit admiration from every one. Strength, beauty of wood, elegance of design and ornamentation, combine to render their products the finest of any establishment on the continent. The antique dining-room set, in oak, is complete in all its appointments, and carries us back a hundred years. The Toa wood set, panneled with French mahogany, is incomparable; and the Tomano furniture looks as rich as it is possible for wood to do. Primivera reminds one of the old butternut of the East, or white walnut. This company operate on a large scale, and can fill orders for furnishing hotels or private residences on short notice. Office and factory, corner Fourth and Bryant street, San Francisco.

Weed & Kingwell, Brass Work. 8 J

Messrs. Weed & Kingwell make a fine exhibit of a general assortment of brass goods, consisting of finished and rough bells, steamboat bells, steam gauges, whistles, oilers, and, in short, every variety of brass goods for steam engines and other purposes. It is scarcely possible to conceive of better work than these brass castings now on exhibition. Everybody who knows anything about this branch of manufactures is aware that great skill in metallurgy and chemistry as well as mechanical invention is necessary to complete success. All these requisites are possessed in abundant measure by Messrs. Weed & Kingwell, No. 125 First street.

Weeks, L. F. & Co., Oaknm. 4 M
Welchhart, J., Hay Cutters, Reaper Knives, Edged Tools and Safe, Lawn Rakes. 8 J
Weister & Co., 1,407 Useful Inventions. 4 U
Wells, Mrs. L., Japan Silver Polish. 3 P
Whitman, (inventor) Mrs. E. J., Kettle Scraper. 3 L

Any housewife who has scraped a mush or fruit kettle for half an hour knows about how much work it is; but male humanity has but little idea of it, and consequently left it for a woman to invent a kettle-scraper which should be a saving on spoons and elbows, to say nothing of time and patience. Go up in the gallery and call at Mrs. Whitman's stand and see it. If you are not convinced that it is the one thing needful, buy it and take it home for your wife to pass judgment on, or address for town and county rights at agency, Mrs. E. J. Whitmen, Oakland, Cal.

White, Capt., Model Pat. Fire Patrol Wagon. 7 V
Whittier, Fuller & Co., Pioneer White Lead. 6 F
Wheeler, S Carbon Engine. Engine Room
Willard, Z. A., Ore Roasting Furnace. 9 N

This furnece consists of a cylindrical chamber, which is made, according to its dimensions, of either wrought or cast-iron. This chember or retort has a falso bottom, somswhat on the principle of a Bessemer converter, which sspar-atss it from another chamber, into which a blast of air is blown. The false bottom is perforated in order to allow a finely-divided current of heated air to pass up into the ors to be treeted. The furnace is so arranged that charging and discharging are very easily performed, and the operation may, without difficulty, be made entirely automatic. The cheap and effective reduction of refractory ores is the most important problem that has presented itself to miners and millmen; for nearly every mining section has its full quota of such ore, the successful working of which would be sure fortune to hundreds of hard-working miners who are now struggling vainly to get the precious metel separated from the baser ors. We believe this has been at last solved satisfactorily by the invention above described. Mr. Willard has introduced his method without any special horn blowing, and quietly set it to work in the Pavilion and elsewhere, and has successfully treated some of the most rebellious ores, both arsenical and sulphurst, from Amador, Butte, Placer, Sierra and Tuolumne counties, and also the far-famed Meadow Lake ore, heretofore unconquerable. It is cheap, easily understood, more easily worked—for it works itself—durable, and has but little machinery about it. The plant is comparatively inexpensive. It is at work in the Fair every afternoon and evening, and miners and millmen will find it to their interest to call and examine its workings, which they are cordially invited to do.

Wilson Sewing Machine Co., Machines and Sample Work. 3 L
Wilson, T. A., Improved (Little Chief) Washing Machine. 7 M

This washer acts by atmospheric pressure. When the piston rises it fills with air; descending, the valve closes and the air is forced through the clothes, carrying the water and dirt with it. The driving of the whole is mere amusement for a child. The power can be detached when desired in two minutes, and used to drive a churn dash with equal facility and ease; with it a child 10 years old can do a 10-pound churning. Canvassers wanted. D. M. Jacott. Agt., 211 Polk st.

Wilcox & Gibbs S. M. Co., Automatic Sewing Machine and Work. 2 B
Woerner, David, Wine Casks. 1 W

This exhibit is one of the best ever made in the fairs of our State. The immense wine pipes are 11 feet high and 8 feet long, with concave heads and brass fitted man-holes, hooped and finished in the finest manner, and are models of strength and workmanship, as are also the small pipe and beer barrels. At his factory, No. 104 Spear street, every style and size of cooperage can be furnished at the shortest notice from selected stock.

Wood, Benjamin, Pat. Portable Houses. 8 Y
Woodward, R. B., Birds and Animals Stuffed, Tropical and Ornamental Plants. 4 Q

As has been his usual custom, Mr. Woodward comes nobly forward and adds to the attractions of the pavilion by exhibiting his beautiful collection of ferns and flowers, and a large case of taxidermical specimens. Not having them for sale nor expecting to derive any benefit from their exhibition, makes the display praiseworthy. The mounted specimens of beast, bird and reptile are very fine samples of what may be seen in much greater numbers at his gardens; and the richness of the ferns and few other plants shown are but indicative of what appears in much greater profusion at his conservatoire in the far-famed Woodward's Gardens.

Worth, W. E., Stationary Washhowl Trap. 7 N
Yates & Oo., Lamps, Oil Blacking and Axle Grease. 3 J
Young, Madame, Toilet Articles. 3 P
Zolezzi Nicolo, Wooden Puzzle. 1 T

Mill and Mining Machinery Of All Kinds For Sale by BERRY & PLACE

At the Old Stand, Market, head of Front Street, S. F.

FOR SALE.

One Engine, 16 by 36 Inches, Link Motion.
One Engine, 14 by 30 Inches, Link Motion.
One Engine, 12 by 24 Inches.
One Engine, 9 by 18 Inches.

☞ Boilers to match each Engine. Each of the above will be sold at a very low figure.

ROBERT M. CONE, 226 Fremont St., S. F.

French Savings and Loan Society,

411 Bush Street, above Kearny, SAN FRANCISCO

G MAHE, Director.

Business Directory.

Mining Law. Patent Law

M. EYRE,

Attorney and Counsellor at Law,

Room 25 Court Block, 636 Clay Street, S. F.

Advice concerning Patents, Location of Mines or any other matter connected with *Mining or Patent Law* promptly given by mail, and full information furnished.

WM. BARTLING. HENRY KIMBALL

BARTLING & KIMBALL,

BOOKBINDERS,

Paper Rulers & Blank Book Manufacturers.

505 Clay Street, (southwest corner Sansome),

SAN FRANCISCO.

ANDERSON & RANDOLPH,

JEWELERS,

(CLOCK TOWER BUILDING),

Cor. Montgomery and Sutter Streets,

SAN FRANCISCO, CAL.,

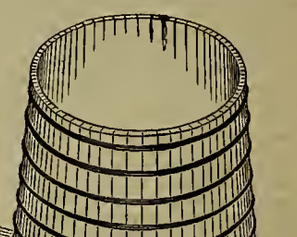
Call the attention of the public to their extensive display of

WATCHES, DIAMONDS, JEWELRY AND SILVERWARE.

The largest stock in the City at the lowest prices.

Goods sent to all parts of the Coast.

Watches repaired in a superior manner.



WATER TANKS of any capacity made entirely machinery. Materials the best in use; construction excelled. Pan Stavee, Tubs and Oak Guides for mining purposes a specialty.

WELLS, RUSSELL & CO.,

Mechanics' Mills, Cor. Mission and Fremont Streets.

Steel Castings,

From ¼ to 10,000 lbs. weight, true to pattern, sound and solid, of unequaled strength, toughness and durability. An invaluable substitute for forgings or cast-iron requiring three-fold strength. Send for circular and price-list to

CHESTER STEEL CASTINGS CO.,

EVELINA STREET, - - - PHILADELPHIA, PA.

San Francisco Cordage Company.

Established 1856.

We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes: Tarred Manila Rope; Hay Rope; Whale Line, etc., etc

TUBBS & CO.,

611 and 613 Front Street, San Francisco.

Double C. Reversible. 5½x12, 6x12, 7x12, 8x12, 9x14, 10x14 — 7x12, 8x12, 9x14, 10x14

ALL SIZES Hoisting Engines FOR SALE BY BERRY & PLACE

Market, head of Front Street, San Francisco

C. LEONARD,

PATTERN AND MODEL MAKER,

133 & 135 BEALE STREET,

Between Mission and Howard, up-stairs, San Francisco

CHROME IRON WANTED.

Parties having any vein or deposit of Chrome Iron wil please send all particulars as to location, distance from railroad or other communication with this City.

Address, CHROME IRON,

SCIENTIFIC PRESS, No. 202 Sansome St., San Francisco.

Dewey & Co. { 202 Sansome St } Patent Ag'ts.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch from Washington, D. C.

PERMUTATION LOCKS.—Stephen A. Mann, Reno, Nev.

MACHINE GUNS.—Harvey R. Leonard, San Francisco, California.

California.—An Allegory.

At the invitation of Mr. Oscar Kunath we paid a short visit to the gallery where his picture "California" is exhibited. "California" is a queen of tall, masculine yet graceful and symmetrical figure. Upon her head is a crown of bright ripe cereals, clasped above the forehead by the royal jewel, a full blooming rose. A long, loose garment of cloth of gold, bound at the waist, falls gracefully to her feet, and over her shoulders and reaching also to the ground, is thrown an ample robe of regal purple. She stands firmly in the recess of a lofty weather-beaten rock. Behind her to the right tower two brother sequayas, just enough of which is seen to suggest, with the belp of the surroundings, the immensity of their hight. Further to the right and way below are the cliffs of the Yosemite. On her left a life-like oak lifts its branches, and in the distance is the Golden Gate, not so far hut that the guardian fort can he distinguished. Through the Gate rolls the Pacific, stretching away to the dim horizon. Back from the horizon and reaching up the western sky, spreads a vast sheet of veritable summer clouds, overcharged with flowing wealth for her kiugdom. In front of the Queen and to her left lies a grizzly, his paws folded comfortably beneath his chin as he reposes. At the right of the Queen the rock rises a few feet to form a barrier between her and the vast, deep valley beyond, a sort of arm to her throne. Down this rocky arm, and covering it, a grapevine trails. Where the vine reaches the more level rock, and reaching around in front almost far enough to disturb the bear, there are piled in careless profusion the fruits of the kingdom. There are white grapes and purple, the apple, the peach, the plum, and representatives of semi-tropic as well as temperate climates. Below the fruit is heaped the more substantial though less prepossessing product of the mines. The malachite and cinnabar attract the eye by their colors, hut a second, more thoughtful glance, finds worthy occupation in studying the less showy pieces.

Standing upon the throne in the midst of her dominions, "California" makes but one motion. She strctches her right arm out ovcr these her treasures. The attitude is one of majestic command, and if her countenance showed less voluptuousness and more of forcible intelligence, her extended arm might symbolize progress as well as unbounded control. It is our State in her stretch of territory, her resources and wealth, that "California" represents. As au allegory, it is as successful as it is interesting, and this is paying it a high tribute.

Woodward's Gardens were never more attractive than at present. Besidea three liona already mentioned, six monster living alligators, aeveral iguanas and a boa-constrictor have just been added. New stars are conatantly engaged for the Pavilion exercises. Ratea of admission as uaual.

UNION READING ROOMS, FIRST STREET, SAN JOSE. WELCOME TO ALL!—Having lately been removed to the old hall of the City Zouaves, this institution is located in a pleasant and spacious apartment. The latest and best eriodicala of the day are found on its tables, fres to all. Alao many eboice volumea upon its shelves. Good music is provided for every Wednesday evening's social. Admiasion [to these entertainments, 25 ceuts—to pay expenaes.

EXAMINE the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.94. Lewis C. Grover, President; L. Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulara to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

Signal Service Meteorological Report.

Week Ending September 17, 1878.

HIGHEST AND LOWEST BAROMETER.

Sept 11	Sept 12	Sept 13	Sept 14	Sept 15	Sept 16	Sept 17
30.08	30.09	30.05	30.01	29.97	29.97	30.02
29.99	30.03	29.97	29.96	29.99	29.91	29.93

MAXIMUM AND MINIMUM THERMOMETER.

68	70	03	02	60	63	62
54	55	53	54	54	63	65

MEAN DAILY HUMIDITY.

75	73	77	74	75	75	82

PREVAILING WIND.

SW	SW	SW	SW	SW	SW	SW

WIND—MILES TRAVELED.

255	240	307	324	310	424	101

STATE OF WEATHER.

Clear.	Clear.	Fair.	Clear.	Smoky	Smoky	Fair.

RAINFALL IN TWENTY-FOUR HOURS.

Total rain during ths season, from July 1, 1878, .01 in.

GENERAL MERCHANDISE.

[WHOLESALE.]

WEDNESDAY M., September 18 1878.

BAGS—Jobbing.

Eng Standard Wheat. —@13½
Cal. Manufacture.
Hand Sewed, 22x36..13½@—
24x36..... —@—
23x40..... 14½@—
Machine Swd, 22x36..13½@—
Flour Sacks, halves...10½@11
Quarters..... 6½@ 7
Eighths..... 4½@ 4½
Hessian, 60 inch.....15 @—
45 inch..... — @11½
40 inch.....11½@—
Wool Sacks,
Hand Sewed, 3½ lb..47½@50
4 lb do.....52½@—
Machine Sewed.....50 @—
Standard Gunnies.....14 @15
Bean Bags..... 7½@ 8

CANDLES.

Crystal Wax.....17 @—
Eagle.....12 @—
Patent Sperm..... 30@—

CANNED GOODS.

Assorted Pie Fruits,
2½ lb cans.....2 25 @2 50
Table do.....3 00 @3 25
Jams and Jellies..3 50 @3 75
Pickles, 8 gal.... 3 25 @ —
Sardines, qr hox..1 67½@1 90
Hf Boxes.....2 50 @2 75
Preserved Beef,
2 lb. doz.....4 00 @ —
do Beef, 4 lb.doz.8 50 @ —
Preserved Mutton,
2 lb. doz.....4 50 @ —
Beef Tongue.....6 50 @ —
Preserved Ham,
2 lb. doz.....6 50 @ —
Devlled Ham, 1 lb.
doz.....3 50 @ —
do Ham, ½lb doz.3 00 @ —

COAL—Jobbing.

Australian, ton.. 8 00 @—
Coos Bay,..... 6 50 @ 7 00
Bellingham Bay. 6 50 @—
Seattle..... 6 00 @ 6 50
Cumberland.....14 00 @— —
Mt Diablo..... 4 75 @ 6 00
Lehigh.....13 50 @— —
Liverpool..... 7 50 @ 8 00
West Hartley.....10 @— —
Scotch.....10 50 @— —
Scranton.....11 50 @— —
Vancouver Id... 7 00 @— —
Charcoal, sack... 75 @
Coke, bbl... .... 60 @

COFFEE.

Sandwich Id. lb. @
Costa Rica..... 17½ @ 17½
Guatemala..... 17 @ 17½
Java..... 23 @— 26
Manila..... 17 @— —
Ground, in cs... 25 @— —

FISH.

Sac'to Dry Cod.. 5 @ 5½
do in cases.. 6 @ —
Eastern Cod.... 7 @— 7½
Salmon, bbls.... 8 00 @ 9 00
Hf bbls..... 5 00 @ 5 50
1 lb cans..... 1 45 @ 1 80
Pkld Cod, bbls..22 00 @— —
Hf bbls.....11 00 @— —
Mackerel, No. 1
Hf Bbls.....10 00 @10 50
In Kits..... 1 80 @ 1 90
Ex Mess..... 3 25 @— —
Pkld Herring, hx 3 00 @ 3 50
Boston Smkd Hrg 70 @— —

LIME, Etc.

Lime, Sta Cruz,
bbl..... 1 25 @ 1 50
Cement, Rosendale..... 2 00 @ 2 25
Portland..... 4 00 @— —

Plaster, Golden
Gate Mills.... 3 00 @ 3 25
Land Plaster, tn 10 00 @12 50

NAILS.

Ass'ted sizes, keg 2 90 @ 3 00

OILS.

Pacific Glue Co's
Neatsfoot, No 1..1 00 @ 90
Castor, No 1.....1 10 @ —
do, No. 2.....1 05 @ —
Baker's A A.....1 25 @1 30
Olive, Flagnol...5 25 @5 75
Possel.....4 75 @5 25
Palm, lb..... 9 @ —
Linseed, Raw, bbl, 72 @ —
Boiled..... 75 @ —
Coccanut..... 55 @ —
China nut, cs.... 70 @ 72½
Sperm.....1 40 @ —
Coast Whales.... 40 @ —
Polar..... 45 @ —
Lard..... 90 @1 00
Oleophine..... 22 @ 22½
Devoe's Bril't.... 22 @ 23½
Photolite..... — @ —
Nonpariel..... 31 @ 32½
Eureka..... 18 @ 42½
Barrel kerosene... 20 @ —
Downer Ker.... 37½@ —
Elaine..... 37½@ —

PAINTS.

Pure White Lead. 8 @ 8½
Whiting..... 1½@ —
Putty..... 4 @ 5
Chalk..... 1½@ —
Paris White..... 2½@ —
Ochre..... 3½@ —
Venetian Red.... 3½@ —
Averill Mixed
Paint, gal.
White & tints...2 00 @2 40
Green, Blue &
Ch Yellow.....3 00 @3 50
Light Red.....3 00 @3 50
Metallic Roof...1 30 @1 60

RICE.

China, Mixed, lb.. 5½@ —
Hawaiian..... 7 @ 7½

SALT.

Cal. Bay, ton...15 00 @22 50
Common.....10 00 @12 00
Carmen Id.....12 00 @14 00
Liverpool fine...19 00 @— —

SOAP.

Castile, lb..... 10 @ 10
Common brands.. 4½@ 6
Fancy brands.... 7 @ 8

SPICES.

Cloves, lb..... 45 @ 50
Cassia ..... 22½@ 25
Nutmegs..... 85 @ 90
Pepper Grain.... 15 @ 17
Pimento..... 15 @ 16
Mustard, Cal.,
½ lb glass.....1 50 @ —

SUGAR, ETC.

Cal. Cube, lb..... 11½@ —
Powdered..... 11¾@ —
Fine crushed..... 11½@ —
Granulated..... 11 @ —
Golden C..... 9½@ —
Cal. Syrup, kgs... 70 @ —
Hawaiian Molasses 26 @ 30

TEA.

Young Hyson,
Moyune, etc.... 27 @ 31
Country pckd Gunpowder & Imperial..... 60 @ 60
Hyson..... 30 @ 35
Fooo-Chow O..... 35 @ —
Japan, 1st quality 40 @ —
2d quality..... 20 @ 25

METALS.

[WHOLESALE.

WEDNESDAY M., September 18, 1878.

IRON.—
American Pig, ton.....28 00 @30 00
Scotch Pig, ton.....28 00 @30 00
White Pig, ton.....28 00 @— —
Oregon Pig, ton..... — @— —
Refined Bar..... 21@ 3
Horse Shoes, keg..... 5 00 @— —
Nail Rod..... —@ 7
Norway, Oval..... —@ 7

COPPER.—
Sheathing, lb..... 34 @ 35
Sheathing, Yellow..... 21 @
Sheathing, Old Yellow..... 12 @
Composition Nails..... 24 @—
Composition Bolts..... 24 @—

STEEL.—
English Cast, lb..... 13 @ 14
Anderson & Woods, ordinary sizes..... 15 @— —
Drill..... 15 @— —
Flat Bar..... 14 @ 19
Plow Steel..... 8½@ 12½

TIN PLATES.—
10x14 I C Charcoal..... 7 50 @ 8 50
Banca Tin..... 23 @— 24
Australian..... 17 @ 17½

ZINC.—
By the Cask..... 9 @—
Zinc, Sheet 7x3 ft, 7 to 10, lb..... 9 @— 10
7x3 ft, 11 to 14..... 10 @—
8x4 ft, 8 to 10..... 11 @— —
8x4 ft, 11 to 10..... 11 @— —

NAILS.—
Assorted sizes..... 3 15 @3 25

LEATHER.

[WHOLESALE.]

WEDNESDAY M., September 18, 1878.

Sole Leather, heavy, lb..... 22 @ 29
Light..... 20 @ 24
Jodot, 8 Kil., doz.....48 00 @50 60
11 to 13 Kil.....65 00 @76 00
14 to 19 Kil.....80 00 @90 00
Second Choice, 11 to 16 Kil.....55 00 @70 00
Oornellian, 12 to 16 Kil.....57 00 @67 00
Female, 12 to 13 Kil.....63 00 @67 00
14 to 16 Kil.....71 00 @76 00
Simon Ullmo, Females, 12 to 13 Kil.....58 00 @62 50
14 to 15 Kil.....66 00 @70 00
16 to 17 Kil.....72 00 @74 00
Simon, 18 Kil.....61 00 @63 00
20 Kil.....65 00 @67 00
24 Kil.....72 00 @74 00
Rohert Calf, 7 and 9 Kil.....35 00 @40 00
Kips, French, lb..... 1 00 @ 1 35
Cal. doz.....40 00 @60 00
French Sheep, all colors.. 8 00 @15 00
Eastern Calf for Backs, lb..... 1 00 @ 1 25
Sheep Roans for Topping, all colors, doz..... 9 00 @13 00
For Linings..... 6 50 @10 5
Cal. Russet Sheep Linings..... 1 75 @ 4 50
Boot Legs, French Calf, pair..... 4 00 @—
Good French Calf..... 4 00 @ 4 75
Best Jodot Calf..... 5 00 @ 5 25
Leather, Harness, lb..... 35 @ 38
Fair Bridle, doz.....48 00 @72 00
Skirting, lb..... 35 @ 37
Welt, doz.....30 00 @36 00
Buff, ft..... 18 @ 20
Wax Side..... 17 @ 18

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, September 18, 3 P. M.

LEGAL TENDERS in S. F., 11 A.M., 99½@99.90. SILVER, 1½@2. GOLD in New York, 100¾.

GOLD BARS, $80@$10. SILVER BARS, 8@15 ₱ cent. discount.

EXCHANGE on New York, ½% on London bankers, 49@49½. Commercial, 60; Paris, tive francs ₱ dollar; Mexican dollars, 89@91.

LONDON Gonsols, 94 13-16; Bonds, 108⅜.

QUICKSILVER in S. F., by tbe flask, ₱ lb, 41½@42c.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

The California Fruit Growing Association.

—Location of principal place of business, San Francisco, California. Location of property, El Dorado County, California.

Notice is hereby given, that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 9) of three (83) dollars per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, No. 641 Sacramento street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 30th day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Monday, the 21st day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco, Cal.

Gover Mining & Milling Company.—Lo-

cation of principal place of business, San Francisco, California. Location of works, Amador County, near Drytown, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the ninth day of August, 1878, an assessment (No. 37,) of fifty cents per share was levied upon the capital stock of the corporation, payable immediately in gold coin or legal currency of the United States, to the Secretary, at the office of the Company, Room 8, No. 402 Front Street, San Francisco, Cal.

Any stock upon which said assessment shall remain unpaid, on Monday, September 23rd, 1878, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, October 21st, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

W. O. WILSON, Sec'y.

Office, Room 8, No. 402 Front Street, San Francisco, Cal

Keystone Quartz Mining Co npany.—Prin-

cipal place of business, San Francisco, California. Location of works, Sierra County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 30th day of August, 1878, an assessment of fifty (50c.) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary at the office of the Company, northwest corner Pine and Sansome streets, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the eighth day of October, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the twenty-eighth day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

LOUIS VESARIA, Sec'y.

Office, northwest corner Pine and Sansome streets, San Francisco, California.

Hackberry Mill and Mining Company.—

The regular annual meeting of the stockholders in the Hackberry Mill and Mining Company, for the election of five Directors to serve during the ensuing year, and for such other business as may properly come before the meeting, will be held at the office of the Company, No. 300 Clay Street, San Francisco, Cal., on Monday, the seventh day of October, 1878, at the hour of 12 o'clock noon.

ED. B. PARTRIDGE, Sec'y.

Mariposa Land and Mining Company of

California.—Location of principal place of business, San Francisco, California. Location of works, Mariposa County, California.

Notice.—There is delinquent upon the following described stock, on account of assessment (No. 14) levied on the tenth day of July, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

COMMON STOCK.

Names.	No. Certificate.	No. Shares.	Amount.
Ambleman, Edgar M.	1629	100	$100 00
Aunhleman, Edgar M.	1631	100	100 00
Brumagin, J H.	1115	100	100 00
Brumagin, J H.	1120	100	100 00
Brumagin, J H.	1351	100	100 00
Brumagin, J H.	1352	100	100 00
Brumagin, J H.	1356	100	100 00
Brumagin, J H.	1370	100	100 00
Brumagin, J H.	1376	100	100 00
Brumagin, J H.	1382	100	100 00
Brumagin, J H.	1383	100	100 00
Brumagin, J H.	1387	100	100 00
Brumagin, J H.	1388	100	100 00
Brumagin, J H.	1390	100	100 00
Brumagin, J H.	1391	100	100 00
Brumagin, J H.	1392	100	100 00
Brumagin, J H.	1393	100	100 00
Brumagin, J H.	1394	100	100 00
Brumagin, J H.	1395	100	100 00
Brumagin, J H.	1396	100	100 00
Brumagin, J H.	1397	100	100 00
Brumagin, J H.	1398	100	100 00
Brumagin, J H.	1399	100	100 00
Bogert, Jas C.	1683	100	100 00
Bogert, Jas C.	1684	100	100 00
Bogert, Jas C.	1685	100	100 00
Brumagin, J H.	1189	100	100 00
Brumagin, Fred P.	1191	100	100 00
Brumagin, Fred P.	1195	100	100 00
Brumagin, Fred P.	1270	100	100 00
Brumagin, Fred P.	1274	100	100 00
Brumagin, Fred P.	1280	100	100 00
Brumagin, Fred P.	1301	100	100 00
Brumagin, Fred P.	1302	100	100 00
Brumagin, Fred P.	1305	100	100 00
Brumagin, Fred P.	1307	100	100 00
Brumagin, Fred P.	1309	100	100 00
Brumagin, Fred P.	1311	100	100 00
Browne, George.	1697	100	100 00
Browne, George.	1608	100	100 00
Browne, George.	1320	100	100 00
Browne, George.	A 57	60	60 00
Birmingham, D Walton.	1432	100	100 00
Birmingham, D Walton.	1433	60	50 00
Birmiughan, D Walton.	1435	100	100 00
Birmingham, D Walton.	1436	100	100 00
Birmingham, D Walton.	1437	100	100 00
Birmingham, D Walton.	1439	100	100 00
Birmingham, D Walton.	1441	100	100 00
Birmingham, D Walton.	1480	100	100 00
Birmingham, D Walton.	1480	100	100 00
Birmingham, D Walton.	1437	100	100 00
Birmiughan, D Walton.	A 47	50	50 00
Birmingham, D Walton.	1762	100	100 00
Bernheimer, I & S.	1001	100	100 00
Boody & Co, D A.	A 25	50	50 00
Boody & Co, D A.	1722	100	100 00
Brown, D.	1240	100	100 00
Badger, Geo K.	1723	100	100 00
Colbren, W T.	473	100	100 00
Colbren, W T.	474	100	100 00
Duesenbury, Caroline E.	1219	100	100 00
Duffy, James J.	1816	100	100 00
Dusenbury, E.	A 53	50	50 00
Elston, W A.	1536	100	100 00
Engler, Ad.	1010	100	100 00
Fay, Fredk J.	470	100	100 00
Glendenning, Davis & Amory.	291	100	100 00
Harriott & Noyes.	1102	100	100 00
Harriott & Noyes.	1103	100	100 00
Harriott & Noyes.	1104	100	100 00
Harriott & Noyss.	1251	100	100 00
Hedges, Allen.	1800	100	100 00
Hedges, Allen.	1801	100	100 00
Hedges, Allen.	1804	100	100 00
Hedges, Allen.	1811	100	100 00
Hedges, Allen.	1812	100	100 00
Hyman, Henry.	1613	100	100 00
Hyman, Henry.	1614	100	100 00
Henry, T L.	1673	100	100 00
James, W H H.	1166	100	100 00
Kent, Edward.	1532	100	100 00
Kennedy, Hutchinson & Co.	1640	100	100 00
Kennedy, Hutchinson & Co.	1641	100	100 00
Kennedy, Geo H.	1167	100	100 00
Kennedy, Geo H.	1158	100	100 00
Monroe, E J.	A 49	15	15 00
Monroe, E J.	A 60	50	50 00
Maas, Frederick M.	1627	100	100 00
McEwan, Wm.	A 45	50	60 00
Morris, J C.	A 64	35	35 00
Morris, J C.	A 65	15	15 00
Noice, Edward H.	A 37	10	10 00
Oppenheim Bros.	1642	100	100 00
Oppenheim Bros.	1743	100	100 00
Oppenheim Bros.	1865	100	100 00
Post, Joel B.	1264	100	100 00
Post, Joel B.	1265	100	100 00
Post, W B.	1708	100	100 00
Post, W B.	1711	100	100 00
Post, W B.	A 46	60	50 00
Parker, John W.	1821	100	100 00
Rodwell, C M.	115	100	100 00
Rathhorne, R Wm.	240	100	100 00
Rathborne, R Wm.	314	100	100 00
Seyd, Alexandsr.	1742	100	100 00
Strong, H H.	1823	100	100 00
Townsend, W B.	A 27	50	60 00
Townsend, W B.	1623	100	100 00
Townsend, W B.	1624	100	100 00
Townsend, W B.	A 28	50	50 00
Panderhoof, H B.	1599	100	100 00
Panderhoof, H B.	1600	100	100 00
Panderhoof, H B.	1694	100	100 00
Waldran, Albert.	1067	100	100 00
Williams, B C.	1720	100	100 00
Williams, Samuel F.	1747	100	100 00
Brumagim, J H.	unissued	200	200 00
Weed, Ed H.	unissued	100	100 00
Towar & Learned.	uni-sued	100	100 00
White, Morris & Co.	unissued	100	100 00
Joslyn, Bacb & Co.	unissued	100	100 00

PREFERRED STOCK.

Bogart, James C.	A107	35	35 00
Bogart, James C.	1446	100	100 00
Baldwin, J C.	A 13	16	16 00
Bernhoimer, I & S.	1350	100	100 00
Bernhoimer, I & S.	1351	100	100 00
Bernheimer, I & S.	1352	100	100 00
Bernheimer, I & S.	1353	100	100 00
Bernheimer, I & S.	A 74	37	37 00
Bernheimer, I & S.	A 75	50	50 00
Bernheimer, I & S.	A 70	50	50 00
Brumagim, J H.	1308	100	100 00
Brumagim, J H.	1314	100	100 00
Brumagim, J H.	1315	100	100 00
Brumagim, J H.	1317	100	100 00
Brumagim, Mark.	1305	100	100 00
Brumagim, Fred P.	1184	100	100 00
Brumagim, Fred P.	1185	100	100 00
Brumagim, Fred P.	1270	100	100 00
Browne, George.	A 63	20	20 00
Birmingham, D Walton.	1329	100	100 00
Birmingham, D Walton.	1339	100	100 00
Birmingham, D Walton.	1344	100	100 00
Birmingham, D Walton.	1356	100	100 00
Birmingham, D Walton.	1476	100	100 00
Butterworth, Theron.	1437	100	100 00
Butterworth, Theron.	1438	100	100 00
Cutting & Co, R L Jr.	1376	100	100 00
Cutting & Co, R L Jr.	1382	100	100 00
Davidson, W S.	1307	100	100 00
Doubleday, M.	1457	100	100 00
Egbert, W W.	A 61	47	47 00
Francis, H M, Atty.	A 127	50	50 00
Homana, E C.	1198	100	100 00
Homana, E C.	1212	100	100 00
Hedges, Allen.	A 07	23	23 00
Heugstler, Julius.	A 111	50	50 00
Hengstler, Julius.	A 112	50	50 00
Hollander, F.	A 117	50	50 00
Haight, Henry M.	A 132	50	50 00
Haight, Henry M.	1671	100	100 00
Hafgitt, Henry M.	1672	100	100 00
Haight, Henry M.	1683	100	100 00
Haight, Henry M.	1674	100	100 00
Kennedy, Hutchinson & Co.	278	100	100 00
Ludvigh, E.	1453	100	100 00
Lansing, Edwin B.	1579	100	100 00
Lansing, Edwin B.	A 132	5	5 00
Monroe, E S.	A 133	30	30 00
Monroe, E S.	A 134	5	5 00
Monroe, E S.	A 135	50	50 00
Rathborne, R Wm.	139	100	100 00
Rathhorne, R Wm.	140	100	100 00
Rathborne, R Wm.	197	100	100 00
Rochner, Edward.	1300	100	100 00
Requa, F L.	1321	100	100 00
Requa, F L.	1322	100	100 00
Requa, F L.	1326	100	100 00
Scott, Wm B.	1110	100	100 00
Scott, Wm B.	1491	100	100 00
Weed, Ed H.	1207	100	100 00
Weed, Ed H.	1272	100	100 00
Weil, Henry.	242	100	100 00
Ward, A H.	A 10	2	2 00
Ward, A H.	1240	100	100 00
Ward, A H.	1241	100	100 00
Ward, A H.	1318	100	100 00
Ward, A H.	A 118	50	50 00
Waldron, Albert.	1430	100	100 00
Wills, A J.	1451	100	100 00
Wills, A J.	1452	100	100 00
Faitoute, H C.	unissued	31	31 00
Kellogg, Chas.	unissued	14	14 00
Litchfield, Edwin C.	unissued	405	405 00
Brumagin, J H.	unissued	100	100 00
Underhill, Frederick.	unissued	100	100 00
Rathborne, R Wm.	unissued	200	200 00
Wollberg & Co.	unissued	100	100 00

And in accordance with law and an order of the Board of Directors, made on the tenth day of July, 1878, so many shares of each parcel of such stock as may be necessary will be sold at public auction, at the office of the Company, Room 33, Nevada Block, No. 309 Montgomery Street, San Francisco, California, on Monday, the ninth day of September, 1878, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale. LEANDER LEAVITT, Sec'y.

Office, Room 33, Nevada Block, No. 309 Montgomery Street, San Francisco, Cal.

POSTPONEMENT.—The above sale is postponed until Wednesday, the twenty-fifth day of September, 1878, at the same hour and place.

By order of the Board of Directors.

LEANDER LEAVITT, Sec'y.

Orion Mining Company.—Location of Prin-

cipal place of business, San Francisco, California. Location of works, Iowa Hill, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the fifth day of September, 1878, an assessment (No. 3,) of seventy-five (75) cents per share was levied upon the capital stock of the corporation, payable immediately in U. S. gold coin, to the Secretary, at the office of the Company, 28 Sausome Street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the fifth day of November, A. D., 1878, will be delinquent, and advertised for sale at public auction, and

unless payment is made before, will be sold on Wednesday, the 20th day of November, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors,

P. CONKLIN, Sec'y.

Office, No. 28 Sansome Street (up stairs), San Francisco, Cal.

Pocahontas Gold Mining Company.—Location of Principal Place of Business, San Francisco, California. Location of Works, El Dorado County, Cal

Notice is hereby given, that at a meeting of the Board of Directors, held on the 14th day of August, 1878, an assessment (No. 14) of One Dollar and a Half ($1,50) per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, Room No. 9, 411½ California street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 23rd day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Wednesday, the 23rd day of October, 1878, to pay the delinquent assessment, together with cost of advertising and expenses of sale By order of the Board of Directors

M C SOUTHARD Sec'y.

Office, Room No. 9, 411½ California street, San Francisco, California.

South Comstock Consolidated Silver Mining Company.—Notice.—A meeting of the stockholders of the South Comstock Consolidated Silver Mining Company will be held on Tuesday, the 24th day of September, 1878, at 2 o'clock P. M., at the office of the Company, Room 4, second floor, No. 309 California street, San Francisco, California, to adopt a Code of By-laws for the government of said corporation and its officers.

J. M. BUFFINGTON, Sec'y.

San Francisco, September 0th, 1878.

Summit Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the tenth day of September, A. D., 1878, an assessment, (No. 5,) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of said Company, 318 Pine street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the twenty-second day of October, A. D., 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before will be sold on the nineteenth day of November, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK, Sec'y.

Office, Room 6, No. 318 Pine Street San Francisco, Cal.

Vigorit Powder Company.—Location of principal place of business, City and County of San Francisco, California. Location of works, California City, Marin County, State of California.

Notice.—There are delinquent upon the following described stock, on account of assessment (No. 1) levied on the first day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. of Cert.	No. Shares	Amount
Louis McLane, Trustee	30	437½	$218 75
Louis McLane, Trustee	32	½ of 875	218 75
O W Grayson, Trustee	62	1312½	656 25
H H Shinn, Trustee	01	400	200 00
H H Shinn, Trustee	02	400	200 00
H H Shinn, Trustee	03	400	200 00
H H Shinn, Trustee	04	112½	56 25

And in accordance with law, and an order of the Board of Directors, made on the First day of August, 1878, so many shares of each parcel of stock as may be necessary will be sold at public auction, at the office of the Company, Room No. 1, 109 California street, on Wednesday, the second day of October, 1878, at the hour of 2 o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale. JAS. W. BAKER, Sec'y.

Office, No. 109 California street, Room 1, San Francisco, California.

Printing Type For Sale Very Low.

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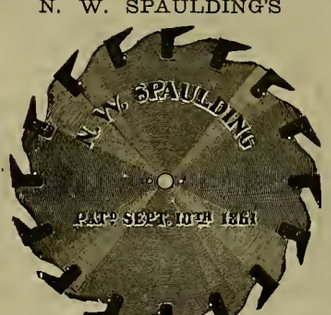

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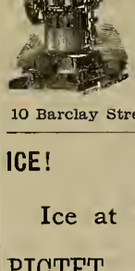

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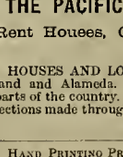

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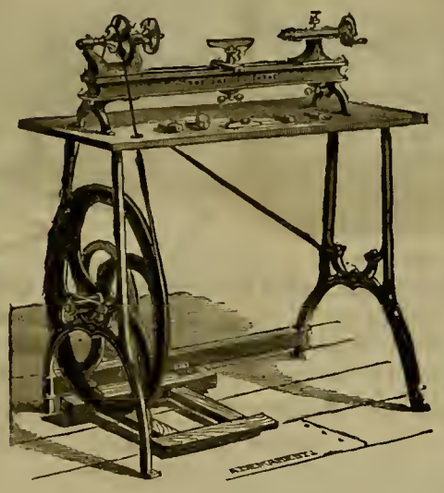

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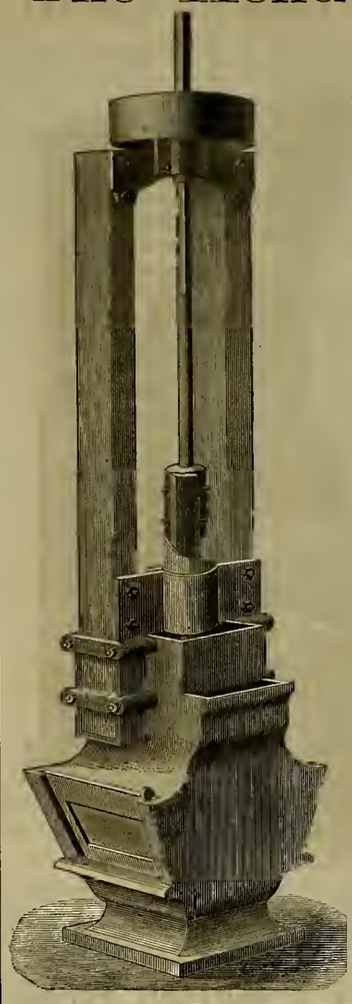
STEPHEN KENDALL, Patentee.



This Battery embraces the only genuine improvement that has ever been made in the process of reducing ores. The frame is all secured to the mortar, so that no extra framework is required. The stamp is rotated by a horizontal pulley on the top of the frame, and raised by the cam which is set horizontally on the girt timber. The upper end of the stem is made square, and works up through the pulley. When the stamp falls it crushes and grinds the ore fine by the continual rotary motion. The mortar has three discharge openings, and is adapted to either wet or dry crushing. A mill with an 800-pound stamp will crush five tons of average ore per day, shipping weight, 4,000 lbs., and requires about five horse-power. A 1,600 lb. stamp mill is in process of construction, which will give a capacity equal to any five-stamp mill. Several of them are now in successful operation in various parts of the country. For PROSPECTING PURPOSES this mill has no equal, as it can be set up and moved with such facility and operated at so small an expense. Address for further information,

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Elephant Ore Stamp.

We beg to call your attention to this engraving representing the Elephant Ore Stamp. The advantages claimed for this Stamp are as follows:

CAPABILITIES.—The "Elephant" is capable of crushing as much stuff as a 12-Stamp Battery of the present system, having crushed as high as 1¼ tons of tough copper ore in one hour, through a No. 4 punched screen. The undersigned, however, will guarantee 20 tons per day of ordinary quartz through the same size screen.

WEAR.—The "Elephant" having only two pairs, Shoe and Dies, the wear in this instance is equal to one-sixth of a 12 Stamp Battery. There being no Cam Tappets, Cam Shafts or Guides, the consequent wear on these parts is done away with; the leather thorough-

brace, uniting the lever with the spring, would only require replacing at most, once a year.

POWER.—The "Elephant" only requires a seven horse-power engine to drive it where a 12-Stamp Battery would require from 18 to 20 horse-power.

PORTABILITY.—The entire Battery, including Mortar, will weigh about six tons, thereby causing an immense saving in the way of freight to such places as Arizona, Mexico, Cariboo and Bodie. As no part of the machine weighs more than 1,800 lbs., the handling of the machine is comparatively easy, and in places where it would be necessary to pack the machine on mules, it could be easily made in pieces not to weigh over three hundred pounds.

The above engraving shows the Machine in exactly the position it would be placed in a mine; the reader will therefore see that all wood work is done away with, and that once the Machine is on the ground it will take but a few days to set it up and have it in full working order.

The "Elephant" can be seen working every day from 2 to 4 P. M. at No. 342 Main St, near Harrison, San Francisco. For particulars, apply to

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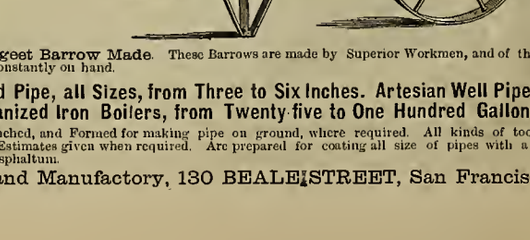

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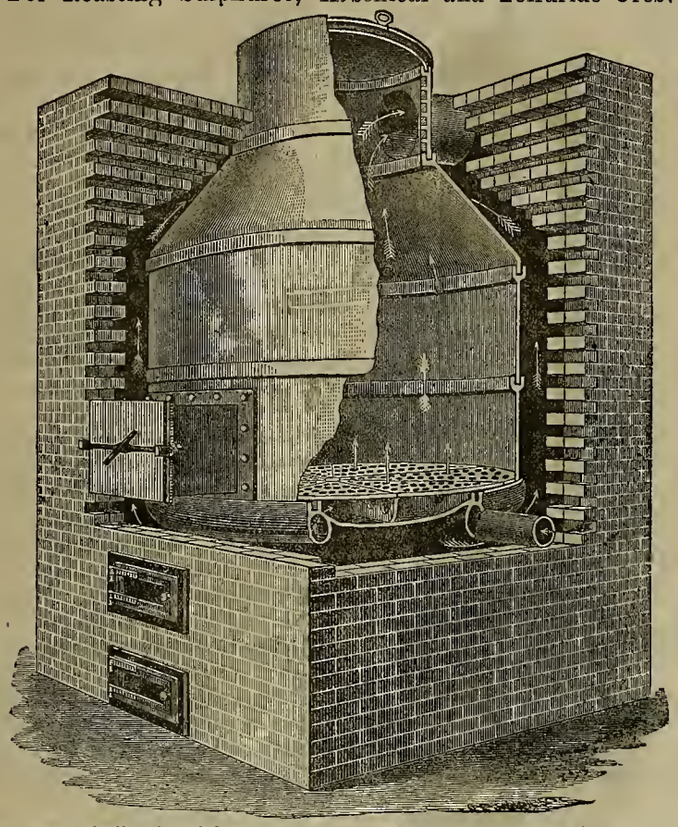
Z. A. WILLARD'S AUTOMATIC FURNACE

For Roasting Sulphuret, Arsenical and Telluride Ores.



The attention of scientific and practical men is called to Z. A. Willard's new method of treating sulphuret ores.

This process has been tried and tested on a large scale in Boston and in Colorado on every variety of ore, including sulphurets of iron, copper, lead and antimony, and arseuical and telluride ores of high and low grade, and in all cases with the most complete success.

The advantages claimed for the Furnace are: Perfect adaptation to the process. Simplicity and ease of construction. Cheapness—caused by shortness of time required in roasting, small amount of fuel needed, dispensing with skilled labor, and by the low cost and durability of the furnaces. Durability—the low heat used not injuring either iron or brick work. Economy of fuel—the amount used not exceeding one cord of wood to ten tons of ore. Economy of labor—no skilled labor, and very little labor of any kind, its automatic action only requiring one man to six furnaces. Perfect nature of roast—by which all the sulphur is burned away, the base metals oxidized and the precious metals set free. Ability, by reason of the perfect nature of the roast, to use chlorination (Plattner's method) for saving the gold in strictly gold ores. No loss by dust or volatilization.

The cheapness and simplicity of this process renders it of vast importance in solving the question of the profitable reduction of low grade refractory ores.

Z. A. WILLARD, Patentee,

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Persons interested in mines of rebellious ore, or having on hand any ore that is not satisfactorily worked, yielding less than it assays, will do well to notice the following offer. The undersigned is in possession of a new secret process which he is willing to try on any ores sent to him. If a pound or more of ore is forwarded to his address, he will test it with his process, and acquaiut the owner with the results and the cost per ton for working. Address,

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Publishers.

SAN FRANCISCO, SATURDAY, SEPTEMBER 28, 1878.

VOLUME XXXVII Number 13.

New Apparatus for Mounting Theodolites in Mines.

The use of the tripod for mounting the theodolite in mines is connected in many cases with difficulties, and is, therefore, unpractical. In the mines of Virginia City, where work must be done in hot and badly ventilated places, and where it becomes necessary to rub the body frequently with ice to prevent fainting, it is difficult to do scientific work. To facilitate such work, Ernst Koch, Surveyor and Assayer of the Sutro Tunnel Company, has constructed the following apparatus (see Fig. 1 and Fig. 2) for mounting the theodolite more easily and more quickly than by the use of the tripod:

The apparatus and the theodolite are fastened by a wooden screw, *i*, Fig. 1, to the roof of the tunnel or level, either to the timber or to a small wooden block in the rock. The theodolite is moved by screws *d* and *c* horizontally, and by screws *h* and *k* vertically, under the plumb, *b*, suspended from the center, *c*. The theodolite is slid and turned near to the center by the hand on *e*, which is round, and is then fastened by screws *a* and *d*; by turning screw *d* the theodolite is moved close under the center, *c*. The rod, *e*, is fastened to the slide box, *f*, at the axis, *g*. The slide box is moved up and down by screw *h* to bring the theodolite close under the plumb. The screw *k* serves to bring *e* and the theodolite at right angles to the plumb, *b*. In inclines and shafts the theodolite is fastened to one side of the shaft by screw *i*, Fig. 2, which is connected at right angles with *h*. The rest is the same as described above. The observations are not disturbed by cars passing underneath. In case the cars are too high, the screw *l* is moved 180°, and after they have passed, is moved back again, causing no delay, while the use of the tripod necessitates the stopping of cars and of work. The above described apparatus will prove time-saving and accurate.

The Little Wonder.

This is the name given by J. S. Phillips to a new invention of his lately exhibited at the Mechanics' fair in this city. It is a self-calculating sample and button weigher, for prospectors who can use the blow-pipe. It is devised so as to combine extreme lightness and delicacy of weighing with portability and self-calculation. It weighs less than one-fourth of a pound, the pointer turns a half inch with a hundredth of a grain in the pan. One who cannot even read figures may value the percentage of base metals, the thousandths fine of bullion, and dollars per ton of both gold and silver rock. It has two beams for weighing the sample and the resultant button, with a full set of suitable weights. The whole packs in a spectacle case. The prospector in his trip may find a richer, but never a more concentrated bonanza than this little pocket companion.

GOOD PROOF OF MINERAL LAND.—One of the most coveted exhibits at the recent State fair was "small but hefty." We allude to $1,000 worth of nature's gold specimens, varying in value from $2 to $70 each, from the mine of A. J. Blakely, on the Jack Johnson ranch, near Placerville, El Dorado county. The specimens about filled a good sized tea saucer. Four thousand dollars was the result of 30 days' hydraulicing. A yield of $12,000 has been taken from the mine at an expense of $1,500. Mr. Blakely had some difficulty in proving to our Government officials that this land was more valuable for gold than agriculture, but persevering he triumphed, as above indicated, in proving his claim to be substantial. We understand he is succeeding well in making some good farming land after it has been worked for minerals.

AT Forest Grove, on the line of the Oregon and California railroad, fire destroyed 50,000 bushels, September 13th.

Wanted—More Capital.

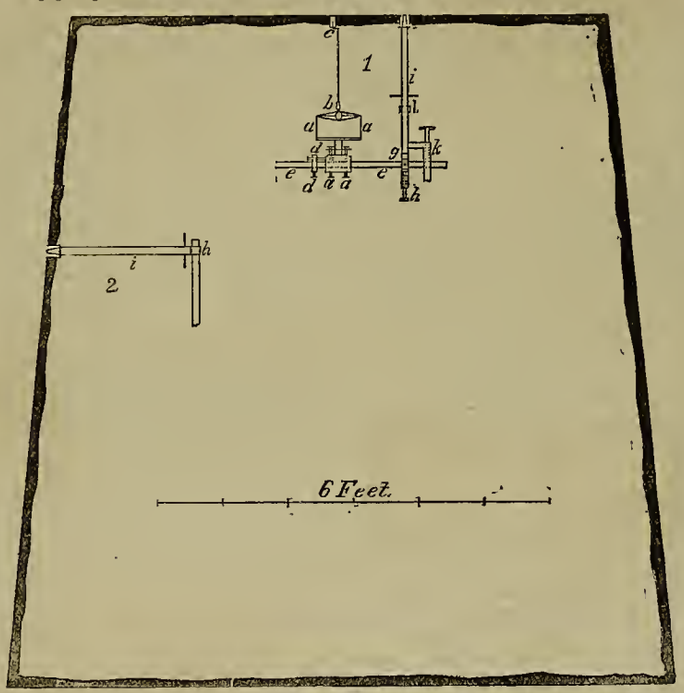
When the first "mining correspondent" wrote his first account of a visit to a mine, there was invented the expression, "We have no doubt that in a very short time, developments will be made here that must gain for this mine a reputation rivaling that of the ancient Ophir." That is the formula for a mine in progress. If the mine is an abandoned prospect hole, the prescription is altered and the correspondent writes, "All that this region wants is more capital. Cannot you turn the attention of capitalists in this direction?" These inventions have proved of such convenience that they remain in general use even unto this day. Each newspaper, wherever published, sounds high the praise of its own region and ascribes dull times to want of capital.

When papers published on our coast declare the mineral richness of their particular districts, we believe that they do not exaggerate. When experienced and judicious men write in glowing terms of the undeveloped placer resources of southwestern, as well as southeastern Oregon; when Idaho papers say that 100 men might well find employment in Idaho diggings, where now but few are at work; when sober accounts come of what might be done in, as yet, hardly prospected parts of Nevada and Arizona and the south of California, considering their general tone and remembering what has been already accomplished in most unpromising regions, we feel inclined to believe them and to think that men are very foolish to concentrate their energies so fully on but two districts, the Comstock and Bodie. But when all the undevelopment is laid at the door of capital, an objection may be justly raised. Capital is generally very quick-witted and alive to any chance for profit. And if capital does not find its way to any worthy mining locality, it is because the miners themselves are not energetic enough; in first, making unmistakable developments, in other words, getting something to show, and in next making known what they have found.

A visitor to the Silverado mines, in Los Angeles county, in writing to the Anaheim *Gazette*, touches the point exactly. He says: "The great want of the district is a mill, and unless one is speedily erected there will be an exodus of miners. On the other hand, the capitalist could hardly be expected to invest his money in a mill until the mines are better developed, and the sooner the Silveradoans recognize this fact the better it will be for them. There are probably a hundred locators who, having made a few feet of hole, just sufficient to show a vein of silver ore, are now sitting down, awaiting the building of a mill before they take any ore out. These people should remember that before capitalists can be induced to invest in a mill they must be fully satisfied that there is sufficient ore to keep it at work."

Reclaiming Shifting Sands.

In this State, as in many other parts of the world, it would be of great value to chain down the drifting sands on the sea coast by the introduction of effective vegetation. The encroachment of these barren areas grows apace upon the valuable coast soils. In the Golden Gate park in this city a good measure of success has been attained with lupine. We notice that our Australian exchanges are discussing the question and report some successes with plants which we believe have not been tried in this State. In places where it is found impossible to exclude cattle, they say that the robust kinds of perennial *mesembryanthemum* will be found very efficacious in restraining sand. The plants delight in the vicinage of the ocean; they will grow either on loose sand or on the bare subsoil left after the passage of the sands; in the one case they fix the sands, and in the other they not only cover the bare and unsightly earth, but gradually, by the arresting of particles of sand and by the decay of their leaves and stems, form a new and rich vegetable mold. In the shelter of their trailing stems the winged seeds of *Pomaberis ericifolia* find a lodgment and an aid to germination, as also to the seeds of clover, and especially of prairie grass. An exceedingly valuable grass for the reclamation of sands unprotected from cattle is *Elmus arenarius* or Sea Lyme grass—a very hardy littoral grass, which grows extensively on the coast of Sussex, in England. It has been tried in Taranaki, and is looked upon as a very valuable grass for reclamation purposes. It is not eaten by sheep, horned cattle, or horses; it will grow in the bleakest spots and within reach of the sea-spray; it forms great tufts of herbage from four to five feet high, and by its matted roots arrests the sands. Although it seeds pretty freely it does not readily propagate fresh plants on very bleak hills, on account of the seeds finding no lodgement, but being driven clean away by the winds. The evil is remedied when the plants have become sufficiently plentiful to form a shelter. At first it is necessary, therefore, to raise plants from seeds in a nursery and to plant them out on the hills when they have attained sufficient maturity, or, as the mature plants will bear division, to plant out stolons in rows, in damp weather.



KOCH'S THEODOLITE MOUNTER—SECTION OF SUTRO TUNNEL.

The Mines and the Courts.

Judgment was rendered, September 19th, by Judge Daingerfield in favor of J. H. Moriey and against the Cleveland and Sierra Hydraulic mining company for $10,000 on a promissory note.

J. H. Gilman recovered judgment in the Twelfth District Court against the Almaden Consolidated quicksilver mining company for $585, for services rendered.

In the Nineteenth District Court, September 20th, in the case of George H. Faulkner, who asked for judgment against the McCracken mining company for $6,400, alleged to be due him for 1,619 shares of stock owned by him, but which were not delivered, the motion was denied.

In the suit of Lucy A. Fisher vs. the Ophir silver mining company, the demurrer has been overruled. This was an action to recover $1,000 damages, alleged to have been sustained by the plaintiff by the refusal of the defendant to transfer 20 shares of stock and mutilating the shares. Judge Wheeler failed to perceive how there could be any loss by the mutilation of shares of mining stock. He had heard of mutilated expectations on the part of people who dabble in stocks, but he could not discover that the plaintiff had suffered any. However, he would, in the meantime, overrule the demurrer.

W. T. Burns, H. B. Luther, J. H. Job, C. A. Kyle and A. D. Williams have, by their attorneys, S. S. Grass and M. S. Bonnifield, brought suit against William A. Rodefer, Daniel Muffley, S. B. Palmer, L. H. Morse, A. L. Washburn, Ferd. Bauman and O. P. Crawford to recover possession of a certain mining claim in Mount Rose district, called by plaintiffs the Mutual and by defendants the Grand Bullion mine, and for damages. The property, which consists of 1,500 feet of mining ground, is represented as being the most valuable in the Paradise mines.

In the Twelfth District Court, James Neall has brought suit against the Union Con. silver mining company to recover $25,000 on 250 shares of the capital stock of the company, which he cannot get hold of, as he complains that the defendants refuse to issue the same to him.

BULLION SHIPMENTS.—Hillside, Sept. 19th, $5,500; Northern Belle, 16th, $4,045.17; 18th, $4,046.41; 21st, $4,324.59; Standard, 16th, $18,947.56; Bodie, Sept. 16th, $14,000; Sept. 21st, $13,400; total to date, $152,218; 23d, $14,000; Leopard, Sept. 18th, $8,816.64; Hussey, Sept. 18th, $7,393.31; Con. Virginia, Sept. 21st, $54,049.41; total to date, $106,254.35; California, Sept. 21st, $68,523.84; total to date, $148,814.91; Tybo Con., Sept. 16th, $8,140.49; Hackberry, Sept. 23d, $13,000; Independence, Sept. 23d, $11,000; Indian Queen, Sept. 16th, $4,221.98; Black Jack, Sept. 23d, $6,102.19; Christy, Sept. 25th, $5,363; Manhattan, Sept. 24th, $11,600; McCracken Con., Sept. 23d, $8,600.66.

IT is reported that river-bed gold diggings, panning $20 per day to one man, have been discovered about 30 miles from Snohomish, Oregon.

DURING the week ending September 20th, 25,380 pounds of quicksilver and 62,259 pounds of sulphur have been shipped from Calistoga to San Francisco.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—EDS.

Virginia City.

EDITORS PRESS:—There is no place on the Pacific coast, or perhaps in the world, where can be found in greater abundance or more varied, material out of which to compile a letter to a mining journal than Virginia City; but there are so many reporters and correspondents always on the alert for news, that every strike, every little alteration, or even the slightest change in the mines, is seized upon and ventilated in the daily papers, and almost forgotten long before a letter in the ordinary course could be published. Hence the difficulty of writing anything to interest the general reader. There is, however, no place in the world of the population of Virginia City possessing as many interesting and peculiar characteristics. It has all the features of a great metropolis, hotels, stores, places of amusement, churches, clubs, banks, four or five daily journals, foundries and machine shops, a railroad with 32 arrivals and departures daily, water works superior to that of any other city in the world, furnishing an abundant supply of pure, soft water, direct from the springs and snow-fed streams of the Sierras; an active an efficient paid fire department, which, with the abundant supply of water always assured, gives to the citizens a feeling of security against any more such destructive fires as have heretofore devastated the city and temporarily crippled the energies of this most wonderfully recuperative people. All this is the outgrowth of less than 20 years, and that, too, notwithstanding its location on the steep side of a bleak mountain, where all is barrenness and desolation. It is a "city set on a hill," or rather on the side of a mountain, being situated on the eastern slope of Mount Davidson. The population is about 25,000 in Virginia City proper, and, as written by a prominent journalist of Gold Hill, "it contains more millionaires than absolute beggars, and still it is an exotic, sustained and enriched solely by its mines. Its every luxury, and it has as many as any other city, is brought from abroad, for nothing is indigenous on the Comstock save silver and gold."

The Stock Market

Is to-day the great excitement. Stock gambling, the prevailing mania, in which all are engaged. Everybody is getting rich, not by the old process of the daily aggregation of small sums by constant application to business and economy, but by wild speculation. C street is crowded from early morn until late at night by great crowds of anxious dealers, peering into the windows of the stock brokers to catch sight of the first appearance of every bulletin from the stock boards in San Francisco. The city is full of strangers from the East and the West, who have come here to take a look into the mines and invest their surplus cash. Hundreds of old Comstockers are daily returning to their old love to share in the rich spoils of the new discoveries; and, altogether, the hotels, and the saloons, and the streets, again present all the hustle, animation and excitement which so distinguished the city during the memorable birth of the bonanzas three years ago. The feeling is that another bonanza has been developed in the Sierra Nevada, which extends into the Union Con. and the Mexican, the Ophir and the North Con. Virginia, the Utah and perhaps the Scorpion, and that even little Wells-Fargo is not without hope; and that another fine crop of dividends can be seented in the near future, which will revive business of all kinds, furnish work in abundance to the laborer, and maintain the present remunerative wages; that other stocks from sympathy if not from merit, will most surely advance in price, and, in short, that the flush times of other years are about to be repeated.

The Mines

Do certainly give strong indications of great improvement. The Sierra Nevada has no doubt developed a bonanza equal if not superior to the celebrated Con. Virginia and California mines, which in the aggregate have produced over $200,000,000. The mines in the immediate vicinity, it is supposed, will all he profited by the "find," as they now know just where to look for the ore body.

The bonanza mines are preparing to resume dividends. The shaft of the Con. Virginia will soon he repaired.

The Gould & Curry and Best & Belcher folks are preparing to sink a joint shaft some 2000 feet east of the present hoisting works of the Gould & Curry.

The combination shaft of the Savage, Hale & Norcross and Chollar is down 2,300 feet. The original contract is for 3,000 feet, which from present indications will be accomplished without difficulty. They have encountered no water yet to seriously retard their work, and no pump has yet been used. The water so far has been hoisted by bailing buckets and the "skeets." The "skeets," the invention of I. L. Requa, Superintendent, is a self-dumping iron tank, made of boiler iron, water tight and of the capacity of five tons of rock. In this tank is brought to the surface a large portion of the water encountered. The pumping machinery is all on the ground and will soon be put in place. It will be the most powerful pumping machinery on the lode. There will be double pumps with two lines of 15-inch pump columns. Four of the huge balance bobs are already in, and four more are completed and ready to be lowered as soon as the stations are cut out. The great bob at the surface is already in place. Four new boilers are being set and will soon be ready for use. This shaft has been sunk so far by hand. They have used no Burleigh drill or other power drill, which for a work of such magnitude and which has been prosecuted so rapidly and successfully, displays great ability in the management.

The Pioneers

Of this city celebrated Admission day on the 9th inst. in a style characteristic of this peculiar community. It reminded one of an immense family enjoying a harmless jollification, or a great Christmas dinner. Everybody seemed to know everybody, formality and stiffness dispensed with, and every one having a good time. This immense gathering of the clans was presided over by Col. Bob. Taylor, assisted by Bob. Lowery and Bob. Lindsay, a triumvirate of witty and eccentric geniuses, and denominated by the citizens the "three Bobs." There was no programme of exercises, but the senior Bob. drew upon the audience for talent. Whenever a gentleman or lady was called, if he or she did not immediately respond, a sergeant-at-arms was sent for the delinquent. Among the speakers was Col. Taylor, Mr. Loomis of the Gold Hill *News*, Judge Aude and Calhoun Benham. The other exercises were music, vocal and instrumental, and recitations, which were very creditable, the exercises winding up by a grand jubilee chorus, under the leadership of that hardened old sinner, Bill Gibson, of Gold Hill. After the exercises were concluded a sumptuous repast was spread, consisting of everything good, including immense paus of pork and beans, done in '49 style. All were invited. The pioneers, with their characteristic liberality and improvidence, had furnished "grub" for thousands, with wine and beer enough to float a ship. After supper the hall was cleared and the juniors continued the entertainment, enjoying the light fantastic until morning, the "old boys" retiring in good order.

Sharp Practice.

B. F. Sturtevant, manufacturer and patentee of steel pressure blowers, Boston, Mass., published two catalogues of prices, bearing even date, January 1st, 1878. In one catalogue the price was more than 100% greater than in the other. The Superintendent of a prominent mine in Gold Hill ordered one of the blowers, No. 5, marked in the catalogue, which he had received from the manufacturer, with counter shaft, at $70. In due time the blower came to hand with bill and another catalogue, price of blower $130, and counter shaft $45, making $175 for what the Superintendent supposed he was buying for $70. What can be the object of the manufacturer in publishing two catalogues of prices for the same goods, unless somebody is to be swindled? Perhaps the manufacturer or his agent in San Francisco can explain.

W. G. A.

Virginia City, Sept. 12th, 1878.

The Stonewall Jackson Mine.

An Account of the McMillan Co.'s Property in Globe District, Arizona.

EDITORS PRESS: I was recently afforded an opportunity of going through the underground works of the above-named mining property, and will try to give in part a plain description of the new bonanza. I say in part, for it is scarcely possible for a person who goes into a particular mine for the first time to ascertain with perfect accuracy what is ore and what is waste. He must judge to some extent of the reliability of those who show him through the works, and in addition to an intelligent use of his eyes, he must not be backward in asking questions. If, at his leisure, he is able, by a sifting and reasoning process, to form a tolerably accurate estimate of the future of a mine by what he sees when it is only slightly developed, he will be able to do so in some measure from experience acquired in other mines, aided, perhaps, in a slight degree, by a kind of mining instinct, which it is not well always to disregard.

Until a few months back the so-called Stonewall Jackson mine consisted of a spar-vein ore "feeder," yielding slabs of almost pure native silver, from one and one-half to two inches in thickness, accompanied at times with several inches more of high grade spar or chloride ore. These slabs generally adhered tightly to the country rock, which was a compact, greenish syenite. Except for the ready money it gave to the owners by the sale or reduction of its singularly pure metal, the highest grade of which yielded from $8,000 to $14,000 per ton, there was nothing in this spar itself that justified great mining developments or financial expectations. As a harbinger or indicator of a coming mine of vast wealth near at hand, the practical miner looked upon it at the depth of from 80 to 100 feet, with a strange, fascinating interest. Like the blossom-bearing twig of a submerged tree, it not only told something of the species of the parent stem, but of the vigor it possessed at its invisible root.

The spar, it had been noticed, from the time of its discovery, branched out obliquely from a very large lode of yellow spar, which assayed only a few dollars to the ton. In following the metal downward upon the small vein, an incline had been opened 125 feet deep on the southwesterly or foot-wall side of the mother lode. After Mr. G. N. Freeman became Superintendent, a main shaft was started on the northwesterly side of the large vein near the summit of the hill and opposite a point about 100 feet further to the northeast than the spur incline. As this shaft was carried down it penetrated the lode, pitching toward it, and at the depth of 130 feet a crosscut of 14 feet exposed the footwall. At the same time a tunnel, or cross drift, was run toward the main lode from the spar incline and reached the foot-wall after passing through 37 feet of hard syenite. At both points the foot-wall was found smooth and solid with an inclination to the northwest of about 70°. To secure good ventilation a level was opened along the foot-wall, and now for 150 feet it is exposed and shows, for the entire distance, a selvage of clay, occasionally carrying rich ore, varying from 15 to 30 inches in thickness. Opposite the spar vein incline the crosscut has been extended into the lode for 50 feet without coming to the hanging wall.

As to the grade of the ore and its extent, a few statements will suffice. For three feet next the foot-wall there are places extending for six or eight feet at a time along it, where, without any special assortment, the ore will average $3,000 per ton. Farther into the ledge, for a distance of from 9 to 11 feet, the ore is of good quality, though not equal to that found for the first three feet. Imbedded in this as well as in lower grade ores at other points, there are bucketfuls or hunches of black sulphurets found which assay from $10,000 to $14,000 per ton. Still farther into the great vein the ore is poorer, and though the mass will not pay as it comes, it contains considerable good ore, which can be assorted out with advantage. What little ore is being extracted in opening the mine is divided into three classes, the first yielding from $3,000 to $14,000 per ton; the second from $200 to $1,000; and the third from $50 to $200. Of the last it may be said that, as nearly as can be estimated by a single visit and by the statements of reliable parties, there is a very large supply at command.

Below the level I am referring to, a winze has been carried down 40 feet on the clay, following the footwall. The vein continues quite regular and for 25 feet down has rich ore. Below that point, in getting near to the water line, the ore is of low grade. What the mine will be at the depth of 500 feet it is hard to estimate, but judging from present indications, it will far surpass, at least in the grade of its ore, either the Consolidated Virginia or California mines. One little chamber pointed out to me, measuring about 18 feet long by nine feet wide and 12 feet high, yielded sufficient ore to produce $50,000 in coin, and there seems to be a good deal more of the same kind still in sight. The ore is very deceptive when looked at in a cursory way. On the dump near the whim shaft there is a pile of reddish, rather clayey looking stuff, which a stranger would think contained very little; but when a piece is broken and every seam displays a thin plate of almost pure silver, the opinion formed at first undergoes a speedy change. That dirty-looking ore, according to the reliable statement of Mr. J. L. Clark, the Assistant Superintendent, has an average value of $3,000 per ton, and he showed me good-sized pieces that I know would assay twice that figure.

I learn that a muddled mining critic in San Francisco has tried to gain for himself a temporary notoriety by saying that the large Stonewall lode was only a "mud vein." If I am correctly informed, he is the same erratic genius who made the ridiculous assertion that the Silver King mine, in Pioneer district, was an egg-shaped deposit, found in a sandstone formation, which would furnish excellent material for grindstone disks. He was right, however, for once in his checkered life, when he spoke of the McMillan company's great mine as a "mud vein." A larger proportion of it than of any ledge he ever saw will go into amalgamating pans in the form of mud, and it will be found then to have a remarkable affinity for quicksilver, preparatory to its becoming the very kind of "mud" which margin brokers delight to handle. If the allusion was to the spar, which at the surface is the gauge of the lode, it is only necessary to say that some of the best mines of the country have spar ore bodies. But the Stonewall Jackson spar is changing as depth is attained and below the water-line is likely to be all quartz. The ore extracted from the Hannibal mine, on the same lode, is in quartz rock and of a soft, fine grain, very like Comstock quartz at that.

The mine is evidently well managed by practical mining men. Mr. Freeman does not pretend to be a miner himself, but his Assistant Superintendent, Mr. Clark, has had experience in mining works, and under him is a good, square foreman, Mr. Dodge, who will carry out the Superintendent's wishes effectively. At the close of last year a stranger could not go near the mine without subjecting himself to almost certain insult, even if he offered no provocation whatever. Everything is changed now. From the blacksmith, if no other person is around, up to the Superintendent, visitors will at least receive courteous attention, even if their wishes as to getting access to the mine may not in all cases be complied with.

JOHN DARE EMERSLEY.

Globe District, Arizona, Sept. 5th, 1878.

The Leviathan Mine.

W. writes us from Gold Hill the following interesting account of this mine. Particular attention is called to the new inventions mentioned in the latter part of the article.

By invitation from the management, we, in company with several gentlemen, paid a visit to the above-mentioned mine, and by the courtesy of the gentlemanly superintendent and his assistants, were enabled to make a thorough examination of its underground workings.

This mine is situated in Gold Hill mining district, Storey county, Nevada, and was located in 1862 by A. Fleming and others, upon a fine body of croppings east of the Crown Point and Belcher, and distant therefrom about 1,000 feet. The mine contains 2,000 lineal feet and 300 feet in width. The working shaft is located on the west side of Main street in Gold Hill, and near the center of the claim. The mine is incorporated in San Francisco, N. Atkinson, President; F. E. Luty, Secretary; John McMahon, Superintendent. Office, 507 Montgomery street. The opening and developing the mine was commenced by the present management about three years ago. The main hoisting shaft has attained a depth of 600 feet, and from that point an incline was started east to intersect the ledge, which had been cut through by the shaft at the 400-foot level. The ledge has been reached at a distance 400 feet east of the shaft, and at a greater depth of about 150 feet. Drifts are now being run north and south from the bottom of the incline, following the west wall of the ledge. In the north drift the rock is easily scaled off the black dyke, or the west wall of the ledge, leaving it exposed the whole hight of the drift. Stringers of quartz are coming in from the east, which show splendidly and assay well. The Superintendent and the experts who have examined the mine, feel confident of encountering a fine body of ore a few feet further north. About one and one-half years ago, in a drift on the 600-foot level, about 60 feet north of the face of the present drift, was found a very promising body of ore. It is for this body of ore the north drift is being run, and from present indications the ore body will be reached much short of where found on the 600-foot level. The south drift is in the footwall of the ledge, and on the west side shows a large body of vein matter. Crosscutting will soon be commenced on both the north and south drifts, when it is confidently believed that the Leviathan will make a showing that will gladden the hearts of her owners.

The management of this mine has been upon a very economical basis. The machinery is good and of sufficient capacity to sink 400 or 500 feet deeper. The assessments have been light, and it is hoped and believed by the management that in the future they will be still lighter.

Before closing this article, I will mention a device invented by the Superintendent, John McMahon, for hoisting the car up the incline to the bottom of the vertical shaft by the power at the surface. It consists of two pulleys at the bottom of the shaft, one stationary, and the other so constructed upon arms and hinges as to hang in a niche in the side of the shaft and out of the way of the cage. The rope attached to the car in the incline passes over the stationary pulley and under the swinging pulley, which, when brought into use, swings into the center of the shaft, keeping the rope vertical in the shaft until the car is landed at the station, where it is run on the cage and hoisted to the surface. The whole business is managed by one man at the station, who attaches and detaches the rope and runs the car on the cage.

By this little device the company is saved about $1,000 per month. It does away with the necessity of an air compressor, three additional engineers, three or four additional laborers, saves 60% in fuel, besides the original cost of the machinery necessary to do the same work in the old-fashioned way. It is estimated that the saving for the first year will be about $20,000 to the stockholders, no inconsiderable item in itself. The same gentleman has invented a safety cage, which is now in use in this mine, and is also worthy the notice of mining men.

SOLAR STEAM POWER.—W. Adams of Bombay, India, has been mentioned as boiling water by the heat of the sun. He has lately tried further experiments, as follows: In the presence of several gentlemen of Bombay, nine gallons of water were poured into a small boiler at 9:25 A. M. The rays of the sun were then directed on the boiler, and the water boiled in exactly thirty minutes. After boiling one hour, the focus was turned off, when it was found that three and three-quarter gallons had been evaporated. In the experiment described above, he used 198 glass mirrors, each fifteen inches by nine and one-half.

DISCOVERY OF A NEW BRITISH MINERAL.—Mr. C. E. Manby, an English analytical chemist, has discovered a new mineral in the mineral clay of Furness. From a paper on the subject read before the Barrow Naturalist Field Club, he says he names the new mineral vermicellite, owing to its similarity in many respects to the vermicellite of Pennsylvania, belonging to the mica group. The distinction between the two metals appears to be a great increase of ferric oxide in vermicellite, a decrease of alumina, silica, and water, with the addition of new compounds, titanic and phosphoric acids, lime and soda.

MECHANICAL PROGRESS.

A Scale of Constant Equilibrium.

We read in an exchange, the *Manufacturer and Builder*, an account of a scale which, for extreme nicety, seems without a parallel. It is so sensitive that it notes and records the growth of a plant and the waste of nerve tissues on the living subject. It has been constructed by A. Redier, of Paris. It is a platform scale in constant equilibrium. On a stand next to the platform are placed the registering cylinder, the clock-work, which rotates slowly, and the double wheel-work, which determine the state of constant equilibrium. The principle by which the equilibrium is restered, as soon as it has been disturbed by some cause or other, is this: If we place on an ordinary balance a glass full of water, counter-balanced by a weight, and if we dip into that glass a mass, whatever it may be, hanging from a thread, the equilibrium will be destroyed; in proportion as the plunger penetrates more or less into the liquid, it will more or less disturb the equilibrium. It is such a plunger which Mr. Herve Mangon has made use of to establish the state of constant equilibrium on the platform scale in question.

Under the little platform of the instrument is a cylindrical vass, three-fourths filled with water; a cylindrical plunger, of which the supporting thread is rolled over a pulley, is lowered or hoisted by the wheels of the pulley as soon as the large platform experiences any augmentation or diminution of weight. The equilibrium restores itself immediately, and the motions of the pulley are transmitted to the lead pencil which passes over the surface of the registering cylinder, leaving on the unrolled paper traces of all its movements. The wheels of the pulley are the same as those used in the registering barometer of Redier; the one goes constantly to the right with an escape; the other to the left, with twice the speed of the first, and the extremity of the balance, by its motions, determines the freedom of the fan of the second wheel-work, which makes the pulley turn in the desired direction.

Several specimens of this balance have been successfully used for several months by Grandeau in his laboratory of the Western Agronomical Station. M. Grandeau has, with the help of this balance, undertaken a series of experiments on the evaporation of the soil and of plants.

In one of his late lectures at the Conservatoire of Arts and Trades, M. Maugon made the registering balance operate in a striking manner. A man sat on the platform scale; the curve traced by the apparatus indicated a certain diminution of weight, to which all living beings are subject during repose. When the curve was neatly traced, the man began to read aloud. The mechanical part of the apparatus, as small as it is, at once indicated its sensibility; as soon as the reading began the curve changed its form, and indicated a greater loss of weight.

The Steam Wagon.—We learn from the Colusa *Sun* that the steam wagon, belonging to the San Joaquin Company, made a round trip from Princeton to Willows. The writer was at Princeton, last Tuesday, when it came in with a load of wheat. It was loaded with 20 tons of wheat by J. S. Wall, but the rods connecting the wagons broke just before it got to Princeton, and they had to come in with only two wagons. It was a day and a half getting in from Willows, but there was no heater on the boiler, and and there were several other deficiencies noticed, but Capt. Roberts, who was with the wagon all the while, is entirely satisfied that it is a success, and he says the Company will immediately invest $60,000 more in the manufacture of the wagons, and in wagons to carry the freight. They took the wheat from Willows to the ship side at San Francisco at $3 a ton, the same as charged by the railroad to Vallejo.

A Hand Power Rock Drill.—A correspondent, writing from the Paris Exposition, says: I have recently witnessed the operation of a newly invented hand power rock drill. It may be worked by two men with a pressure of 80 pounds per square inch, on the top of the cylinder, and a proportionate dead blow of 20 pounds per square inch, It is admirably adapted for tunnel drilling, where the expense of the steam drill cannot be afforded. It is worked by a crank force being applied to the drills by a system of cams. Yesterday an old Californian expert in rock mining, in two minutes, drilled with this machinery, a hole two and one-half inches in depth in a block of hard granite.

Combustion under Pressure.—Verdie's apparatus for combustion under pressure has been adopted at Tamines, the seat of the Hasard collieries. The cost of the apparatus, with royalty and firing, was £240. At the Marie-mont Colliery Verdie's apparatus has been supplied to four boilers, the cost, exclusive of steam engine, being £480. The saving in fuel at the latter colliery is estimated at 25%, a cheaper fuel being used. A similar saving in fuel is reported to be effected at the Namur Glass Works, where the Verdie apparatus has been adopted.

American Locomotives for Australia.

The influences of the Centennial exposition are still clearly observable in our export of manufactured articles. From their exhibit at Philadelphia, the Baldwin locomotive works of that city gained entry to Australia for their locomotives, and they are now building especially for the Australian demand. On the first of the present month one passenger and two freight locomotives were shipped to New South Wales. The passenger locomotive is of the type used in American railroad practice, but with some features of construction according with the usages prevailing in the colonies. It has cylinders 18 by 24, driving wheels 63 inches in diameter, and a four-wheeled swinging bolster truck with wheels 30 inches in diameter. The total wheel base of the locomotive is 21 feet 6 inches, and of locomotive and tender, 43 feet 6 inches. The tender is on four-wheeled trucks, in accordance with the American practice. The tender wheels are 36 inches in diameter. All the truck wheels for both engines and tender are steel-tired.

The two freight engines are of the consolidation type, as introduced by the Baldwin works several years ago. They are the largest and most powerful engines which have ever been made in the world. They weigh when in full working order, exclusive of tender, 102,000 pounds each. Their dimensions are as follows: Cylinders, 20 by 24; eight driving wheels in front, 30 inches in diameter; one pair of pony truck wheels in front, 30 inches in diameter, with swinging bolster and radius bar; total wheel base of engines, 22 feet 10 inches, and of engine and tender, 45 feet 11 inches.

The strength of these locomotives can be imagined from the fact that at recent experiments one of them drew 160 empty cars, making a train one mile in length. They are guaranteed to draw from 90 to 100 loaded cars each trip. The English have hitherto had the exclusive control of the locomotive market of the colonies, and the fact that the Government has been induced by superior merit to transfer its custom to an American house has occasioned no little alarm among them, especially as they admit that they are unable to compete with such workmanship.

Sun-Heat Cooking.—Mouchot exhibits at Paris an apparatus for utilizing the sun's heat. It consists of a truncated cone mounted on stand similar to the tripod of a level, so constructed that the axis of the cone can be adjusted to suit the position of the sun. The inner surface of the cone is polished, reflecting the rays of the sun toward the axis of the cone where a glass cylinder is placed, serving as a receptacle for the water to be distilled or the food to be cooked. With a cone 16 inches in diameter and 10 inches high, Mouchot has succeeded in cooking beef in 3 hours 30 minutes in France, while it took only 3 hours in Algiers. Poultry was cooked in 25 minutes in France and in 20 minutes in Algiers. A large apparatus having a cone several meters in diameter is to be erected in Paris between the Trocadero and the Seine.

Travel by Bicycle.—Mr. R. Naunton, of Mayfield, sends us an English paper which reports that Mr. John Rankin, a young Kilmarnock gentleman, has just completed a journey to London and back on a bicycle. He left Kilmarnock on the 23d of July and reached the metropolis on the 1st of August, after having made a stay of two days at Sheffield, part of a day at Birmingham, and part of a day at Coventry. The distance of 439 miles was thus run in about six days, making allowance for stoppages. Mr. Rankin left London for home on the 5th of August, taking the east coast route, and reached Glasgow on Saturday evening, thence going to Kilmarnock that night by train. The longest run in one day was from Morpeth to Edinburgh, the distance traveled being 112 miles.

Preserving Iron from Rust.—Some months ago we described Prof. Barff's method for obtaining this desirable result. We read that the process is well illustrated at Paris by the numerous articles there shown. At least a couple of hundred specimens are now on view, of which we will name the following: A small riveted girder, various boiler plates (some of them riveted), divers rainwater pipes, gutters and traps, ventilators, urinals and washbasins, gas and water pipes, various railings, statues for fountains, and a number of domestic utensils, such as saucepans, fire irons, etc., as well as some fine specimens of Berlin ironwork, among which a man in armor is specially to be noted.

Prize for an Invention.—Charles Bartlett, United States Consul at Guadaloupe, informs the Department of State that the authorities of that colony have offered a premium of 100,000 francs to the inventor of a process to obtain a yield of over 14% from sugar cane. The competition is open until June 30th, 1880. It is not for an improvement on sugar mills, but for the discovery of a process bearing upon the yield of turbinated sugar. All the expenses of transit, putting up of machinery or implements are to be borne by the inventor.

A Spanish Gun.—A Spaniard of Madrid has invented a novelty in revolving fire-arms. It consists in the addition of a special chamber for receiving from the rear end of the cylinder a portion of the gas resulting from the explosion of the cartridge, and conveying it to one of the discharged chambers to expel the empty shell.

SCIENTIFIC PROGRESS.

The Air as a Geologic Agent.

At the recent meeting of the British Association for the Advancement of Science, an American, Prof. T. Sterry Hunt, of Boston, read a paper on the relation of the atmosphere to geology. He began by noticing the inquiries of Ebelmen into the decomposition of rocks through the influence of the atmosphere, resulting in the fixation of carbonic acid and oxygen, and discussed at length, with arithmetical data, the question. He inquired farther into the fixing of carbon from the air by vegetation, with liberation at the same time of oxygen, both from carbonic acid and from the decomposed water, the hydrogen of which, with carbonic, forms the bituminous coals and petroleums. It was shown that the carbonic acid absorbed in the process of rock decay during the long geologic ages, and now represented in the form of carbonates in the earth's crust, must have equaled probably 200 times the entire volume of the present atmosphere of our earth. This amount could not, of course, exist at any one time in the air; nor would it at ordinary temperatures be liquefied at the earth's surface. Whence came this vast quantity of carbonic acid which must have been supplied through ages? The hypothesis of Elie de Beaumont who supposed a reservoir of carbonic acid stored up in the liquid interior of the planet, was discussed and dismissed. The gas now evolved from the earth's crust from volcanic and other vents was probably of secondary origin, and due to carbonates previously formed at the surface. The solution offered by the author is based upon the conception that our atmosphere is not terrestrial, but cosmical, being a universal medium diffused throughout all space, but condensed around the various centers of attraction in amounts proportioned to their mass and temperature, the waters of oceans themselves belonging to this universal atmosphere. Such being the case any change in the atmospheric envelope of any globe, whether by ths absorption or the disengagement of any gas or vapor, would, by the laws of diffusion and static equilibrium, be felt everywhere throughout the universe, and the fixation of carbonic acid at the surface of our planet would not only bring in a supply of this gas from the worlds beyond, but by reducing the total amount of it in the universal atmosphere, diminish the barometric pressure at the surface of our own and of all other worlds. This conception of a cosmical atmosphere of which our own forms a part, is not new, but was put forth by Sir William R. Grove in 1843, and is developed in the very learned and ingenious work of Mr. Mattieu Williams on the "Fuel of the Sun." Tyndall, by subsequent researches on radiation, showed that certain gases, in amount too small to affect considerably the barometric pressure, might influence powerfully climatic conditions, and suggested that in the former presence in the atmosphere of moderate quantities of a gas like carbonic acid might be found a solution of the problem of the climates of former geologic ages. According to the author, the amount of this gas, which since the advent of life on our earth has been subtracted from the universal atmosphere, although it may not have sufficed to diminish by more than a small fraction the pressure at the earth's surface, would account for all the conditions of geological history as far as temperature and climate are concerned. He maintains that while we have evidence of a warm or sub-tropical climate prevailing over the Arctic regions from the carboniferous down to the lower cretaceous times, and gradual refrigeration up to the temperate climate of the miocene age, we had, for the first time in the pliocene age, the evidence of Arctic cold, which with some variations has continued until now. Since that date geographical variations have caused and may again cause, local climatic changes of considerable magnitude; but no such changes could permit the existence over continental areas within the Arctic circle of such tropical vegetation as we know to have once flourished there. Geographical changes, as J. F. Campbell, Dawson, and others have so well pointed out, might lift large areas into the region of perpetual frost, and thus give rise to local glacial phenomena, and may, moreover, account for considerable local climatic variation at the sea level since the pliocene age. We cannot, however, account in this way for the warmer climates of previous ages, but must seek for their cause in the former constitution of the atmosphere.

Science and Art Teaching.—In England, the twenty-fifth report of the Science and Art Department of the Committee of Council on Education has been issued. *Iron* says: It shows that the number of persons who have, during the year 1877, attended the schools and classes of science and art in connection with the department are as follows, viz.: 55,927 attending science schools and classes in 1877, as against 57,988 in 1876, and 610,620 receiving instruction in art, showing an increase upon the previous year of 80,208, or more than 15%. At the Royal School of Mines there were 38 regular and 181 occasional students; at the Royal College of Chemistry, 282 students; at the Metallurgical Laboratory, 73. At the Royal College of Science for Ireland there were 21 associate or regular students and 45 occasional students. The lectures delivered in the lecture theater of the South Kensington Museum were attended by 8,481 persons. The evening lectures to workingmen at the Royal School of Mines were attended by 1,227 persons; and 172 science teachers attended the special courses of lectures provided for their instruction in the new Science Schools of South Kensington. The various courses of lectures delivered in connection with the department in Dublin were attended by about 4,300 persons. The total number of persons, therefore, who received direct instruction as students, or by means of lectures, in connection with the Science and Art Department in 1877, is 681,367, showing an increase, as compared with the number in the previous year, of 81,199, or more than 13½%.

The Rocks under London.—Recent well boring in London settles some contested points concerning the rocks under the English metropolis. The boring passed through 652½ feet of chalk, 28 feet of Upper Greensand, and 160 feet of Gault, at the base of which was a seam, three or four feet thick, of phosphatic nodules and quartzite pebbles. Beneath this was a sandy calcareous stratum of a light ash color, passing into a pale or white limestone, and this into a rock of oolitic aspect. Casts and impressions of shells found in this bed showed it to be the Lower Greensand, whose place it occupied. The boring was carried further in the hope of reaching the loose water-bearing sands of this formation; but the rock became very argillaceous, and when 62 feet of it had been passed through, the boring entered into mottled red, purple, and grenish shales, dipping at 35° in an unascertained direction. These beds continued through a depth of 80 feet, when, their nature being clearly ascertained, the boring was stopped. The fossils of these colored beds, which included Spirifera disjuncta, Rhynchonella cuboides, and species of Edmondia, Chonetes, and Orthis, show them to be of Devonian age. Thus, the existence of Palæozoic rocks at an accessible depth under London, and the absence of the Jurassic series, as maintained long since by Mr. Goodwin-Austen, is experimentally demonstrated.

Perils of the Government Scientific Service.—As we sit and study the splendid reports upon scientific subjects as treated by the government in our wild regions, we seldom think of the hardship and peril by which the truths are obtained. A letter from Mr. A. D. Wilson, topographer of the Hayden survey, contains a picture it will do to remember. He writes: On the 25th, the Indians surprised us at Henry's Lake, at half-past eight. We were sitting around the camp fire when we were fired on by the Indians, who were not more than seventy feet distant. Strange to say, they hurt none of us by their fire. We made an ineffectual effort to protect ourselves, and concluded nothing could be done but to get away alive. We heard the Indians driving off our animals, and then knew that our party was in reality afoot. Taking provisions for three or four days, and our blankets and guns, we got away under night, and moving off about a mile in the woods we remained there until daylight, when the Indians reopened fire on our deserted camp, and we started for the Upper Geysers, and after a hard walk of three days we reached there, and found Jackson's and Gannett's parties there and all safe.

A Phonoscope.—At the British Association meeting, Mr. Ladd read a paper on Edmund's "Phonoscope." This was an instrument for producing figures of light from vibrations of sound. It consists essentially of three parts—an induction coil, an interrupter and a rotary vacuum tube. The action of the instrument is as follows: Sounds from any source produce vibrations on the diaphragm of the interrupter, which, being in the primary circuit of the induction coil, produce at each interruption a current in the secondary coil similar to the action of a contact breaker. Therefore each vibration is made visible as a flash in the vacuum tube. The tube revolving all the time at a constant speed, the flashes produce a symmetrical figure like the spokes of a wheel, as in the Gassiot star. The number of spokes or radii are according to the number of interruptions during the revolution of the tube, and the number of vibrations are varied to any extent, according to the sounds produced, and the figures in the revolving tube will be varied accordingly. In case of rhythmical interruptions being given, such as a given sound, or a trill, most beautiful effects were noticeable. The uses of this instrument are the rendering visible of sounds and showing the vibrations required in their production, and is a mode of confirming by sight an appeal to the ear.

Prof. Hanks' Gift to France.—A correspondent at the Paris Exposition writes as follows: The School of Mines in Paris desires the collection of California minerals which Mr. Hanks, the Commissioner, is duplicating from his own collection for the purpose of presenting them to France. The Jardin des Plantes authorities desire the same also, to add to their mineral cabinet. Both parties are pleading for them before your Commissioner. The Commissioner has determined to leave them simply to France, and let the rival schools, cabinets and professors settle the division of the gift among themselves. Prof. Hanks has been awarded a certificate of honor for his work at the Exposition.

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

CALIFORNIA.

AMADOR.

MINING NOTES.—*Ledger*, Sept. 21: Ore from Down's claim, near Volcano, yielded at a late crushing, average of $80 per ton. This is the best average reported for some time. There is plenty of similar high-grade ore left in the miue. The shaft is down 240 feet, with a ledge three feet in thickness at the bottom. The owner is satisfied tbat there is sufficient quartz exposed to keep Stewart's ten-stamp mill running steadily for the next twelve months. A small crushing lately made at the Talisman mill of ore from the Iowa mine, Tucker Hill, near the Mahoney, Sutter Creek, realized about $4 per ton, barely enough to cover expenses. A new discovery, however, hae been made upon the property within the last few days, which promises better results. A ledge 12 feet wide is exposed, the rock from which wears a remunerative aspect.

ITEMS.—Arrangements are now being made to put up new steam hoisting works, and a ten-stamp mill on the Moore mine forthwith. Another einking will soon be commenced in the middle shaft of the Oneida mine. Timbers, and all other necessaries have been engaged for a einking of 150 feet. The mine is being run on a very safe and careful plan, by the present Superintendent. W. Doyle is prospecting on his claim in Hunt's gulch. He thinks he is nearing the mother lode.

CALAVERAS.

CHAVANNE MINE.—*Citizen*, Sept, 21: Mr. Chavanne, owner of the McNair mine, who has spent a large eum of money in opening up the mine, has at last struck rich rock. The lead varies from one to two feet in width and shows plenty of free gold. This mine is on the extension of the Ferguson & Wallace claim, and will undoubtedly prove as remunerative to its owner, as that claim has. Mr. Chavanne has erected a first-class mill, costing in the neighborhood of $20,000, beeides making numeroue other improvements.

RICH STRIKE.—Collier has struch a rich quartz claim, about 5 miles above Murphy in the direction of the Echo mining district. He had 16 tons of ore crushed, which paid $5,100. The ledge ie near the surface. the deepest part eunk being 40 feet. Mr. Collier has commenced the erection of a mill on the mine.

CLEAN-UPS.—*Chronicle*, Sept. 21: Fifty tons of Champion, West Point ore, yielded fully up to the average, which never falls under $100 per ton. Ninety tons of Montana, Mosquito gulch, rock, unassorted, gave an average of about $35.

STRIKES.—In the Rising Star claim, Central hill, a large gravel body was struck within the last fortnight. Three pans gave $32. At a depth of about 185 feet in the Banner shaft, a ledge showing a width of from 18 inches to two feet, all first-class milling rock.

ITEMS.—The San Bruno hoisting works will be moved to the Montana, to aid further sinking in the latter. There is not even water enough to supply the Gwin mine. It is said that J. Zumwalt, Spring gulch, has lately sold his qaartz mine in Jesus Maria district to a San Francisco company. The San Joaquin miue at Mosquito continues to send out high grade ore. Mr. J. J. Holmes, the proprietor, is urging operatione with his usual vigor.

EL DORADO.

KELSEY MINES.—*Mountain Democrat*, Sept. 21: The gold deposit has assumed a bright aspect. Every available man bas been put at work and it has the appearance of a lively camp. The boiler and machinery aro on the ground. Much of the lumber for the building has arrived and teams are hauliug the remainder, so that in a few days a good eubstantial structure will mark the site of the mine. In the Ida Livingstone miue some very high-grade ore was hoisted last week. The rock in this mine is quite hard and progress necessarily elow, but there is a perceptible increase both in quantity and quality of the ore. The Base Metal mine, situated about one mile west of the gold deposit, has given some fine results. Twelve huudred pounds of the ore was worked by furnace and arastra, which turned out a button weighing $300. The ore in this mine is somewhat base, but can readily be worked by a simple process of desulphurizing, aud as it is of high grade, it would justify quite an outlay of time and money in procuring suitable machinery for reduciug it.

INYO.

KEARSARGE.—*Independent*, Sept. 21: Very favorable reports are at hand concerniug this miue, showing that one of the main ledges has been etruck, and the other, the main objective point of the long tunnel, is but eight or ten feet distaut. After four years of costly work the great questiou is soon to be solved, with prospects so far the most flattering.

LOS ANGELES.

SILVERADO.—San Bernardino *Argus*, Sept 15: We have very exciting news from Silverado. The country is alive with prospectors, the estimate being that 1,000 men are scattered throughout the district. Dr. Shelton says that it ie a most favorable country for prospecting, the surface beiug cut into innumerahle deep canyous, whicb reveal on their nearly vertical sides well-defined ledges, many of tbem attaining to the length ou tbe surface of about 600 feet. Men are pouriug into the camp daily. The prospecting columns are moving steadily toward Temescal, in this county, and indeed are now only a mile or two from the dividing line. The Doctor has great hopes in the permanent prosperity of the camp, and argues much good to this town from the new discoveries. A new town is being laid out in Shrewsberry canyon, as an opposition to Silverado. It is to be called Santiago City.

FLORENTINE.—Anaheim *Gazette*, Sept. 21: The owners of the Florentine mine, at Silverado, have had five men at work for some time, and the tunneling done at various places on the claim will aggregate about 150 feet. The tunnel on which work is being done at present is now in 45 feet; it is about 30 feet from the ledge. The ledge once found, they will take out ore sufficiently rich to ship to San Francisco for milling. The company sent a carload of ore to that city some time ago, and the returns, judging from the euergy with which work has since been prosecuted, must have been very satisfactory. The paying vein is from twelve to fourteen inches wide. Assays of rock from this mine run all the way from $100 to $200 to the ton, and unless the knowledge of mining experts is at fault the ledge will be found to extend all through their claim.

CONCENTRATOR WANTED.—There is undoubtedly plenty of ore in Silverado district, that will yield from $40 to $50 per ton, but it don't pay to ship rock to San Francisco unless it yields at least $75 per ton. It bas been suggested that a concentrator, such as is used at the Silver King mine in Arizona, would be a great benefit to the district. The concentrator reduces eight tons of rock to about one ton. This would permit the shipment of low grade ore until a mill is established. The cost of a concentrator is about $1,500. This sum could probably be raised among the miners in Silverado, and a joint etock company formed, if some one would take the lead.

GOLD MINES.—The Opbir mine, at Silverado, and the adjacent Emma, differ from the others in being gold mines. An assay of Ophir ore gave $40 gold, and $6.50 silver per ton. The Ophir ie tunneled about 30 feet. The gold-bearing vein in tbe Emma is from 13 to 15 inches wide.

MONO.

BENTON.—Inyo *Independent*, Sept. 21: The old Comanche has been, for the present, abandoned, and the company are at work on their other mines—the Kerrick and Tower. In the Kerrick a force of some 25 miners is employed extracting the rich, black ore so peculiar to and found only upon Blind Spring hill. The mine is being systematically exploited and shows well, though of itself cannot supply ore sufficient to keep the mill running more than half the time. At the Tower mine, which is located at Yellow Jacket, some eight miles south of the town, work is going on under contract. In the shaft a continuous 30-inch vein of $300 ore has been developed. The ore is entirely different from the Blind Spring rock, and would be readily taken for the richest product of the Comstock, as to appearance and quality. Steam hoisting and pumping works have recently been put in place, eo that deep working is practicable and cheap.

DIANA.—In the Diana work is being prosecuted upon the 600-foot level, drifting and sinking, iu some ore and very good ground, carrying the most favorable indications of the close proximity of a body of ore.

BODIE MINES.—*Standard*, Sept. 18: Tbe Noonday ledge has been traced 650 feet. The sbaft, which is down 75 feet, followed it all the way. A new double-compartment shaft, 4x4 feet bas been started in the center of the ground, about 75 feet east of the ledge, in order that the ledge may be cut at a depth of 100 feet. The Blackbawk shaft is down 398 feet. Rock continues hard; no change in vein since last report. Commenced cutting station this week at 400 level to commence drifting east and west. Winze, on 300 level, down 25 feet, on the west vein. Casings of vein is four feet apart with three feet of ore and one foot of porphyry. Porphyry seems to be cutting out and quartz increasing. The machinery for the new hoisting works for the South Bulwer will soon arrive. The work of cutting out and timbering the new double-compartment shaft has advanced favorably, and at present 20 feet has been timbered. The Riqueza shaft is down 200 feet. Left the ledge at a depth of 33 feet aud intend sinkiug 250 feet before crosscutting. Work progressiug rapidly. Material passed through iron stained porphyry. Arrangements made for an engine and hoisting works. The ledge in the bottom of tbe Summit shaft continues to look well. There is at present two feet of ore on the foot wall, aud eight inches on the hanging wall; assays from which show an average of $51.90. There is yet two feet of "horse," also, betweeu the walls which are nearly five feet apart. The Westchester is near the Red Cloud on the east slope of Silver Hill. A new shaft has been started lower on the hill, than the old prospect shaft, and is now down 54 feet. A crosscut has been started west for the ledge. The Addenda incline shaft is 135 feet deep. Bottom shows three or four feet of ore and ledge matter. Water bas been entiiely bailed out; sinking now with three sbifts, in soft ground. Following down between the walls almost perpendicular. The Ajax shaft is being put down as rapidly as three shifts can work. As soon as lumber is received the shaft will be raised from the eurface eight feet, to give room for the dump and erection of building. The Relief company has been consolidated with the Blue Bell, and is now sinking and timbering. Work progresses rapidly and everything looks well.

NEVADA.

MURCHIE.—Grass Valley *Union*, Sept. 22: The ledge is looking well in the shaft, and is improving in quality and growing larger. The miners are working the Big Blue ledge, and an 18-stamp mill is kept poundiug, night and day, ou the rock. The mine has an air compressor and two power drills running, and hoists about 35 tons of quartz per day. This rock is dumped iuto a hopper about 25 feet from the hoisting works, and from this it is conveyed on the tramway to the mill, which is 1,000 feet from the hopper, the cars making tbe trip in less than two minutes, and dumping themselves at the end of the track. The company have 440 acres of patented land, and timber is plentiful. A flume and water-wheel will soon be constructed, and thus they will do away with steam power. A rock breaker will be put in operation, and, before long, the mill will have all the modern appliances for saving gold. The mill has never had any concentrators until recently, and now there are nine used in saving the sulphurets, which are very rich, some of them going as high as $200 per ton.

GOOD INDICATIONS.—*Herald*, Sept. 17: About two months ago, L. Ragon and John Grimes commenced work on a small quartz ledge located on Grimes' rauch, Gold Flat. When they first commenced work, the ledge was about three inches thick, but iucreased in size with the depth attained. At the depth of 16 feet from the surface it had widened out to the thickness of one foot of solid quartz, and about one foot of ocher on the hanging wall. The ocher prospects well, and the rock will probably pay about an average of $20 per ton. The incline is down 50 feet, and the prospects are as encouraging as ever.

PITTSBURG.—*Transcript*, Sept. 22: Everything is progressing in an unusually eatisfactory manner. About 40 men are employed, and a good number of them are at work on a fine 16-inch ledge in the 800 level. The rock is said to be very fine. New tubes are being put in the boiler, and as soou as they are adjusted, the battery will be started up. There are about 150 tons of fine looking rock already out in one of the dump piles.

ITEMS.—A new stringer in the Hudson mine, it is estimated, will yield from $90 to $100 per ton. Hartley, an old resident of Meadow Lake, has bonded his four mines to George D. Roberts, of Virginia, for $60,000. The mines are the Excelsior, Pittsburg, Bullion and Keystone. The Scadden Flat mine is raising working capital by the sale of 20,000 shares at 75 cents: The hoisting machinery of the Bullion mine has all been taken down and hauled to the Alaska ground, where it is now being erected over the new combination shaft that is being opened for the two companies. The 420 level of the Centennial is probably by this time opened. The rock in the incline has continued of the same rich quality that has been characteristic of the mine in the upper workings. The shaft in the Gold Hill mine is being put down at a rapid rate. The Tam tunnel is in 35 feet on the ledge, which is 14 inches in width. The contractore are pushing work ahead in the Cold Spring mine as rapidly as possible. The Rocky Bar mine is showing improvement of late, both in the drifts and stopes of the second level, and at the bottom of the incline, now being eunk for the third level. The first level, worked on tribute, continuee to yield its usual good quality of paying rock.

PLACER.

QUARTZ MINING.—*Herald*, Sept. 21: Quartz mining in the vicinity of Auharn, and especially in the district lying between Auburn and Ophir, is turning out profitable to those who are engaged in it. The old style of sinking a few feet on a ledge and then abandoning it, because on breaking open a few pieces of rock no gold would be visible to the naked eye, has been done away with in the district referred to, and prospectors are now at work iu earnest, taking out the quartz and sending it to the different mills in the locality and having it crushed. The little 5-stamp mill of Messrs. Simons & Pelster, situated on North ravine, between Auburn and Ophir, has been pounding away for the past month on rock for different parties, taken from different quartz ledges in the near vicinity of the mill, and in each instance the rock has paid well—paying from $12 to $40 per ton.

SAN BERNARDINO.

BORAX.—Inyo *Independent*, Sept. 21: Mr. John Searles and two or three other gentlemen, including his brother, hold Unitcd States patents to a large area of exceedingly rich borax lands or marsh, at Borax lake, just below the southern Inyo line, and, by dint of great perseverance and lahor of their own hands mostly, have suceeeded in establishing very complete borax works. Until quite recently the actual product was one hundred tons of the *refined* article every month. The works, as they stand, have a capacity of fully 200 tons per month, but have not been worked up to the maximum because of tbe low market rates for horax. For months past, owing to an over eupply, the price at San Francisco has stood at about 8 cents per pound, giving no adequate return to the producer. On this account—to give the market a chance to clear itself—this company, as also that at Teel's marsh in Nevada, mutually resolved to suspend shipments in toto, and not wear out their lands for nothing, so nothing more is being done at either place thau to employ a small force in keeping things in order. In general the Searles company work 50 persons; at this time only about 15. Fresh water for domestic uses is piped from a spring some five miles distant. For manufacturing purposes an abundant supply is obtained by means of artesian wells, of which there are eleven, all spouting. These are nothing more than ordinary iron pipes driven 55 feet through the clay and sands of the old lake bed, then pumped out.

TUOLUMNE.

BOSTON TUNNEL.—*Independent*, Sept. 21: Thos. Morris, of the Boston tunnel, has sold his two-thirds interest to Mcssrs. Beaven & Burns, of San Francisco. This claim adjoins the famous New York gravel mine, which paid $1,000 per foot across the channel, near this location. There is a break in the mountain on the Boston ground, with 10 to 40 feet of gravel on the outside. Water can be obtained at a hight of 300 feet, and it is the intention of the purchasers to hydraulic this portion of the ground. They also intend to drift, a shaft and hoisting works being ready for this purpose.

ITEMS.—*Union Democrat*, Sept. 21: Gid. Wing is making a lot of 15-inch heavy hydraulic pipe for the Hassel mine, at Philadelphia diggings, above Columbia. John Londen is pushing work in the Chaparral claim. The tunnel is now in 325 feet and close to the vein. It is expected the pay etreak will be reached in a few days.

NEVADA.

WASHOE DISTRICT.

OPHIR.—Gold Hill *News*, Sept. 25: A new, most important, and what promises to be a valuahle ore development, has been made in tbie mine during the week. It was made in the main incline at a perpendicular depth of 66 feet below the 2100 level, and consists of an entire change of ground throughout the full size of the shaft from the hard porphyry in which it had been einking to lively, healthy ore-bearing vein formation, consisting of a broken, chopped-up mixture of vein porphyry, clay and quartz, identical in character and make with that found lying next to the ore vein in the new strike in the Sierra Nevada. The quartz is ore-bearing, and afford assays from $5 to $25 per ton. On the 2100 level the formation so far as penetrated is of a much softer and more favorable character than on either the 2000 or 1900 levels. The bottom of the winze helow the 2000 level is showiug small veins of quartz which afford excellent assays where there was nothing but hard, barren porphyry on the levels above. The main north lateral drift on the 2000 level is again being steadily advanced, the face in hard blasting porphyry. This is a most important drift, connecting as it will in the course of time with the bottom of the North Consolidated Virginia shaft aud opening up the entire length of the Mexican and Union Consolidated mines to that depth. The south drift on the 2000 level is also being driven forward to connect with the joint California winze on the south line.

CON. VIRGINIA.—Daily yield, 175 tons of ore. Although much the largest portion of the Consolidated shaft ie completed, it is not at all likely that the extraction of ore will be resumed for some time, as there is much work to be done on all the levels in repairing the many long working drifts before it can be done to advantage.

CALIFORNIA.—Daily yield, 200 tons of ore. The ore etopes going north on the 1650 and 1750 levels still show finely and are yielding good ore. Sinking the C. & C. shaft is also making fair progress, the bottom in hard blasting ground and the flow of water being still very strong. The great heat on the lower levels is gradually subsiding, which enables the workmen to do a much larger amount of work on a shift. Winze No. 6, helow the sill floor of the 1750 level, is down 16 feet, the entire distance in ore affording low assays. The south lateral drift from the bottom of the joint Ophir winze on the 1950 level is etopped for the present on account of trouble with the water and bad air. As soon as this winze is counected with the south drift on the 2000 level of the Ophir, work in the face will be resumed. This it will probahly take two weeks yet to accomplish. A large quantity of winter supplies are being laid in and everything is working finely.

JULIA CON.—The east crosscut No. 1 on the 2000 level is being pushed steadily forward, the face to-day heing in clay. It is now in 183 feet, and it is believed that good quartz will be again encountered after passing through tbe clay. The main south drift on the 2000 level is rapidly approaching the point under where the good ore prospects and quartz were found on the 1800 level. This drift is running parallel with the ore vein in a very eoft, dry and favorable formation.

TROJAN.—The south drift from the west drift at the second station level is still advancing, the face in fair ore. Tbis drift is now in 52 feet, the entire distance being in ore. The uorth drift on the same level is being pushed vigorously ahead, the face in quartz of a fine character, affording low assays. The west crosscut from the main south drift on the fourth station level is in 59 feet, the face in solid blasting quartz, which shows a steady and favorable improvement. A considerable quantity of good ore is being extracted for milling daily.

CALEDONIA.—The north drift on the 1600 level is steadily advancing, the face in soft porphyry carrying quartz streaks of a very favorahle character. The ground in the face of the

main east crosscut on this level is also in softer and more favorable rock. The main south drift on the 1400 level is showing a very lively vein formation. Sinking the joint winze on the Overman line has been resumed and is making good progress, the bottom in vein matter.

BULLION.—The west crosscut on the 2000 level is steadily advancing. The face shows a decided improvement in both the quantity and quality of the quartz encountered. The ground is getting quite soft and requires constant timbering. Sinking the main incline is making good headway, the bottom in quartz that affords excellent prospects. There are many spots of ore in this vein that assay well.

BENTON.—The nortb drift from the Alta on the 1350 level is advancing alongside of the ore vein in good working ground. It is now 20 feet into the Benton ground. The north drift on the 1250 level has penetratcd the Benton ground 188 feet, and is also running parallel with the ore vein, having a considerable portion of the vein ready for crosscutting.

UTAH.—Sinking the main incline is being pushed vigorously, the bottom in good working ground. A goodly supply of timber and wood is being laid in for winter use.

SAVAGE.—The water is down to the 2100 level. Sinking the north winze below the 2000 level is making good progress, the bottom in vein material.

LADY WASHINGTON.—The north drift on 1250 level of the Alta now being run in the Benton ground will serve to open up this entire mine to that depth.

LEVIATHAN.—Yesterday afternoon the north drift on the 750 level cut into about 16 inches of ore, evidently an offshoot from the main vein, along which the drift is skirting. It shows very good snd improving assays, and gives promise of valuable results when it shall be deemed advisable to crosscut east into the main vein. Nothing new to report of the south drift. It is also skirting along the footwall in the black dyke formation underlying the vein.

MEXICAN.—No work has been done in the joint Ophir east crosscut on the 1600 level during the week. Sinking the joint winze below the 1600 level on the line of the Union Con. will be pushed downward to tbe 2000 level with all the speed possible.

BEST & BELCHER.—Sinking the new joiut Gould & Curry ehaft is making excellent progress. The north drift from the Gould & Curry on the 1900 level is steadily advancing, the face in hard blasting rock.

HALE & NORCROSS.—A breakage of a pumprod has been remedied, and the water is down to the 2100 level. The east drift on the 2000 level, running to make a connection with the Combination shaft, is making good progress.

GOULD & CURRY.—Sinking the joint new shaft is making good progress. The east drift, No. 4, on the 1900 level, ie steadily advancing, the face in soft vein matter carrying a considerable quantity of good looking quartz.

UNION CON.—The northeast drift running to connect with the North Con. Virginia shaft, is making good headway, the face in clay and porphyry carrying occasional streaks of good quartz.

SIERRA NEVADA.—Sinking the main incline is being pushed ahead with all the vigor possible, the bottom in the same lively vein formation; the bottom still cutting at intervals the same regular vein and quartz formation as that which it has exposed for the past 200 feet. Sometimes no ore will be cut for several feet, when a hump or inequality will be encountered, upon cutting into which ore of tbe richeet character will he enconntered. On Sunday last an assay of ore thus exposed gave $400 per ton, Yesterday tbe mine was visited hy five different experts, who each took an average assay of the ore thus exposed at the hottom, the lowest of which was $399, and the highest $700 per ton. Passing through this the incline again gave lower assays, the best being $124, and the poorest $24 per ton, hut again this morning passed into richer ore than any that has hefore heen shown.

YELLOW JACKET.—At the new shaft during the past week the material encountered has been a hard, hlack rock, very hard to drill, but has changed again into gray rock, all the hlack rock having disappeared except in the pump shaft. They are still making good headway and will run very near 100 feet for the month's work. Everything ahout the shaft is running nicely.

ORIGINAL GOLD HILL.—Under new control and management work ie soon to be reenmed. The ledge in the Original Gold Hill on the 300 level is from 80 to 100 feet wide, well defined, with a strata of milling ore of considerahle width, which, with improved facilities for extraction, can be made to pay well under the stamps. This ore vein shows continued improvement as depth has heen attained, and it is the intention of the new management to sink the shaft deeper in order to explore and work the vein at a greater depth, meanwhile extracting and milling the ore at the present lowest level in order to ascertain its actual value. They are also ahout negotiating with the Sutro Tunnel company to explore their mine hy means of a west drift from the south branch of the tunnel when it ehall he completed to a point opposite the mine. This drift will intersect the mine at a depth of 1700 feet below the surface.

BELCHER.—Sinking the north drain shaft is making good progress. It is now down 127 feet on the elope below the 2360 level. It is the intention to crowd the shaft downward to the 2560 level, at which point it is the intention to open another prospecting station. Everything in and about the nine working finely.

SUTRO TUNNEL.—The south branch towards the Julia and Ward shafts is making excellent advancement, the face being in good workiug ground. Work in the header of the main tunnel continues suspended.

CROWN POINT.—The two east crosscuts on the 2360 level are steadily advancing toward the ore vein, the face of each in a fine character of vein material. Everything moving along smoothly.

ALPHA.—Crosscutting the 2400 level is being forwarded with all the dispatch possible, the chances for finding paying ore being excellent.

OVERMAN.—Sinking the shaft on the east side of Gold canyon will be commenced in a very few days. The south drift on the 1600 level is making good progress, the face in healthy vein matter. Sinking the joint winze on the Caledonia line has been resumed and is makiug good headway.

New Incorporations.

The following companies have filed certificates of incorporation:

NORTH SCORPION M. Co.—To mine in Storey county, Nevada. Capital, $10,000,000. Directors—S. D. Wood, A. H. Clough, H. K. White, J. A. Jackson and H. L. Nichols.

GOLDEN GATE M. Co.—Directors—S. F. Thompson, J. R. Scupham, A. W. Havens, J. E. McElrath and B. B. Minor. Capital, $500,000.

HUMBOLDT M. Co.—Bodie district. Directors—A. Hemme, R. Pacheca, H. C. Hyde, W. W. Morrow and B. B. Saucbez. Capital, $10,000,000.

BOOKER CON. M. Co.—Bodie district. Directors—W. M. Lent, C. A. Burgess, C. X. Hobhes, Louis Teese, Jr. and A. H. Rutherford. Capital, $10,000,000.

SOUTH POTOSI M. Co.—South Potosi quartz ledge, Storey county, Nevada. Directors—E. C. Boohar, David S. Lusk, Fred Jones, H. Schel and James O. Mars. Capital, $10,000,000.

CRESCENT G. & S. M. Co.—Mono county. Directors—Geo. S. Carrier, Eugene Theriot, D. F. Manning, J. D. Thompson and C. W. Ham. Capital, $10,000,000.

RUSSIAN G. & S. M. Co.—Directore—George S. Carrier, Eugene Theriot, D. F. Manning, J. D. Thompson and C. W. Ham. Capital, $10,000,000.

COLUMBIA CON. M. Co.—Storey county, Nev. Directors—J. V. Simons, O. H. La Grange, J. P. Jackson, J. H. Crossmain and Geo. W. Kidd. Capital, $10,000,000.

NORTH BONANZA M. Co.—Storey county, Nev. Directors, Joseph Clark, R. N. Graves, John Skae, A. K. P. Harmon and Charles H. Fish. Capital, $10,000,000.

FLOWERY M. Co.—Storey county, Nev. Directors—Joseph Clark, R. N. Graves, John Skae, A. K. P. Harmon and Charles H. Fish. Capital, $10,000,000.

BEACONSFIELD M. Co.—Nevada and California. Directors—S. W. Kennedy, A. C. Chick, Thos. Corbett, J. C. Treadwell, Charles J. Maguire. Capital, $10,000,000.

THREE BROTHERS M. Co.—California and Nevada. Directors—S. W. Kennedy, A. C. Chick, Thos. Corbett, J. C. Treadwell, Charles J. Maguire. Capital, $10,000,000.

NORTH CON. CALIFORNIA G. & S. M. Co.—To operate in Nevada, California and Arizona. Dicectors—C. L. Weller, H. H. Howell, C. A. Herbert, Victor Rapayre. Capital, $10,000,000.

NORTH UTAH G. M. Co.—Esmeralda district, Nev. Directors—A. W. Potter, W. W. Jacobs, C. C. Palmer, George Storey and P. Caffrey. Capital, $10,000,000.

CURTIS CON. M. Co.—Storey county, Nev. Directore—Thos. S. Achison, Robert Sherwood, George P. Thurston, Samuel T. Curtis, W. A. M. Van Bokkelen. Capital, $10,000,000.

GERMANIA G. &. S. M. Co.—Storey county, Nev. Directors—J. O. Eldridge, John Rosenfeld, G. Holland, B. L. Schmitt, J. Naphtaly, J. L. King and L. P. F. Waller. Capital, $10,000,000.

SHERWOOD CON. M. Co.—Storey county, Nev. Directors—Robert Sherwood, George P. Thurston, Samuel T. Curtis, W. A. M. Van Bokkelen and John Foley. Capital, $10,000,000.

CHIEF OF THE HILL TUNNEL Co.—To operate in this State. Directors—Clinton Gurnee, George W. Hopkins, Charles Oppenheimer, William Sherman and J. P. Dyer. Capital, $10,000,000.

OWYHEE M. Co.—Owyhee county, Idaho. Directors—C. H. Johnson, J. P. Couch, W. A. Phillips, Martin Jones, A. S. Baker. Capital, $5,000,000.

MARY ANN G. & S. M. Co.—Storey county, Nevada. Directors—Joseph Gruss, H. V. S. McCullough, Frank Fredericks, George W. Hopkins, E. Terra. Capital, $10,000,000.

MOUNTAIN VIEW S. M. Co.—Storey county, Nevada. Directors—E. P. Marsellus, George W. Towle, Jr., Robert Sherwood, Wm. H. Fifield and Seth Marshall, Jr. Capital, $10,000,000.

UNCLE SAM M. Co.—To mine in Eureka District, Nevada. Capital, $5,000,000. Directors—L. G. Rohinson, Clinton Gurnee, J. H. H. Williams, D. F. Verdenal, Thomas Findley, F. V. Cutting and G. W. Hopkins.

NORTH UNION M. Co.—To mine in Virginia District, Nevada. Capital, $100,000. Directors—H. H. Howell, H. R. Howell, P. B. Nagle, J. W. Clough and E. S Burnett.

CHARTER OAK M. Co.—To mine in Bodie District. Capital, $6,000,000. Directors—C. B. Putnam, W. H. Howland, J. S. Morgan, John Daggett and A. P. Cox.

JUPITER M. Co.—To operate in Bodie. Capital, $6,400,000. Directors—A. J. Ralston, W. M. Gwin, Jr., Josiah Belden, H. M. Yerington and N. K. Masten.

News in Brief.

EMPEROR WILHELM is entirely recovered.

THE deaths from yellow fever aggregate over 5,300.

STRAY hostiles are still committing depredations in Idaho.

MT. HECLA is reported to bave been in eruption August 22d.

SEVEN million people are said to have died in the China famine.

NEW placer diggings have been discovered near Ashland, Oregon.

GLANDERS is reported among horses in and about Truckee Meadows.

THE British mission to Cabul has been turned back by the Ameer's officers.

ABUNDANT rainfall in the north of China will probably secure good harvests.

YOUNG men are already claiming railroad lands in the San Joaquin valley.

LARGE deposits of asbestos have been discovered near McMillanville, Arizona.

THERE are 79 insurance companies doing business on the Pacific coast.

SEPT. 19th, $250,000 in gold bullion was sent from Deadwood, Black Hills.

FRANCE has sent $6,000 as a first instalment of her yellow fever contributions.

MEXICAN commerce with the United States is reported to be steadily increasing.

CHICAGO has sent a grain cargo direct for Glasgow, Scotland, by way of the Lakes.

THE British Parliament has been further prorogued till tbe 30th of November.

THE first successful attempt to ascend Mt. Blanc on the Italian side, is chronicled.

IT is reported that the Frisco mine, Bingham, Utah, has been sold to Chicago parties for $100,000.

W. W. GARRISON of Virginia City claims to have discovered a sure preventive of yellow fever.

LATEST census sbows the population of Japan to be 34,338,404, a steady and large increase since 1875.

IT is rumored that China will confer with Russia on the snbject of the latter's territorial encroacbments.

THE wool clip of Oregon this year is about 6,500,000 ponnds, being ahout 1,500,000 more than last year.

APPLICATION has been made for a patent on a cbalk mark drawn around ehelves to keep ants off. Thus far not granted.

H. R. SYMONDS is bringing diamonds from tbe neighborbood of Jet district, Nev., to San Francisco for examination.

THE bran and corn crops of Santa Barbara county are unprecedentedly large, yielding from one to two tons per acre.

A RIOT against the Japanese government took place on August 23d. Corrupt administration is said to have led to it.

ON September 12th the works of Yuba Q. M. Co. at Hansonville, Yuba county, were destoyed by fire. Loss, $10,000.

A DECREE has been issued by the Viceroy at Nanking ordering the confiscation of every house rented for opium smoking.

THE last round trip of the *City of Peking*, from San Francisco to Hongkong and return, was the quickest on record, 61 days.

AN oil well in Sespe district, Ventnra county, etruck fine green oil at a depth of 1,325 and an increased supply at 1342 feet.

INDIANS have brought some crystallized quartz to Seattle, containing silver, copper and iron, found in the Cascade mountains.

WELLS, Fargo & Co. shipped during the year ending July 1st $2,060,511 of gold hullion and $1,119,635 of silver from Montana.

BURNING GREEN PEAT UNDER BOILERS.—The Montagne Paper Company, Turner's Falls, has heen hurning green peat successfully, under its hoilere set with the Jarvis patent furnaces, but as soon as the owners of peat bogs in the vicinity found it could be burned successfully without drying, they raised the price so high that the mill has gone hack to screenings again. Peat land in the New England States is not worth, on the average, over $5 per acre. It costs about 50 cents per cord to dig and haul peat when within a mile of the mill. Three cords of green peat, burned by the Jarvis process, are equal to one ton of the best soft coal, and the economy over authracite coal is from 30% to 40%. Every mill having peat lands near at hand can supply its own fuel at small expense, as the peat is not dried but used as dug, with a little soft coal mixed.

COMFORT IN SLEEP.—One of the newest patented exhibits which attracted much attention from all, except hashful, newly married people, at the Sacramento State fair, was T. Woodward's clothes clamps for bedsteads. The device is so simple that the most stupid of all servants can operate it instantly and make all the clothing fast in proper position at the foot of the hed. The device is applicahle to old as well as new bedsteads. The inventor's address is No. 56 Eleventh street, Sacramento.

Notes at the State Fair.

Many persons were interested in examining the Excelsior entrance gate, which can be opened and shut without alighting from any vehicle or load of hay. It is so arranged that there is no strain on gate or post and can be adapted to any gate without expense. It is simple, cheap and durable. It is also portable and not set into the ground. No castings are required. The gate was awarded medal at world's fair, 1876; and numerous premiums at the fairs in the country. For particulars apply to H. Brightman, Placerville, El Dorado county, Cal.

Orchardists should not fail to send for descriptions of the "Boss pruner," whicb was shown at the fair by George Larkin, Newcastle, Placer county, Cal. It works on an entirely new principle, and cuts small and large branches perfectly. It bas been thoroughly tested, and we are informed, bas given perfect satisfaction.

An invention of which we propese to speak more fully hereafter, and give an illustratiou, is Thomas' improved apple parer, corer and slicer, which was exbibited by J. R, Craudall, of Auburn, Placer county. This seems to us a very desirable device for doing an important work, and tbose in immediate need of such a machine should address Mr. Crandall at once.

Water Filters.

The subject of filtering water for drinking purposes in cities and towns deserves greater attention than it has beretofore received. Sacramento city is especially interested in the question, and bere is what tbe *State Fair Gazette* says of a popular invention, under the head of "Important to Sacramentans:"

The inv ention which we are about to speak, is the discovery of Mr. Jordan Peters, of Petaluma, and Thomas C. Walters, of San Francisco. It is an improvement in filters and water coolers, and is so simple and practical that it should engrose the attention of every one. It is attacbed directly to the water pipes in tbe house, and filters and cools the water as it comes from the pipes, furnishes the water cool, clear and thoroughly purified. It occupies a very small space, and is no trouble whatever to take care of, as the simple turning of a faucet will clean the apparatus at once. It will never clog up, performs its work perfectly and is more convenient than any cooler and filter we have ever seen before. It is attached to the hydrant in the pavilion, and is there performing its work. Hotels and saloons could not be induced to remain without one, if they knew and understood its working. Particulars concerning the above can be had hy addressing Thos. C. Walters, 612 Greenwich street, San Francisco, or Jordan Peters, Petaluma, Cal.

A NEW MINERAL WHITE.—At tbe recent meeting of the British Academy a paper was read hy Dr. Phipson on a new mineral white. The author, after referring at length to a number of experiments carried on for some years past in bis laboratory with silicates of zinc, magnesia, lime, and other white compounds, with the view of giving to these snbstances the qualities of white lead hy snbmitting them to a great variety of mechanical treatment calculated to indnce molecular contraction, alludes to the ingenious researches of Mr. T. Griffiths, of Liverpool, with sulphide of zinc, which appears to he the only substance hitherto discovered that can possibly supersede carbonate of lead as a white pigment. The preparation and properties of this new white pigment are described in detail, and its composition discussed. After some ten years of laborious and costly experiments, Mr. Griffiths has succeeded in producing a new mineral white by the aid of sulphide of zinc, which entirely eclipses white lead and the old zinc white (oxide of zinc), hy having much more "body" or covering power, and more permanent qualities than either of these, and moreover, not heing of a poisonous nature like white lead, does not affect the health of the workmen who manufacture it or of those who use it. The white sulphide of zinc is precipitated, washed, collected, calcined, levigated and dried, the product being, in the author's opinion, the most perfect white pigment hitherto obtained. The problem which the author had in view—that of producing a mineral white which should supersede white lead, hy being non-poisonous, less costly, more durable, and of better color—has been completely solved in these experiments, for nothing can possibly surpass in these respects the new white obtained by Mr. Griffiths, unless it be some one of the silicates or earths above referred to, which the author'e lengthened experiments prove to he impossible.

TUOLUMNE COUNTY FRUIT.—Mr. H. Quin, of Columbia, Tuolumne county, entered at the State fair a remarkably fine lot of peaches, grapes and other kinds of fruit, which, for freshness and fairness in looks, was not excelled. Although entered too late for competition the committee, we are told, recommended a special premium.

The Engineer.

New Railway Projects at Home and Abroad.

The *Railway World* thinks that very little improvement in the financial affairs of tbe world, or rather in the willingness of capitalists to advance money for railway construction, is needed to establish another era of great activity in railway building. The proposed fields of exertion have to some extent changed, and a good many of the enterprises seriously contemplated at this time have not yet quite reached the stage in which large expenditures are made; but nevertheless the work of conceiving projects, and advancing them so far that final success is only a question of time, still goes on.

Temporarily the most rapid progress will, from present appearances, be in the New Dominion, India, and other British colonies, France, Italy, Switzerland, South American countries, Russia, and portions of Asia, hut indications of a desire to resume construction, on a somewhat extensive scale, or are no means wanting in some sections of our vast republic, and these aspirations are not all unaccompanied with the ability to provide the necessary financial backing.

The Canadian government seems to be thoroughly in earnest in its indorsement of the project for completing an all-rail connection between the British North American possessions on the Atlantic and Pacific coasts, and, as work is progressing at several important points, the final success of this gigantic undertaking can scarcely be considered doubtful. Meanwhile great activity is being displayed in connection with schemes that to some extent hinge upon this movement of our northern neighbors, and it would not be surprising if construction in the regions south of Manitoba, and identified with the Red River valley and various portions of Dakota and Minnesota, should soon be commenced on an extensive scale.

In the central Rocky mountain districts, the Atchison, Topeka and Santa Fe is busy with extensions, which are alleged to have as their objective point, a connection with the lines of the Southern Pacific; the Denver and Rio Grande is pushing its lines south towards New Mexico with considerable vigor, and there have been many evidences or premonitions of activity in various portions of central Colorado, Utah, and districts contiguous to the Black Hills.

Deepening Charleston Harbor.—The construction of the proposed jetties in Charlestou harhor, which the government is about to commence, will, it is confidently believed, make it one of the best on the coast. The plan is like the one employed with such gratifying results at the mouth of the Mississippi. The har at the entrance is about 10 miles long, and the jetties are to be so coustructed as to enclose all the water now spreading over an area of 10 miles in width into a chaunel half a mile wide, excepting what may pass over the suhmerged portion of the jetties. The outflow hetween the jetty-heads, it is expected, will then have eight times the force it has at present, consequently scouring out a channel estimated at from 21 to 24 feet at mean low water. The present depth on the har is only 10 to 12 feet; so that, if successful, the value of the improvements can readily he seen. The *News and Courier* says: It means that the largest vessel afloat can then come across Charleston har, running into a land-locked port spacious enough and deep enough to accommodate the navies of the world.

Shortening the Atlantic Crossing.—The Government of. Newfoundland has addressed a circular to a numher of prominent American contractors inviting their attention to a movement which is on foot looking to the construction of a railroad across the island from St. Johns to St. George's bay, or some other convenient point on the west coast. A preliminary survey has proven the practicability of the scheme, and the Legislative Assembly of Newfoundland has resolved to vote an annual subsidy of $120,000 to any individual or company which will take the matter in hand, besides granting liheral concessions of crown lands for the purpose. The completion of the proposed line would have the effect of opening up enormous deposits of copper, iron, coal, nickel, lead and other minerals, which are now almost inaccessible, while it would also cut through the great pine and spruce forests of the interior, which are also at present utterly useless. The construction of the railroad would shorten the ocean voyage hy 1,000 miles.

Another East River Bridge.—The project of huilding a hridge across the East river near Seventy-ninth street with pier on Blackwell's Island, has heen revived, the ohject heing to connect the railways of Long Island and New York. The plans coutemplate a hridge, which, including the approaches is 9,500 feet long, and 137½ feet high in the centres of the spans over the river. The New York approach begins at Lexington aveuue, and is 3,500 feet long. The span across the New York channel is 718 long, and that over the Loug Island channel 618 feet long. The roadways at the towers is 130 feet above the water. The distance across Blackwell's Island is 680 feet, and the towers on the island will be connected by trestle work. The Long Island eud of the bridge is in the neighborhood of Astoria, and the approach on that side of the river is 3,900 feet long. The New York approach crosses the streets hy trusses 100 feet long, and reaches the surface at Lexington avenue. The road passes under the avenue and connects with the Central railroad at Fourth avenue. The channels of the river are spanned by rigid suspension bridges.

Accurate Tunneling.

An exceedingly difficult piece of underground engineering, and one which furnishes an admirable illustration of the accuracy of calculation hased on scientific priuciples, has just been completed in Pennsylvania at the Hampton mine of the Delaware, Lackawanna & Western Railroad Company. The Scranton *Republican* says: The mine has been idle for improvements for some time, and the work under notice is the construction of a tunnel in the rock vein, making one slope serve the purpose for which two slopes and a "dip" were formerly employed, effecting a eonsiderable saving in men, mules and machinery, and shortening the distance from the scene of the mining operations to the foot of the shaft by at least 2,000 feet. The survey was begun six months ago by Mr. Joseph P. Phillips, Mine Surveyor, under directions of Mr. Snyder, the company's chief Mining Engineer, and from the outset was attended with the greatest difficulty. Over seven-eighths of a mile, principally through old tumble-down workings, had to be surveyed, and 85 sights, at as many different angles, taken before reaching the point opposite the shaft from which operations for the tunnel should he commenced. The most difficult feature was to strike the exact starting point, so that the tunnel, when completed, would be found mathematically correct on grade and point. A variation of a few feet up, down, right or left, would entail additional cost and labor in going over the task to secure uniformity, so that it is not to be wondered at that those responsihle for the work regarded it with some anxiety until the workmen met in the middle of the tunnel, and proved the problem to be correct.

At least a quarter of a mile of the survey was made through old workings where the roof had fallen in, and in some places the space was no more than two feet high, so that Mr. Phillips and bis assistants were compelled to crawl through it. The survey was plotted on a scale of 100 feet to the inch, and the result on Saturday last, when the men who had been tunneling in opposite directions cleared away the last barrier, and met face to face, was of the most satisfactory character. Every line came out just as it had been computed, and the work complimented on all sides.

The Mississippi Jetties.—In a late letter to a member of Congress, Captain Eades makes the following statements concerning the present condition of these great works of improvement: "The jetty channel is now almost as good as the entrance to New York harhor. Larger ships and steamers visit the port of New Orleans than ever before. Ocean freights have been so greatly lowered in consequence that the saving on cotton alone from the port of New Orleans the past season was over $1,600,000. Every intelligent man in Missouri knows that a revolution has been wrought in the grain trade as a result of this deep water. As the channel deepens and commerce adapts itself to these new conditions, the benefits to the producers of Missouri will he still more extensively enjoyed. The permanent improvement of the mouth of the Mississippi operates as a regulator of transportation charges, and thus adds to the value of every bushel of grain grown for export to Europe, or for consumption in the Atlantic States, and it also cheapens to the farmer all of his merchandise and other supplies brought from the East.

Hayden and the Yellowstone.—The *Madisonian* says of Hayden's work in Montana Territory: The interest which is now being manifested in the Yellowstone Park, not only hy people of our own nation, hut also by Europeans, demands a more careful survey of the Park and the country on all sides of it, in order that its facilities of approach may he enlarged. Prof. Hayden is accomplishing this work rapidly as possihle, and will spend the next two years giving Montana a detailed examination, which would seem necessary as his former explorations were more of a reconoissance. A part of the work of the expedition is the preparation of an atlas, showing the geology, topography, and all economic features of Montana. This will be made ready for publication at as early a day as possible, and will he equal to the one just issued on Colorado, which has done so much to spread information concerning that State.

Ship-Canal Project.—The hill authorizing the Barataria Ship-Canal Company to construct a canal from New Orleans to the Gulf of Mexico, and granting the right of way for that purpose, has become a law. The promoters of this enterprise are confident tbat, when this canal is completed, a new and advantageous way of exit to the Gulf for all classes of ships will be opened.

German Projects.—Railway extension is being carried forward by the German government on a comparatively large scale, the State outlay for railways in the year for April 1st, 1877, to March 31st, 1878, having been £5,730,000. The railway companies, which have heen nagged into lower transport rates all round hy senders of heavy goods, are declaring themselves in favor of a return to protective duties.

Academy of Sciences.

Inaugural Address before the Chemical Section.

The following is an abstract of the address of Prof. W. B. Rising at the opening of the Chemical Section of the California Academy of Sciences: I have thought it not foreign to the occasion to say a word in explanation why we have organized into a chemical society, and what we hope to accomplish. I consider it a matter of congratulation to those who are interested in chemical science on this coast, that so many professional chemists are numbered among the instructors at the University. The opportunity is at hand to mutually help each other. So many special branches of the science are represented here that it is possible to discuss the various topics which may come up for our consideration from many different standpoints. An opportunity to present to an intelligent and appreciative audience the results of investigation is a great desideratum. It becomes a great stimulus both to speakers and to listeners, and the discussion which follows may bring suggestions. An organizatiou of some kind had accordingly become a necessity. After long and careful consideration we believed that the time bad fully come. As officers of the University, with its wants and needs ever before us, we wished to organize in such a way as to best subserve its true interests—we would draw especial attention to

The Department of Chemistry.

We would seek to gain for the study of this science the respect of the student on the one hand, and of an enlightened public on the other. I think it not too much to expect that some lover of science—some friend of education and investigation—witnessing the success and harmony of the society and the department, may be induced to give us material assistance. We would have students imbued with a proper sense of the dignity of original investigation, and we shall hope tbat very many may be drawn towards it because of the existence of this society. The managers of the California Academy of Sciences were wise and liberal in allowing its members to organize into sections for special study. We thank them for the catholic spirit which guided them in their organization. We have gladly but modestly embraced the opportunity which they have offered us. We shall attempt to the full extent of our ability to fulfill the ohligation imposed. I am led, in this connection, to say a word in regard to the mutual relations and obligations of the University and the Academy of Sciences. The acknowledged

Aim of the University

Has heen to train up the young men who enter its halls to the completest manhood, to impart instruction, to develop independent thought and action, to so start them in life that they shall add something to human thought. But investigators are the most successful teachers, and investigation becomes the best test of scholarship. The University, then, if it is to fulfill its mission, must do everything it can to encourage investigation. I regard it as an essential part of a higher education—a most practical part, too. I do not hesitate to affirm that nothing in our scheme of eduction can so well fit a persou to meet the difficulties of practical life as the habit of

Independent Thought.

The University, then, should do every thing within its power to encourage the spirit of inquiry and investigation. It should furnish abundant opportunity for carrying forward the same. The Academy, on the other hand, realizing the great ohligation that we are under to men of science in other couutries and in past times, who have freely given the results of their labors to the public, and which we enjoy, would make some return in kind. It aims to do what it can do to promote investigation on this coast. It hopes to aid at least in making discoveries which shall be of benefit to the world. I think it is apparent that the highest and hest interests of

The University and the Academy

Are closely connected; and if they are not identical, they at least lie in the same direction. Each needs the co-operation and help of the other. Each should forget self and self-aggrandizement, and strive to accomplish the noble mission which is set for it. The University had for its special work the education of our youth into investigation; the Academy has for its work the promotion of investigation in general. The University will furnish investigation; the Academy will give them to the world. The University will furnish laboratories, apparatus, museums, books, and so far as it can, teachers; in short, helps of every sort to investigation. Let every citizen of the State, every interest, every organization, do all it can to furnish young men who can grow up into investigators. I think that I can best illustrate what I conceive to be the

Common Objects

Of the Academy of Sciences and the University hy reference to the future Lick Observatory. This institution will he in its objects and tendencies strictly in harmony with the objects of the Academy of Sciences—the promotion of astronomical science. At tbe same time its relations to the University will he close also. The astronomer in charge will need assistants, and these will very naturally be drawn from the students of the University. In turn, instructiou will be given to students at the University by the astronomer or bis assistants, and thus the objects of the Academy will here be united with those of the University—the promotion of science and scientific education going hand in hand. In conclusion, let me again eongratulate the Section on the auspicious circumstances under which it begins its career, and express tbe hope that its labors may bring forth good fruit.

Milling of Auriferous Veinstones.

(Continued.)

The next specimen which Mr. Attwood considered was veinstone from the Melones mine, containing a large proportion of telluric gold, or gold in chemical combination with tellurium, besides gold mechanically mixed with the quartz and pyritic matter. By the ordinary milling process, only the free gold would be taken up hy the mercury. The results by assay of some of the pulverized sample were $2,100 to the ton for gold, but only at the rate of 100 was obtained by the most careful panning.

Fine stamping with water, when the veinstone contains tellurie gold, would result in a serious loss, as tellurie gold is very friable, and a large proportion of it would be held in suspension by the water and be carried away with it, and, in fact, through any appliances that might be devised for its retention; so that the treatment of this character of veinstone is just the opposite of tbose carrying pyritic matter.

Coarse stamping being recommended, and by either of the ordinary milling methods in use to save all the free gold, and then, by concentration, to collect all the beavier hodies, for sale, or to be treated by the chlorination process. No doubt that many of tbe complaints about not being able to save the gold may have arisen from the fact of its being chemically combined with tellurium.

Concerning two specimens of veinstone composed mostly of talc and contaiuing little pyrites, and the gold of which occurred in plates, threads and filures, he said: The stamping of such rock requires great care, as too heavy a flow of water through the mortars would carry the thin plates of gold away. The talcose matter clogs up in the mortars, so that in stamping if any gold quartz can be obtained it is hetter to mix them together.

Mill men appear to be divided in opinion respecting the relative merits of the ordinary milling processes used in this State, viz: the amalgamation in hatteries with copper plates and the hlanket system.

Auriferous Veinstones.

The blanket system may he said to have hcen introduced into the mills at Grass Valley in 1853. The head hlanket troughs were theu made in lengths of about six feet, and the fall from one trough to another was about three inches. The inclination was from three to five degrees with the horizon, hut they were movable and so arranged that hy pressing on a small lever the amalgamator could vary the inclination to suit the flow of water and stamped stuff from the batteries.

The blankets first used were the common hed hlankets, with a long nap. They were expensive, as the nap came off very easily, and there was great waste in cutting them to fit the troughs. Soon after the establishment of, I think, the North Beach Woolen Mills, I sent to San Francisco and ordered the first sluicing blankets. They wove them for me in long lengths and the width of the troughs, were made of a very coarse wool, with the nap thrown up on one side; altogether a much hetter article than is now furnished to the different mills.

The following may be noticed with profit by mill men in a country so careless and extravagant as is California:

In comparing the reports from the different Superintendents of the Australian gold mines and those of this State, the former appear to all agree on the importance and value of having an assay office attached to their works, and in ascertaining the *value* of the material operated upon, and the loss sustained in the various methods of treatment. Monthly statements are furnished of the loss hy each mill, and the actual gold contents of the veinstone treated. In all reports that I have seen hy our California Superintendents, they only give the quantity of rock stamped, sulphurets saved, and the results obtained from the former by milling, and the latter hy sale. They perhaps do not consider it of sufficient importance to puhlish any other particulars, hut if no means are taken to ascertain the gold contents of the rock they are milling, how can they possibly judge of the effect of any modification that may have been introduced in the method of treatment, or that due attention has heen exercised during the various processes to which the vein matter has been subjected? Some general idea of loss on working may be obtained hy sampling the tailings at regular intervals during the day, by placing a bucket under tbe sluice launder, from which they finally make their escape, and when the hucket is full of water and stamped stuff, to set it aside to settle, so that the whole of the solid matter held in suspension is deposited hefore the water is decanted off. The deposit accumulated at the hottom of the hucket should then he emptied into a tuh, and, at stated times, the contents of the tuh should be dried, thoroughly mixed, and then suhmitted to assay.

A tolerable fair estimate may be made of the

gold contents of the rock under treatment, from the average results of samples taken of everything passing direct from the batteries, using a bucket in the same way as for the tailings, but at intervals of every two hours; to which result must also be added the cleaning up from the mortars.

We too often hear of patents being applied for, for some new and mysterious process for the treatment of *rebellious gold ores*, and how crowds of people flock to interview the supposed inventors, without even first taking the trouble to inquire whether there was any such a thing as gold *ores* to treat, or, in other words, any other form of mineralized gold except telluric gold. There are a great many persons credited as miners and millmen, who have acquired any knowledge they possess without much practice, and in an incredible short time; it is this class of men who always recommend and prefer any novel and crude process for the extraction of gold to that in use now, the result, I may say, of our past experience. They do not seem to be aware of how much has been done, written and thought of the matter years ago, and that, in reality, our science may be said to have grown out of our practice.

The stamping-mills of the present day are, undoubtedly, much superior to the old-fashioned square stamps, but the pan, as a *grinder*, will not do as much work, or so cheaply, as a well-constructed edge-mill, and is infinitely inferior to the barrel as an amalgamator.

The blanket system in use now is not so good as that introduced in Grass Valley in 1853.

The Atlantic and Pacific Forests.—No. 4.

[By Prof. Asa Gray.]

It does not altogether follow that, because rain or its equivalent is needed for forest, therefore wherever there is rain enough, forest must needs cover the ground. At least there are some curious exceptions to such a general rule; exceptions both ways. In the Sierra Nevada we are confronted with a stately forest along with a scanty rainfall, with rain only in the three winter months. All summer long, under those lofty trees, if you stir up the soil you may be choked with dust. On the other hand, the prairies of Iowa and Illinois, which form deep bays or great islands in our own forest region, are spread under skies which drop more rain than probably ever falls on the slopes of the Sierra Nevada, and give it at all seasons. Under the lesser and brief rains we have the loftiest trees we know; under the more copious and well-dispersed rain, we have prairies, without forest at all.

There is little more to say about the first part of this paradox; and I have not much to say about the other. The cause or origion of our prairies—of the unwooded districts this side of the Mississippi and Missouri—has been much discussed, and a whole hour would be needed to give a fair account of the different views taken upon this knotty question. The only settled thing about it, is, that the prairies are not directly owing to a deficiency of rain. That, the rain-charts settle, as Professor Whitney well insists.

The prairies which indent or are enclosed in our Atlantic forest region, and the plains beyond this region, are different things. But, as one borders—and in Iowa and Nebraska passes into—the other, it may be supposed that common causes have influenced both together, perhaps more than Professor Whitney allows.

He thinks that the extreme fineness and depth of the usual prairie soil will account for the absence of trees; and Mr. Lesquereux equally explains it by the nature of the soil, in a different way. These, and other excellent observers, scout the idea that immemorial burnings, in autumn and spring, have had any effect. Professor Shaler, from his observations in the border land of Kentucky, thinks that they have; that there are indications there of comparatively recent conversion of oak-openings into prairie, and now, since the burnings are over, of the reconversion of prairie into woodland.

I am disposed, on general considerations, to think that the line of demarcation between our woods and our plains is not where it was drawn by Nature. Here, when no physical barrier is interposed between the ground that receives rain enough for forest, and that which receives too little, there must be a debateable border, where comparatively slight causes will turn the scale either way. Difference in soil and difference in exposure will here tell decisively. And along this border, annual burnings—for the purpose of increasing and improving buffalo feed—practiced for hundreds of years by our nomade predecessors, may have had a very marked effect. I suspect that the irregular border line may have in this way been rendered more irregular, and have been carried farther eastward wherever nature of soil or circumstances of exposure predisposed to it.

It does not follow that trees would re-occupy the land when the operation that destroyed them, or kept them down, ceased. The established turf or other occupation of the soil, and the sweeping winds, might prevent that. The difficulty of reforesting bleak New England coasts, which were originally well wooded, is well known. It is equally, but probably not more difficult to establish forest on an Iowa prairie, with proper selections of trees.

[To be Continued.]

Useful Information.

The Outlook for our Iron Industries.—According to *Seward's Journal*, Mr. James M. Swank, Secretary of the American Iron and Steel Institute, has recently visited the important iron districts of Pennsylvania. He brings most encouraging reports regarding the present condition of the trade, and says the indications for the future are flattering. All the Bessemer and crucible steel mills as far west as the Missouri river with a single exception in St. Louis, are in operation, and of the big iron furnaces about two-fifths are in full blast. There is no accumulation even of the common grades of iron, and all that is produced goes upon the market. The demand is now heavier, he says, than it has been for a long time, and while the production of pig iron is slightly in excess of last year, that of steel of all descriptions is considerably greater. Prices of coal at this time are very firm, with an advancing tendency, and the quotations for Bessemer steel show a fair improvement over those of last year. The country never before consumed as much American-made iron and steel as at present, and the demand for the current quarter being far in excess of its predecessor. Numerous public works now in progress have taken vast amounts of stock, and orders from all quarters of the country indicate a largely increased demand in the immediate future. It is the firm belief of the producers, he asserts, that the opening of the fall trade will reveal a much brighter state of affairs, and that the improvement will be continuous and substantial. This view is firmly fixed in the mind of Secretary Swank, and he declares it to be the prevailing impression in all producing districts.

Harvesting with Electric Light.—We know of cases in which harvesting machinery has been run in the San Joaquin valley with hoodlights, this season. The French have an improvement. A novel use has been made at the trials of agricultural implements at Petit Bourg, France, with the electric light in harvesting. The *Revue Industrielle* says that the conditions for good work were so well fulfilled that the light made it possible to harvest at a distance of more than 1,000 feet from its source. The apparatus was designed by Alharat. The lamp is attached to a high scaffolding on one end of the platform of a portable boiler and engine, the latter serving to run a Gramme electric machine.

On the Subject of Gas Leakage.—Mr. Woodhall, gas engineer to the borough of Leeds, says: "The unaccounted for gas in Leeds is 15½%, over 500 miles of mains, about 80,000 service pipes, and 60,000 meters. The length of mains and other items enumerated are greater in proportion to the sale of gas in Leeds than in any town I am aware of in England. In Manchester and Birmingham, for instance, to about the same length of mains and the same number of meters, there is fully double the consumption."

The Microscope in Photography.—The *Iron Age* states that Lermantoff has recently made some very interesting microscopical experiments in photography. When examining under a microscope magnifying 300 to 500 fold, a dry film of iodine or bromine collodion, transparent crystalline grains of iodine or bromine salts are observed regularly distributed. After dipping the plate into the silver bath the grains grow larger, but the distances between their centers do not appear to increase. Every single grain seems to be converted into the corresponding sivor salt. If developing liquor is poured over the plate, the grains rapidly lose their transparency and grow uninterruptedly, in a manner similar to the phenomenon of crystallization under the microscope. When left in contact for some time with the developing bath to which nitrate of silver has been added, the grains grow until they touch one another. This makes the plates slightly reflective. Davanne has noticed that a line drawn on paper with silver becomes plainly visible by being treated with a developing liquid holding some nitrate of silver. The action of the liquid is not, therefore, dependent upon previous action of light; it may be produced quite independently by contact of the liquid with particles of silver. This fact, and the growing of the grains render it probable that in this case a galvanic reduction of the silver from the nitrate takes place.

FIG. 1. EXTRACTING THE WATER FROM LUNGS AND STOMACH.

A Practical Adoption of the Metric System.—The Boston and Providence R. R. have recently set granite posts along both sides of their road, indicating the distance to its termini. The posts are placed *two kilometers* apart. The distances are marked in kilometers, followed by other figures giving the equivalent miles and decimals, those indicating kilometers being the most conspicuous. The B. and P. R. R. are to be commended for their foresight in this matter. The stones are of a very permanent character, and will remain long after the kilometer has become the customary unit for measuring distance. It is to be hoped that this example will be followed throughout the country.

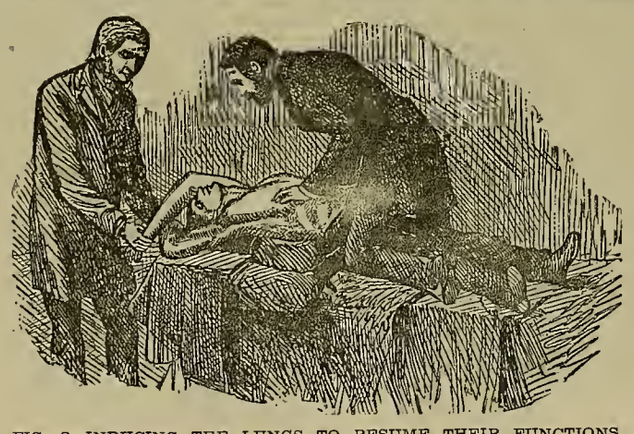


FIG. 2. INDUCING THE LUNGS TO RESUME THEIR FUNCTIONS.

The Population of the World.—The latest edition of Behm and Wagner's *Bevolkerung der Erde* gives the present population of the earth at 1,439,000,000 as compared with 1,424,000,000 as given in the previous issue. These figures are based upon the most recent censuses taken in various countries. The population is divided as follows: Europe, 312,398,480; Asia, 831,000,000; Africa, 205,219,500; Australia and Polynesia, 4,411,300; America, 86,116,000.

A Scientific Voyage to the South Pacific.—A central News telegram says: "The screw sloop *Alert*, one of the Arctic ships, is now fitting out in the Medway for a scientific voyage to the South Pacific. The work is now nearly complete, and the vessel will shortly be able to proceed to sea. Captain Sir G. Nares, K. C. B., who commanded her during the Arctic expedition, will again have the command,

Good Health.

Resuscitating the Apparently Drowned.

We recently gave a description of the method of restoring drowning persons as laid down by Dr. Howard, who, as medical officer of New York harbor, has had much to do in the resuscitation of persons apparently drowned. We repeat the description in order to introduce sketches of the operations and thus make them more clearly intelligible. Dr. Howard's method has received the approval of the New York Academy of Medicine. It has already received the prize of the American Medical Association, and has been adopted by the Life Saving Society of New York. His method is described as follows:

Fig. 1. To Pump and Drain Fluids from Lungs and Stomach.—This is done by placing the patient's face downward over a hard roll of clothing, so that the pit of the stomach is the highest point, while the mouth is the lowest. The operator supplements the pressure of his hands upon the back of the patient, above the roll, if necessary, with all the weight and force at his command.

Fig. 2. For Artificial Breathing.—The patient, whose clothing is ripped open from the waist, is laid upon his back, and the pit of the stomach is made the highest point by a hard roll of clothing beneath the back, while the head is the lowest part. The wrists are crossed behind the head; these a second person, if present, pins to the ground with one hand, while with the other the tongue is held forward with a piece of dry rag. The greatest possible expansion of the chest is thus obtained. The operator kneeling astride the patient, grasps the most compressionable part of the chest, on each side of the pit of the stomach, and using his knees as a pivot, throws forward, slowly and steadily, his whole weight until his mouth nearly touches the face of the patient. Then, by a final push, he throws himself back to his first erect kneeling position. By the sudden removal of the compressing force, the elastic ribs spring back to their original position, and by this bellows action the air rushes into and is forced out of the chest alternately, as in natural breathing. Success may attend this process in a few minutes, but hope of a favorable result ought not to be given up under an hour.

In addition to its apparently superior effectiveness, Dr. Howard claims for this method the conspicuous advantage of unequaled simplicity. When he had the medical surveillance of such matters in New York, he found that one of the most noted facts connected with cases of suffocation and drowning was the probable absence of medical aid at the critical moment. Now, experience has shown that this method can easily be understood by the most illiterate person, and may be carried into execution anywhere, with or without a doctor.

The Use of Milk.

Dr. Crosby, of the Bellevue Hospital, pronounces milk an article of diet which all persons may use, under nearly all conditions. There are those who say that they cannot take milk, that it makes them bilious, etc., but he declares that this is not true. A person who is sick may take milk with the greatest possible advantage, because it contains, in a form easy of assimilation, all the elements essential for maintaining nutrition. It is the natural aliment of the young animal, and certainly answers a good purpose for the old animal, provided it is used properly, and not poured into a stomach already over-filled, as though it had in itself no substance or richness. New milk, he does not hesitate to say, may be taken, as far as disease is concerned, in nearly every condition.

Perhaps it will require the addition of a spoonful or two of lime water. The addition of a little salt will often prevent the after feeling of fullness and "wind on the stomach," which some complain of. If marked acidity of the stomach is present, then perhaps a little gentian may be requisite to stimulate the stomach somewhat, and it may be necessary to give it in small quantities and repeat it often; but ice-cold milk can be put into a very irritable stomach, if given in small quantities and at short intervals, with the happiest effect. It is used in case of fever, which formerly it was thought to "feed," and when scalded it has a desirable effect in summer complaints.

But it is an article of diet for people in health, and who wish to remain in that happy condition, that milk should be most appreciated. For the mid-day lunch of those whose hearty meal comes at night, or for the supper of those who dine at noon, nothing is so good. The great variety and excellent quality of prepared cereals give a wide choice of food to use with milk. Bread, with berries in their season, or baked sweet apples, boiled rice, cracked wheat, oatmeal, hulled corn or hominy, taken with a generous bowl of pure cold milk, makes the best possible light meal in warm weather for children, and for all adults who have not some positive physical idiosyncrasy that prevent them from digesting it. The men of the firmest health and longest life are the men of regular and simple habits, and milk is a standard article in such a diet.

MINING AND SCIENTIFIC PRESS.

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The Week.

The week has been most harren of news. Little has occured to attract attention, unless it be the fluctuations of the stock market, and these are so empty as to merit hare mention here. As winter comes on, the miners are preparing to meet it. Virgiuia miners are laying in necessary supplies. The California hydraulic miners are preparing for the welcome water. Bodie district is growing so fast that she does not seem to have time to stop and think of a wet day, and sends word of new machinery ordered and on the way and of new claims entered and opened. The mines of Silverado are, no douht, worthy of more attention than they are receiving. Prospectors are flocking there in great numbers. Reference to our Mining Summary will show what their hopes and needs are. A correspoudent of the Holt county, Oregon, *Press*, writes to that paper an account of the placer resources of southwestern Oregon. That region has not yet figured among the mining districts of our coast. Yet, judging from the present account, prospectors might well spare some of the desperate energy which they are concentrating on Bodie and the Comstock, and expend it with profit in the lands of our northern neighhor. We notice that mining lands in the neighhorhood of Aurora, Nevada, are coming into notice. This is but the heginning of long activity that may he expected to grow up with the progress of the Bodie railroad.

JOSEPH PFIEFFER, of Rocky Bar, Alturas county, Idaho, has paid $60,000 for 1,000 feet of the Custer lode at Yankee Fork.

The Market is not the Mine.

A few months ago the Bodie stock was flickering hetween one dollar and three dollars per share; suddenly, about the heginning of July, there was a change, Bodie was over four dollars, then over seven dollars; in one week it gained three dollars more and was over ten; the next week it gained seven more; the next, eight, the next, *twenty-one*; until the shares sold for more than fifty dollars apiece. This took place in less than two months. How did the rise start and what did it indicate? The rise in the market started on the report of unmistakahle developments in the mine. A rich pocket was discovered. The discovery was earnest that the commercial world was to he enriched hy some $500,000 worth of gold; that Mono county was to hecome the seat of increased mining activity; that many idle men were to he offered honest employment; in short, that general prosperity was to he not a little added to. These were, and are facts, existing in their own right, entirely independent of any stock market. The rise in the market was, to he sure, in a measure, a gauge of the good prospects; hut in its essence it hears an entirely different interpretation. When Bodie rose in the market, it meant not that somehody thought the stock was a good legitimate investment hecause of the true worth of the mine, and was therefore willing to pay an advanced price for it, hut that somehody foresaw that as the prospects of the mine were hrightening the stock might he soon sold at a still higher price to somebody else possessed of the same acute taste for turning a quick and easy penny. Neither somehody nor somebody else cared a straw whether Bodie was really a good mine or not. All they wanted was a rise in the stock, not an improvement in the condition of the ore-body, and well disguised reports, though empty, would have suited their purpose just as well as facts. To make short work of the matter, the quotations of Bodie stock indicated the temperature to which the blood of some excited gamblers had risen, and not the size, shape, quality and general condition of the Bodie honanza.

What further proof do we want of this than the following: The Bodie mine still exists in its old place; the work upon it is heing rapidly pushed forward; the report comes from the town that "Bodie ore is heing constantly hauled through our streets hy sixteen-mule teams, and Squire Hildreth, at the Standard mill, is kept husy melting and refining Bodie bullion." So much for the mine. How about the market? Bodie stock has come down from its high horse of fifty hands and has heen as low as fourteen. What does that mean? It means that those gamhlers, somebody and somebody else, have discovered a hetter chance to gull each other hy manipulating reports from some other locality, have spied a new "deal" which they think will prove for the moment more profitahle.

But the decline is a gauge of something more. The difference hetween 50 and 14 measures a fall in the hopes of some one, a consumption of so much nerve force, a shortening of life hy so many days, and, it may he added, an increase in revenne to the Government from the manufacturers and importers of alcoholic stimulants.

This is merely an illustration of an oft-repeated story. We are not Bodie hulls. We do not own a share of Bodie stock, and never did. "Bodie" may meau "Sierra Nevada," or "Silver King," or "Martin White." The moral is an old one; yet men forget it, and even legitimate miners sometimes begin to worry when their stock "goes down." The market is not a reliahle gauge of a mine any more than a man's reputation is a true index of his character—no, nor so much. And it is well for the country that the mining industry is a very different thing from the manipulation of markets.

Our College of Mines.

We are glad to note the safe return of Dr. G. F. Becker, Chief of the College of Mines at the University, after a very pleasant and well spent three months in Europe. On inquiry we learn that a month of this time was spent at the exposition in Paris. Dr. Becker also visited the Idria quicksilver mine in Southern Austria, the mines and works of Bohemia, Saxony and South Wales, and the mining schools of Paris, Przihram and Aix la Chapelle. We learn that experiments are heing made hy Dr. Becker, with the co-operation of the managers of the Idria mine, on the protection of iron of mercury condensers against corrosion, and we are promised the results when they are ohtained, for the henefit of our readers. Dr Becker brought with him from Europe several pieces of improved apparatus for the University, which he promises to explain before the Academy of Sciences very shortly. Among this apparatus may he mentioned, as of special interest, Perrot's improved gas-muffle and crucihle furnaces, several petroleum furnaces for the same purposes, and a "Universal Petroleum Grate Furnace," of St. Clair Deville, which may be used for almost any purpose from heating a steam hoiler to melting platinum.

Dr. B. was also fortunate enough to secure for the Agricultural College specimens of the various grains and other seeds which received prizes at the Paris exposition.

WHAT AND HOW?

In this column are printed all sensible inquiries relating to subjects connected with mining or relating to any matters of general scientific interest; also the answers to them as dictated by individual experience, or as furnished by correspondents.

Isinglass.

Four subscrihers write from Scenaga, Ventura county, sending a sample of the mineral popularly called isinglass, hut properly a variety of mica, technically termed muscovite. They have a large mine of the same and wish to know the commercial value of the article.

Muscovite or potash mica is a hydrated silicate of potassium and aluminum. It occurs in vast quantities and widely distrihuted as ingredients of familiar rocks, notahly in granite. But it is only when found in large masses that it is of any practical use. When large pieces can he ohtained, the flexihility, transparency and resistance to heat of the muscovite, adapt it for many, not, however, very important uses. It is used for stove glass, lanterns and lamp shades, for the dials of compasses, etc., for letters on fancy signs, for mounting objects for the microscope, and instead of enamel on photographs. A Philadelphia gentleman has patented a process for silvering mica so as to use it for reflectors, and it has even been proposed to employ it in telescopes. Small and waste stuff is made into coarse powder and sprinkled over tar in roofing to make it fireproof. Finely ground it has been used as a luhricant and for packing deed hoxes and safes to render them fire-proof. Probably the principal use is for stoves and lanterns. In order to find a market for such purposes, the sheets must be of good size, as near colorless as possihle, and free from cracks. The sample sent has damaging stains upon it and is filled with cracks. It is sold at from $1.50 to $5 and $6 per pound, and at times reaches as high as $10 per pound. The larger the pieces, the hetter price they hring. The demand on this coast is not great. Oue large hardware house in San Francisco consumes ahout 10 pounds per annum. The demand in the East is much greater. It has been stated roughly that where 50 pounds is used here, four or five tons would he needed at the East. It is said that they have more mica in the East than can he used, and that a North Carolina company can undersell any one else. This company provide the mica in sheets of standard sizes, which have already such a reputation amoug the trade that it is douhtful whether any attempt to compete would succeed.

In the United States it is found iu New Hampshire, Maine, Massachusetts, Connecticut, New York, Pennsylvauia, New Jersey, Maryland and North Carolina. We believe the market is supplied mostly from the last-named State. It has heen found in marketable pieces near Prescott, Arizona; near Austin, Nevada; and near Soulshyville, Tuolumne county, Cal. It is said that an attempt to hring it to market from Nevada proved a failure. If the mine at Ventura is a good one, very little calculation will serve to show whether or not the muscovite can he hrought to market at a profit.

In the PRESS of Septemher 29th, 1877, an inquiry similar to the one in hand was answered at length. To this number we refer all inquirers. We reprint the following extract from that issue:

At Breslau, Prussia, an important industrial center, one house devotes itself exclusively to manufacturing articles from mica. This house cannot huy the American article, hut now purchases elsewhere, hecause the price here was too high. As for merchantable mica, even of the hest quality, the waste in working it at a factory is from 33% to 75%, and the wastage is not worth a dollar a hundred weight. The price paid hy the house referred to is 14 cents to 75 cents per pound.

In preparing samples, the pieces should he left in their natural shape, not trimmed or squared up, hut just as it comes from the mine. Mica of good quality has the following characteristics: If the top layer, generally stained with foreign suhstances, he removed, the ore heneath, when split off, should he of cystal-like transparency, while the hody of the piece, in all its thickness, should show a reddish hue, with a very smooth surface. To the touch it must feel hard; soft mica, though ever so transparent, does not serve for manufacturing purposes. Finally, the layers, when separated, should he free from flaws or air huhhles. Small pieces, two to five inches square, amount to very little in a commercial view. We have seen perfectly pure, clean sheets, 10 to 16 inches, taken from a mine on this coast, and although it was first-class in every respect, the mica could not he sold here at any price, there heing no demand at all for it on this coast. If the new toughened glass supersedes mica, as it seems likely, for it answers ahout the same purposes, mica would he of no value whatever, except for scientific matters, so that it would not pay to mine it at all.

This presents a very discouraging outlook. Mica has no douht very useful properties. It has heen found very successful in its use for reflectors especially, which is one of its most characteristic applications, as in this its flexibility is availed of to more purpose than perhaps in any other. At the same time it looks as if a mine of it cannot be successfully worked hy parties dependent upon the present market. Enterprising men, determined to increase the numher of applications of the article, would, we think, succeed in making a profitahle market for themselves. But it would require a great deal of patience and much capital.

Electro-Plating.

EDITORS PRESS:—Please give a practical recipe for making silver solution for electro-plating, and ohlige a reader. J. H. O.

Panoche, Fresno Co., Sept. 1st, 1878.

Orr and Ure are our authorities: Take four parts of grain silver; add it, in small portions at a time, to a warm mixture of about five parts, by weight, of strong commercial nitric acid and one part of water. The action should be kept uniform, and if it becomes too hrisk, should be checked hy adding cold water. When the whole of the metal is dissolved, apply a greater heat and evaporate the solution nearly to dryness, which will drive off any excess of acid that may be present. The resultiug salt, nitrate of silver, may he dissolved in a large quantity of water, in the proportion of half a gallon to each ounce of silver used. At the same time a solution should be made of from three to three and a quarter parts of cyanide of potassium in 30 or 40 parts of water, which is to he added gradually to the solution of nitrate of silver as long as it produces a precipitate. The liquid must now he allowed to remain undisturhed until quite clear, the clear poured away from the precipitate of cyanide of silver, and the precipitate washed five or six times in a large quantity of water hy simply adding the water hriskly to it, allowing it to settle and then pouring away the clear portion. Next dissolve from three to three and three-quarter parts of cyanide of potassium in 20 parts of water, adding it in portions at a time to the wet cyauide of silver, with free stirring, until the whole is dissolved, then add about three parts more of cyanide of potassium to form free cyanide and sufficient water to reduce the whole to the proportion of ahout one ounce of silver to the gallon. Finally, when all the free cyanide is dissolved, filter the solution through a piece of unglazed calico. On a small scale distilled water is used, except for washing. On a large scale rain or spring water will do. Sometimes chloride of silver is precipitated hy common salt from the nitric acid solution. The washed chloride is then dissolved in cyanide of potassium. The silver solution may he prepared hy means of a hattery. A hath is prepared by dissolving cyanide of potassium in distilled water. The hattery is charged with this solution and two plates of silver are attached to wires and connected with it. The larger, which is to he dissolved, is attached to the positive, and the smaller, which need he hut the size of a flattened wire, to the negative pole. The action of the hattery is kept up until the desired amount is dissolved.

The Shape of Shoes.

A gentleman writing from Benton, Cal., asks where he can find a shoemaker who will give him a natural fit. As his communication contains more information than questioning, it will he noticed in another column.

Non-Conducting Capacity of Different Substances.

We take the following tahle from the *Polytechnic Review:*

COMPARISON OF THE NON-CONDUCTING CAPACITY OF DIFFERENT MATERIALS, AT EVEN THICKNESS, TAKING BLACK SLATE, THE BEST CONDUCTOR OF HEAT, AT 100:

Black slate	100
Sandstone	71-95
Fire-brick	01.70
Soft chalk	50
Asphaltum	45
Oak wood	33.60
Pine wood	27.01
Wood and plaster	25.55
Sulphate of lime	20.26
Sulphate of lime and sand	18.70
Coarse ashes, shavings, hay, and straw	25-35
Sawdust and tan-bark (fine)	17-20
Mineral wood or asbestos, cemented	18-20
Fine asbestos in thread	13-15
Fine-powdered charcoal	14-16
Ordinary mineral wood, hair-felt, cat-tail, etc	10-13
Extra mineral wood, raw silk, cotton, etc., *quite loose*	8-10
Ice	0

AN ALL-STEEL BRIDGE.—The first all-steel hridge to he made in this country will be erected over the Missouri river, on the line of the Chicago & Alton railroad. It will he of five spans of 350 feet each; the elevation over high water mark will not he less than eighty feet, at which height, the light steel rods of the "Howe truss" will look like cohwehs, hnt for all that the hridge will have a hearing strength reached hy hut few existing structures in the world. The total amount of steel will he ahout 1,500 tons, equivalent to almost double that quantity of iron.

RAILWAY IN ASIA MINOR.—A London dispatch says: It is stated that Commander Cameron will startfor Cyprus soon. Thence he will cross to Asia Minor to survey a route for the construction of a railway to the Persian gulf. His route will lie through Ajas, Marash, Aintah, Diarhekir, Mardin, Mosul, Bagdad and Bassorah. The survey will probahly occupy ten months.

THE Palmetto and Flag mines in the Black Hills were sold for $15,000 each. The Old Ahe with all the machinery brought $160,000.

The Brush Electric Light.—No. 1.

The subject of electric lighting is one which has already attracted much attention, but has not, until lately, proved of any great practical value. The extreme brilliancy and purity of the light, produced between the carbon poles of a powerful electric current, has always excited the admiration of every beholder, but the difficulties in the way of applying the light on a large scale, have, for many years, appeared almost insurmountable.

The chief difficulty was the great cost of chemicals for the production of the current, and the great difficulty of keeping the large number of battery cells in working order. This objection has been entirely removed by the discovery of the fact that a coil of wire, moved in the field of a magnet, is traversed by a current of electricity. In this way it was found possible to generate a current of electricity, in quantity limited only by the power of the magnets, the rapidity of the motion of the wire helices, and the proper mechanical adjustments of the details of the apparatus. In this latter particular there has been much room for ingenuity, and there have been many ingenious dynamo-electric machines invented for the purpose of changing mechanical force into electricity. Of these we shall shortly speak.

The next difficulty was the fact that the carbon poles of the battery were consumed with varying rapidity. This could only be adjusted with the greatest difficulty, except by the use of complicated and delicate mechanisms, which could not be relied upon for rough usage. This latter difficulty was only partially removed by the famous electric candle, but has been overcome very neatly by the apparatus of Prof. Brush, which we shall shortly describe.

The above introduction has been suggested by an inspection of the Brush electric light, which has, for the last few months, been in use in the great court of the Palace Hotel. The light has given universal satisfaction, and its pleasant purity and mildness have made the place a very agreeable resort.

A short description and history of the apparatus which has so well proved itself may not be uninteresting to our readers.

The apparatus for producing the current of electricity is shown in the figure which shows the small machine. It has for its magnetic field, two horse-shoe electro-magnets, with their like poles facing each other at suitable distances apart, the circular armature rotating between them. The currents are generated in coils of copper wire wound upon an iron ring, constituting the armature. This ring is not entirely covered by the coils, but the alternate uncovered spaces between the coils are almost completely filled by iron extensions from the ring, thus exposing large surfaces of the armature ring for the dissipation of heat, due to its constantly changing magnetism. The ring revolves between the poles of two large field magnets, the two positive poles of which are at the same extremity of the diameter of the armature, and the two negative poles at the opposite extremity, each pair constituting practically extended poles of opposite character. The coils on the armature ring are eight in number, opposite ones being connected end to end, and terminals carried to the commutator. In order to place the commutator in a convenient position, the terminal wires are carried through the center of the shaft to a point outside the bearings. The commutators are so arranged that at any instant three pairs of coils are interposed in the circuit of the machine, working, as it were, in multiple arc, the remaining pair being cut out at the neutral point. The commutator consists of segments of brass, secured to a ring of non-conducting material carried on the shaft. These segments are divided into two thicknesses, the inner being permanently secured to the non-conducting material and the outer ones, which take all the wear, are fastened to the inner in such a manner that they can be easily removed when required. The commutator brushes, which are composed of hard brass joined together at their outer ends, are inexpensive and easily renewed. Even at the high rate of speed at which these machines are run, the heating of the armature is very inconsiderable, not exceeding 120° Fah. after four and three-quarter hours run. They are simple of construction, all the working parts being easily accessible, and the cost of maintenance is low.

The above description of the machine, which has been condensed from an interesting article in the May number of the *Journal of the Franklin Institute*, gives as good an idea of the machine as can be given in a few words, and those interested may refer to the above article for further details. The article referred to is the report of a committee to the Board of Managers of the Institute as to the dynamo-electric machine, but adapted to the purposes of the Institute. The committee consisted of Profs. Rogers, Chase, Houston, Thomson, and Messrs. Briggs, Jones, Sartain and Knight. This report, which is very interesting reading, is concluded in the June number. The machines investigated were the Wallace-Farmer, the Brush and the Siemans.

After a very careful and thorough investigation, the committee reported in favor of the Brush machine for the purposes of the Institute, chiefly for two reasons.

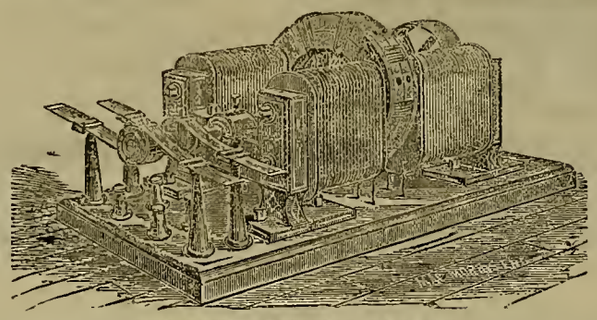
"1. It is admirably adapted to the production of currents of widely varying electro motive force, and produces a good light.

"2. From the mechanical details of its construction, especially at the commutators, it possesses great ease of repair to the parts subject to wear."

The machine selected for the Institute is the small machine figured in the cut. Such a machine should be possessed by our State University. The large machine is the one which is better adapted to electric lighting, for there is a greater economy in its working.

Another great advantage of the Brush machine is the fact that its current is capable of subdivision into several seperate circuits. This is a great advantage over most of the other machines, as formerly it was found possible to run only one circuit with each machine. Mr. Adolph Sutro, of Sutro tunnel, is reported to be much pleased with the results of the Palace Hotel machine. He stated that it was greatly superior for tunnel lighting to anything he had seen in Europe.

This subdivision of the current enables our machine to be used for several purposes at once, as for electro plating, and for the electric light, etc. In view of the recent improvements in the



THE BRUSH ELECTRIC MACHINE.

way of electro-metallurgy, we consider this a great advance in this direction.

The Brush machine is at present manufactured in six sizes, viz.:

No. 1.=	500 candles	1	light or current.
" 2.=	1,000 "	1	" "
" 3.=	2,000 "	2	" "
" 4.=	4,000 "	4	" "
" 5.=	12,000 "	6	" "
" 6.=	25,000 "	12	" "

In the next number we propose to give a description of the improvements of Prof. Brush in the mechanical arrangement of the electro light itself, with some further facts about its efficiency.

BETTER CARE OF LIFE ON RAILROADS.—The *Railway Age* remarks that the vast improvement that has been made in a few years in respect to safety appliances upon railways is indicated every now and then by the comparatively harmless results of collisions and derailments, which formerly would inevitably have been accompanied by terrible loss of life. Now it is not very unfrequent for trains to run into each other at full speed without the death or even serious injury of a single person resulting. Such an accident in Wisconsin a couple of weeks ago, and one near St. Louis recorded in this issue, illustrate the statement. The increased safety of travel is due mainly to the adoption of steam-worked brakes, with which the engineer can instantly arrest the motion, and of continuous platforms which prevent telescoping, the accompaniment of collision which formerly was the most disastrous.

A COMMENDABLE ENTERPRISE IN SAN JOSE.—Bro. Herring, late of the *Agriculturist*, has charge of the Union Free Reading Room, San Jose. He is endeavoring to establish the institution upon an enduring basis for the benefit of all, and is making arrangements to continue to receive his old exchanges and to add many leading periodicals to the list.

THE export of wheat from New York city for the week ending September 14th, was the largest ever known, 2,800,000 bushels.

OREGON is to ship fresh beef to San Francisco.

Mines and Works of Almaden.—No. 2.

[Translated for the Press from "ANNALES DES MINES."]

Silurian System.

The rock which predominates among the silurian rocks in the environs of Almaden is a schist often black, generally gray or brownish, nearly always spotted with hydrated oxide of iron. It sometimes takes a reddish or slightly blue color. It always contains lamina of silvery white mica. It often loses its characteristic structure and becomes earthy. Its layers are never straight nor very continuous; often they are ruptured in every sense, and it is then difficult to determine their direction. It is in the schists that one finds the greater part of the silurian fossils. The most abundant is the *Calymene Tristani*, which hardly ever fails when the schists are fossiliferous. Next comes the *Orthis resdulinaria*, nearly as abundant, but always imprinted, a little Orthoceratite, the *Bellerophon bilobatus, the Calymene Arage, Illoenus, Dalmanites, Asaphus*. One may sometimes traverse great spaces without meeting a single fossil; but in some places the rock contains molds and indeterminable fragments.

After the schists, quartzite is the predominating rock in the silurian layers. It is nearly always white, although frequently spotted with red by oxide of iron, principally along the planes of stratification or the transverse fissures. It is very hard, of a fine grain, and traversed in many places by little veins of quartz. Sometimes it changes into a conglomerate of pebbles united by a silicious cement so compact as to make it impossible to separate any from the mass of the rock.

The quartzite which is found in contact with the black schist takes sometimes the same color, and it is very difficult to explain how in the midst of the same beds white and black quartzite is found. The one or the other is often of great size, forming the elevated serrate crests which surround Almaden.*

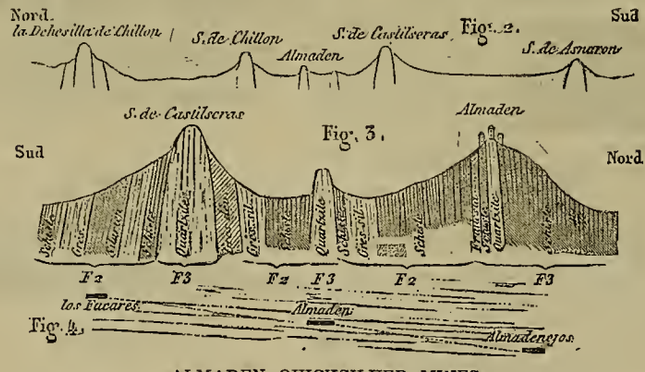
A remarkable fact is that the direction of the chains of quartzite, so distinctly characterized to the north and south of Almaden, is by no means the direction of the beds themselves. The outcroppings of the quartzite run, in effect, north, 80°—90° east, while we have found for the beds of the Sierra de Chillon the directions:

North	70 deg	East
North	80 deg	East
North	115 deg	East
North	110 deg	East
North	113 deg	East

—C. de Prado, upon the geology of Almaden, etc. (Bulletin of the Geological Society, t. XII., 1855.)

This last direction north 110° to 115° east is dominant for two kilometers. At the summit of the chain at the western extremity of which is the chapel of the *Virgen del Castillo* we found the directions north 145°—155°—155°—150°—149° east.

The great banks, nearly vertical and often perfectly level for five or six meters which are found everywhere upon the summits of these chains, permit of exact measurements little subject to errors. Everywhere, or nearly everywhere, the beds make with the axis of the chain an angle varying from 10° to 40° to the south. This fact would seem to indicate at least two successive upheavals anterior to the deposit of the tertiary, which farther on towards Alcaras, at the eastern extremity of the Sierra Morena, reposes horizontally on the straigbtened layers of the silurian rocks. The preceding figures show how the direction of the strata vary at points very near to each other; it is very difficult, under these circumstances, to attribute to this or that particular movement the actual disposition of the beds. All that can be established is that they have been powerfully upheaved and folded at an epoch when they were far from having acquired their present actual consistence.



ALMADEN QUICKSILVER MINES.

In these immense banks of hard quartzite, which give to the country its characteristic relief, there have been found only *Fucoides, Bilobites* and other rare vegetation which M. de Prado formerly collected. This interesting collection is now deposited at Madrid. It is only in the quartzite situated in the middle of the schist that one can see animal fossils; but then one can say that it is another rock, grayish and fragile *(tendre)* often micaceous, colored with hydrated oxide of iron, as one can see at Almaden itself, very near to the entrance of the deepest tunnel (for drainage of the mines), and better yet towards the meridional of the Sierra de Castilseras. These soft quartzites have an external appearance so different from the hard quartzites, that at first sight they might be taken for the devonian sandstone. Fig. 3, where these quartzites have been designated by the name silurian sandstone *(gres sil.)*, shows their interpolation between the layers of schist.

M. de Prado describes these fossils as *Calymene Tristani, Bellerophon bilobatus*, etc.; they are therefore beyond dispute of the silurian epoch, although they should be distinguished from the sandstone with *bilobites*.

Finally, a rock peculiar to the silurian strata of Almaden is that to which the miners have for a long time past given the name *piedra frailesca*, because it has usually the grayish color of the dress of the Franciscan Monks, who had formerly a convent at the market town. It was not known for a long time exactly to what epoch to refer this rock in which M. Dumont and M. de Prado have found *bilobites*. The beds of *frailesca* never seem to extend to great distances; they seem to form a series of intercalated lentils (lens-shaped strata) between the schists. They are breccia very much metamorphosed, essentially consisting of grains of quartz, of carbonate of lime, of dolomite, of fragments of schist, of serpentine; all cemented by an amorphous feldspathic paste.

At Almaden, nearly in contact with the cinnabar-bearing rock, one finds the *frailesca* cemented with dolomitic limestone, with fragments of deep black, thin and not rounded schist, which sometimes have a length of two or three decimeters. The rock, in spite of the predominance of lime, has a schistose structure altogether. Its thickness is more than 30 meters. Its length is not known, but cannot be less than 300 to 400 meters. In the mass are many drusal cavities lined with little rhombobedral crystals of dolomite.*

*We have analyzed this rock at the laboratory of the school of mines and found as a rough estimate of its composition:

Carbonic Acid	4.30
Water	12.27
Silica	44.66
Alumina	17.20
Oxide of Iron (Fe2 03)	7.80
Lime	6.50
Magnesia	3.20
Soda	1.86
Potash	1.15
Total	09 03

The *frailesca* presents otherwise many varied aspects. The collection for use in the preparation of the geological map at Madrid amounts to many samples, of which I will mention the following:

Schistose breccia of *frailesca*	Mines of Almaden.
Frailesca covered with a bed of calc-spar, which is covered in turn by crystallized iron pyrites	Almaden.
Bluish-black *frailesca*	Almadenejos.
Frailesca very quartzose	Almaden.
Frailesca argillacious with nodulis of ocher	Val d'Arrubiel.
Frailesca with limestone veins	Val deazognes.
Frailesca reddish with dolomitic veins	Almaden.

[To be Continued.]

JELLETT'S PACIFIC COAST COLLECTION LAWS.—We acknowledge the receipt from J. H. Jellett of the "Revised Edition" of the above work. Part I. gives a revised list of the names of reliable attorneys in the principal cities and towns throughout the Pacific coast; Part II., the jurisdiction of U. S. Courts. The remaining 10 parts are devoted to a summary of the laws of California, Nevada, Oregon, Washington Territory, Idaho, Montana, Utah, Wyoming, Arizona and British Columbia, including insolvency laws. The revision has been undertaken with a view to concisely present the laws of the Pacific States and Territories as they stand upon the repeal of the National bankruptcy act. The author was assisted by practicing attorneys representing each State and Territory treated of. The lately altered position of bankrupts makes the publication of this work at the present moment especially timely.

ESTIMATED cost of Paris exhibition buildings, 50,000,000 francs; estimated receipts, 21,500,000. It is expected that the government and municipality will indirectly derive a revenue of about 100,000,000 francs.

THE total losses to creditors of all National Banks during the last 16 years upon $500,000,000 of capital, and $800,000,000 of deposits, are estimated not to exceed $6,500,000.

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We invite the acquaintance of all parties connected with inventions and patent right business, believing that the mutual conference of legitimate business and professional men is mutual gain. Parties in doubt in regard to their rights as assignees of patents or purchasers of patented articles, can often receive advice of importance to them from a short call at our office.

Remittances of money, made by individual inventors to the Government, sometimes miscarry, and it has repeatedly happened that applicants have not only lost their money, but their inventions also, from this cause and consequent delay. We hold ourselves responsible for all fees entrusted to our agency.

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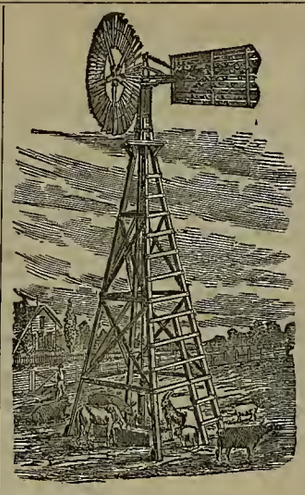

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I am truly yours, ALFRED J. BURKE,
Chief Mail Clerk S. F. *Daily Evening Post.*
San Francisco, July 20th, 1878.

Endorsed by the Medical Profession.

SAN FRANCISCO, July 9th, 1878.

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The lightest, most easily adjusted, and only Drill using rubber buffers to protect cylinder-heads, and with Automatic Feed.

Some of the mines using this Drill on the Comstock Lode, Virginia City, Nevada:

Best & Belcher M. Co.,	Con Virginia M. Co.,
Crown Point M. Co.,	California M. Co.,
Belcher M. Co.,	C. & C. Shaft,
Yellow Jacket M. Co.,	Utah M. Co.,
Sierra Nevada M. Co.,	Ophir M. Co.,
Silver Hill M Co.,	Mexican M. Co.,
Sutro Tunnel Co.	Overman M. Co.,
Gould & Curry M Co.,	

REYNOLDS, RIX & CO., Agents.
18 & 20 Fremont Street, San Francisco, Cal.

KING ENGINE.

The Only SAFE BOILER. SAVES One-half the FUEL Consumed by Others.

The engine is adapted to all the various industries in which small power is required. The engines are FIRST-CLASS, and are made from two to twelve horse-power.

The smaller sizes are especially recommended for irrigating land, driving printing presses, or manufactories. The larger sizes are being extensively introduced in small quartz mills, where their economy of fuel and portability especially commend them. Send for circular.

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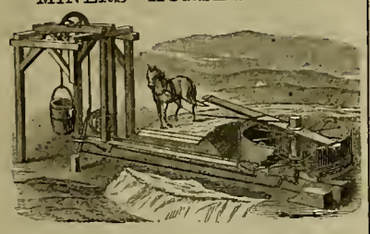
MINERS' HORSE-POWER.



This Power is especially adapted to working mines, hoisting coal or building material, etc. It will do the work of a Steam Engine with one-tenth the expense. One Horse can easily hoist over 1,000 pounds at a depth of 500 feet.

The Power is mainly built of wrought iron, and cannot be affected by exposure. The hoisting-drum is thrown out of gear by the lever, while the load is held in place with a brake by the man tending bucket. The frame of the Power is bolted to bed timbers, thus avoiding all frame work. When required these Powers are made in sections for packing.

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This furnace is guaranteed to chloridize from 88 per cent. to 95 per cent. of the silver, and put gold in a state so that 88 to 95 per cent. of the battery assay can be obtained by amalgamation on any gold or silver ore ever formed by nature.

The cost of Roasting and Chloridizing is as follows:

One man, per day	$3 50
One man, per day	3 00
Wood, 1¼ cords at $3	7 00
Cost of 20 tons	$13 50
Cost of one ton	67½

From 2½ to 5 per cent. of salt is necessary.

In a furnace of three or four times this capacity the cost is decreased by 20 per cent.

Several furnaces are in successful operation in California, Nevada and Idaho.

Any persons wishing any reference can address:

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Lewis Chalmers, Manager Exchequer and 1XL Mines, Silver Mountain, Cal.
J. S. Cone, Vice-President Tchama County Bank, Red Bluff, Cal.
R. H. Campbell, Superintendent Afterthought Mine, Redding; Shasta County, Cal.

For further information, apply to
D. J. O'HARRA, Reno, Nevada.

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A first-class, large sized Britton Fire Engine, in fair order is offered for sale cheap. Price, $400. It is worth more than double that sum. About forty men can work on the brakes. Towns or corporations wishing a good machine should examine this engine before ordering elsewhere. Apply to

ROOT, NELSON & CO.,
Union Foundry, Sacramento

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Highly Important to Miners and Quartz Mill Men.

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Supplied in any quantity and size at greatly reduced rates at

SAN FRANCISCO GOLD, SILVER, NICKEL AND COPPER PLATING WORKS,
Nos. 653 and 655 Mission Street, San Francisco.
E. G. DENNISTON, - - - - - - - - PROPRIETOR

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MACHINERY of all Descriptions.

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J. A. Fay & Co.'e Woodworking Machinery,
Bement & Sons' Machinists' Tools,
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N. Y. Belting & Packing Co.'s Rubber Goods
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Judson's Standard Governore,
Dreyfus' Self Oilers,
Gould Manufacturing Co.'e Hand Pumps,
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A FULL LINE OF

Belting, Packing, Hose, and Other Mill and Mining Supplies on Hand.

☞Send for Illustrated Catalogue.

Eetablished 1844.

JOSEPH C. TODD,

ENGINEER
—AND—
MACHINIST.

Flax, Hemp, Jute, Rope, Oakum and Bagging Machinery, Steam Engines, Boilers, etc. I also manufacture Baxter'e New Portable Engine of 1877, of one horse-power, complete for $125; can be seen in operation at my store. Two horse-power, $225; two and a half horse-power, $250; three horse-power, $275. Send for deecriptive circular and price.

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10 Barclay Street, N. Y., or Patereon, N. J.

Mill and Mining Machinery Of All Kinds For Sale by BERRY & PLACE

At the Old Stand, Market, head of Front Street, S. F.

BURNHAM'S STANDARD TURBINE WATER WHEEL.

WARRANTED BEST & CHEAPEST.
Also, MILLING MACHINERY.
PRICES REDUCED APR. 20, '78.
Pamphlets free. Office, York, Pa.

FOR SALE.

One Engine, 16 by 30 Inches, Link Motion.
One Engine, 14 by 30 Inches, Link Motion.
One Engine, 12 by 24 Inches.
One Engine, 9 by 18 Inches.

☞Boilers to match each Engine. Each of the above will be sold at a very low figure.

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ICE! ICE!! ICE!!!

Ice at $1.00 Per Ton.

PICTET ARTIFICIAL ICE COMPANY, (Limited).

Room 51, Coal and Iron Exchange.

P. O. Box 3033, New York.

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IRON PIPE

In Store for Sale at Loweet Market Rates

500,000 FEET

BLACK AND GALVANIZED IRON PIPE
—FOR—
GAS AND WATER.

Sizes From ¼ Inch to 6 Inches.

Brass, Wrought, Cast and Malleable Pipe fittinge for Gae, Steam and Water.

W. W. Montague & Co.

110, 112, 114, 118 & 120 Battery St.,
SAN FRANCISCO.

SUSPENDED WIRE ROPE TRAMWAYS.

This system of transport is peculiarly adapted for the carriage of minerals over rough countries. Heavy gradients and long spans easily overcome, and cheaper than by any ordinary means.

Transmission of Power by Wire Ropes.

The power of water or steam can by this means be carried for long distances, with great economy.

For estimates and practical information apply to
JOHN SAMSON, Engineer,
No. 743 Pine Street, San Francieco, Cal

Printing Type For Sale Very Low.

We have on hand some 400 to 500 lbs. of brevier, in good condition, for sale at a bargain. Will sell a part only if desired. Second-hand cases to match. Also a font of bourgeois in first-rate order, with cases. Also a cabinet and upwards of twenty fonts of good display type, not very old and but little used. Some of the fonts are large, of modern style, and what might be termed good substantial display type for advertisements and job printing.

A good proof press will also be sold at a greatly reduced price from cost.

We can fit out a good country printing office nearly complete at a moderate cost. Call and see the material.

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PETERSON & OLSSON,

Model Makers, and Manufacturers of Emblematic Signs Models for the Patent Office, in Wood or Metal, a Specialty.

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Bet. Montgomery and Kearny, (up stairs), San Francisco. All kinds of tin, copper and brass work made to order.

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Working Drawings Furnished. ☞Premium obtained for Designs furnished the city for proposed Steam Fire Launch.

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505 Clay Street, (southwest corner Sansome),
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ANDERSON & RANDOLPH,

JEWELERS,

(CLOCK TOWER BUILDING),

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SAN FRANCISCO, CAL.,

Call the attention of the public to their extensive display of

WATCHES, DIAMONDS, JEWELRY AND SILVERWARE.

The largest stock in the City at the lowest prices.
Goods sent to all parts of the Coast.
Watches repaired in a superior manner.

A. J. Ralston, Pres't. Prentiss Selby, Supt.
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Selby Smelting and Lead Co.

Manufacturers of

Lead Pipe, Sheet Lead,

Drop, Buck and Chilled Shot, Bar Lead, Pig Lead, Solder, Anti-Friction Metal, Lead Sash-weights, Lead Traps, Block Tin, Pipe, Blue Stone, Etc.,

Office, 216 Sansome St., San Francisco.

Refiners of Gold and Silver Bars and Lead Bullion. Lead and Silver Ores purchased.

Shot Tower, corner First and Howard streets. Smelting Works, North Beach.

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Rent Houeee, Collect Rente, and Manage Estates.

HOUSES AND LOTS FOR SALE in this City, Oakland and Alameda. Lands and ranches for sale in all parts of the country. Agents in the principal cities. Collections made throughout the Coast.

No. 534 Callfornia Street.

G. F. Deetken. Wm. E. Smith.

PIONEER REDUCTION WORKS,

No. 19 Channel Street, San Francisco, Cal
G. F. DEETKEN, MANAGER.

Hghest price paid for GOLD, SILVER and Copper Ores.

Steel Castings,

From ¼ to 10,000 lbs. weight, true to pattern, sound and solid, of unequaled strength, toughness and durability. An invaluable substitute for forgings or cast-iron requiring three-fold strength. Send for circular and price-list to

CHESTER STEEL CASTINGS CO.,
Evelina Street, - - - Philadelphia, Pa.

San Francisco Cordage Company.

Established 1856.

We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes: Tarred Manila Rope; Hay Rope; Whale Line, etc, etc

TUBBS & CO.,
611 and 613 Front Street, San Francisco.

CHROME IRON WANTED.

Parties having any vein or deposit of Chrome Iron wil please send all particulars as to location, distance from railroad or other communication with this City.

Address, CHROME IRON,
Scientific Press, No. 202 Sansome St., San Francisco.

TO OWNERS OF REBELLIOUS ORES.

Persons interested in mines of rebelious ore, or having on hand any ore that is not satisfactorily worked, yielding less than it assays, will do well to notice the following offer. The undersigned is in possession of a new secret process which he is willing to try on any ores sent to him. If a pound or more of ore is forwarded to his address, he will test it with his process, and acquaint the owner with the results and the cost per ton for working. Address,
S. P. BRESSLER, Elkhardt, Indiana.

Dewey & Co. { 202 Sansome St } **Patent Ag'ts.**

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending Sept. 5.	Week Ending Sept. 12.	Week Ending Sep. 19.	Week Ending Sep. 26.
Alpha	16½ 13	16 13⅔	16 13⅓	20¼ 14½
Alta	2¼ 17⅔	23 17	19 12¼	20 16½
Andes	85c 75c	95c 65c	90c 75c	2 90c
Alps				3
Argenta	2.35 1½	2½ 2	2.90 2.05	3¼ 3
Atlantic				
Aurora Tunnel		3 2	2½ 2	3 2½
Baltimore Con		2 1½	2 1.35	2½ 2
Belcher	15½ 13	16 12	12¼ 9	13⅜ 8
Belmont	3½ 2¼	5 3¼	4.85 3.90	4½ 3¼
Best & Belcher	25½ 20	30 23	34½ 26	39 30
Bullion	11¼ 7½	13 8½	14½ 11½	18¾ 12½
Bechtel	2 1.30	1.60 1.05	1.30 95c	2 1½
Belle Isle		40c 35c	45c 40c	60c 40c
Bodie	49½ 33	37½ 28½	37½ 17	28 19
Benton	7¼ 4½	11½ 9	10 5½	9½ 8
Bulwer		13 11½	13¾ 11½	13 12½
Boyle				
Black Hawk		1.90 1½	1 75c	1
Belvidere		3 2	2¼ 1½	2 1.80
Booker		1.65 1	1 75c	1¼ 90c
Caledonia	4.95 3¼	4.55 3⅜	4.20 3⅓	6 3.95
California	13 12	12¼ 10½	15½ 11	15½ 13⅜
Challenge	2 1.40	1½ 1.30	1.40 1.20	1.60 1.60
Chollar-Potosi	40 34	50 36	48 43	68 47½
Comanche				
Confidence	1.07	8½ 10	8 13½	9
Con Imperial	1.20 1	1.10 1	1.15 1	1.75 1
Con Virginia	13 11½	13 11⅞	18 12½	17 15½
Crown Point	13 9½	12⅜ 9	10⅜ 8½	11½ 9
Con Washoe				
Champion		2 1½	1½ 1	1½ 50c
Comondria		80c 40c	60c 40c	
Dayton	55c 40c	55c 45c	40c	
DeFrees	30c 25c	40c 25c	40c 25c	50c 20c
Daney			50c 40c	
Day	95c 80c	80c 40c	75c 50c	70c 45c
Eureka Con	41 40	42 40	42 37	44 37
Exchequer	5⅞ 4⅞	6 4⅞	6½ 5½	6⅜ 5⅜
Endowment	75c 50c	70c 55c	60c 40c	1.10 40c
Gen Thomas				
Grand Prize	6½ 5⅞	6½ 5½	6 5⅜	6 5⅜
Gila	45c 40c	40c 30c	30c 25c	30c 25c
Golden Chariot	45c 40c	60c 35c		
Golden Terra		4	4½ 4	3½
Goodshaw		1¼ 50c	90c 80c	1 50c
Gould & Curry	12⅜ 9⅞	18 11⅞	21 16	24 17⅜
Hale & Norcross	10¼ 9⅝	16 6⅞	17 13⅞	44 17½
Hillside		6 4⅜	5 4⅜	4 4
Highbridge		2.15 1.70	2.15 1½	2.05 1.85
Homestake		7⅞ 7½	10 9	9½ 9
Hussey	1 75c	80c 60c	1 75c	75c 40c
Independent		2½ 2.20	3½ 2	4 2.65
Juha	11 5⅞	8 6	7 5¾	7⅝ 6⅜
Justice	10½ 7⅜	11⅜ 9½	11¼ 9½	12 9½
Jackson	6½ 4⅜	8 6	11⅜ 7⅞	9 8
Joe Scates				
K K Con				
Kentuck	7 5	10 5½	9 7	10 7
Kossuth	40c 20c	30c 25c	75c 25c	80c 25c
Keystone		6 6	7½ 6	7
Lady Bryan		3½ 2½	5½ 3½	5
Lady Wash	17⅛ 15	5 2	16⅜ 3	3¾ 2.90
Leopard	2 1.60	2 1½	1.80 1.60	2 1
Leviathan	85c 70c	85c 65c	85c 60c	1¼ 70c
Leeds	1 75c	1.10 95c	1.20 1	1.10 1.20
Lee		1½ 1	75c 50c	1 75c
Map Belle		2 1.70		
Modoc	70c 60c	60c 50c	60c 50c	45c 10c
Manhattan	7 6	7 6	7½ 7	6¾ 6
Martin White		7¼ 7	7¼ 6⅞	7 7
McClinton		1.50 80c	70c 70c	1.05 75c
Meadow Valley	50c 35c	50c 40c	40c 40c	40c 20c
Mexican	47 24	59½ 42	60½ 55	96½ 62½
Mides		2 2		2½
Morning Star		7 5	5 4	6 4½
North Con Virginia	4½ 3½	12 8	17 7½	13½ 6½
New York	3 1.90	3 1½	3 1.05	2½ 1.70
Northern Belle	11 9½	11 9	11 9½	10½ 9½
New Coso	500 35c	40c 53c	40c 30c	30c
Navajo	1.30 1	1.30 1.15	1.45 1.20	1½ 1½
Occidental	.05 40c	1½ 1	1.20 1	60c
Ophir	54½ 41	60 47	61 49	98 62
Oriental		3 1	1½ 2½	1½ 1½
Overman	21 10c	22 16½	19¼ 15	27 18
Panther	45c 2 c			
Phenix		2½ 2½	3 2½	6 3½
Phil Sheridan		3½ 3	3½ 2.60	2½ 2½
Prospect		50c 50c		30c 25c
Raymoud & Ely	4 3½	4½ 4	5 5	6 4½
Richer		4½ 1½	2½ 1	1½ 90c
Rock Island	35c 10c	50c 25c	40c 25c	
Rye Patch				1 75c
Rough & Ready		3½ 2½	3 2	3½ 2½
Savage	15 12½	19½ 13	21 16	27 19
Seg Belcher	39½ 32	45 30	48 35	43½ 35
Sierra Nevada	105 48	170 96	162 160	215 195
Silver Hill	4 2½	4 3	3½ 2½	3 3
Silver King				17 15
Silver Prize		15c 15c	15c 10c	15c 10c
Succor	2½ 1½	2 1.70	2.60 1.70	2 1.90
Summit		3½ 3	3 2½	1½
Scorpion		15 9½	20 8	12½ 5½
Solid Silver	9 7	5 4½	5½ 4.70	4 3
South Bodie		1 50c	1 50c	1 75c
South Standard		60c 40c	85c 40c	90c 60c
Star	1½ 85c	1 75c	1 90c	1 75c
St. Louis		80c 60c	80c 70c	75c 60c
Syndicate		2½ 2	2 2	2 2
Tioga Con		2.80 1½	3 1½	4½ 3½
Tiptop		1.40 50c	1.40 1½	1.80 2 1.30
Trojan	1½ 50c	75c 50c	65c 40c	65c 50c
Union Con	67 30	115 77	115 102	157 132
Utah	39 20	51½ 34½	52 40	58 44
Verumont Con		9 8	15½ 14½	20 15½
Ward		2½ 1½	1.80 1	1½ 1½
Wells-Fargo	1 50c	90c 55c	75c 35c	60c 4·c
Woodville	75c 50c	75c 50c	65c 50c	65c 50c
White Clond				
Yellow Jacket	23 17½	25½ 21½	25½ 21½	30 24

Sales at S. F. Stock Exchange.

Friday A. M., Sept. 20.

1710	Alta	17¼@17⅜	
145	Alpha	15⅝@15⅞	
560	Best & Belcher	29@30	
1300	Bullion	12¾@12⅞	
1275	Belcher	9½@9¾	
2145	Con Virginia	15½@15⅝	
1215	California	13¾@14	
415	Chollar	47¼@49	
1275	Crown Point	9¾@9⅞	
2800	Con Imperial	1@1.05	
1860	Caledonia	4@3.95	
170	Confidence	91@99	
1040	Exchequer	5½@5⅝	
790	Gould & Curry	18¼@17¾	
1135	Hale & Nor	17½@18	
1490	Justice	9¾@10	
1710	Juha	7¼@7½	
65	Kentuck	7¼	
380	Lady Bryan	4¾@4.15	
3460	Mexican	62½@65	
665	Overman	19@18	
1615	Ophir	62@63¾	
1130	Sierra Nevada	195@198	
795	Savage	19@19¼	
5	Seg Belcher	41	
780	Union Con	132@136	
130	Utah	47	
655	Yellow Jacket	24¼@24	

AFTERNOON SESSION.

985	Argenta	3	
250	Aurora T	3	
735	Andes	90c@1	
2230	Benton	9¢@8¾	
250	Bechtel	1½	
610	Bodie	19	
1125	Belmont	4¼@4	
850	Bulwer	12¾@13	
875	Belle Isle	50c@40c	
25	Black Hawk	1	
730	Belvidere	2@1.90	
2295	Booker	90c@1	
100	Blue Jacket	5	
1009	Columbia	1¼@1.20	
610	Challenge	1¼@1.60	
300	Champion	1½@1	
200	C Pacific	1¼@1.40	
150	S Standard	90c	
700	St Louis	80c	
400	S Xavier	1	
870	Silver Hill	3	
845	Solid Silver	4@3	
21000	Sutro	15c	
550	Sitting Bull	1	
150	Syndicate	2@2¼	
2740	Tiptop	1.30@1½	
3835	Tioga Con	4¼@3¾	
1150	Tuscarora	55c	
800	Trojan	60@50c	
800	Vermont Con	20@18	
65	Woodville	50c	
667	Ward	1¾@1.60	
915	Wells-Fargo	50@45c	

Saturday A.M., Sept. 21.

445	Alpha	14¼@15	
1955	Alta	17@16¾	
2100	Argenta	3¢@3.10	
1795	Bullion	12¾@13	
1385	Best & Belcher	32¾@33	
1510	Belcher	9¼@9¾	
450	Belmont	4.45@4¼	
4340	Con Virginia	16½@17	
1330	California	14@14½	
850	Confidence	9¼@11	
410	Chollar	50@49	
1040	Crown Point	9¼@9¾	
6860	Con Imperial	1.10@1.05	
125	Exchequer	5½@5⅞	
125	Eureka Con	38	
1645	Gould & Curry	19@19¼	
100	Gila	25c	
410	Grand Prize	6@5¾	
200	Hussey	60c	
2915	H & Norcross	19½@22	
610	Hillside	4¼@4¼	
630	Justice	10¾@10¾	
640	Jackson	18@18¼	
500	Jefferson	2.05	
690	Kentuck	7@7¼	
2425	Mexican	89@95	
950	Navajo	1¾@1.60	
3010	Ophir	59@58	
315	Overman	19@18¾	
1050	Phenix	5@8	
175	Raymond & E	5¾@5	
1395	Savage	20@19¼	
10	Seg Belcher	35	
840	Sierra Nevada	199@201	
915	Union Con	15⅞@15⅝	
230	Utah	44@48	
1535	Yellow Jacket	27@25	

Monday A. M., Sept. 23.

2120	Alta	16¾@17	
900	Alpha	17@20	
3365	Bullion	13¾@13⅝	
1405	Best & Belcher	36@35¾	
3620	Belcher	8@9¼	
2650	California	15@15¾	
2825	Con Virginia	17@16¾	
655	Chollar	69@68	
2985	Crown Point	9@10	
7935	Con Imperial	1.10@1.20	
380	Confidence	13@13¾	
760	Caledonia	4.30@4.10	
2335	Exchequer	7@6	
2338	Gould & Curry	24@22¾	
4470	Hale & Nor	30@44	
1140	Justice	10½@10	
2700	Julia	7¼@6½	
505	Kentuck	10@9	
1240	Lady Bryan	4¼@5	
1725	Mexican	55@96	
3085	Ophir	96@98	
660	Overman	19½@20¼	
1805	Savage	25@27	
1017	Sierra Nevada	205@201	
100	Succor	2	
250	Utah	55	
445	Union Con	157@152	
2355	Yellow Jacket	27¼@30	

AFTERNOON SESSION.

1975	Andes	1¼@1.80	
1200	Argenta	3.40@3	
200	Aurora T	2¼	
1960	Bodie	20@23	
340	Bulwer	12¾@12	
660	Bechtel	1¼@2	
160	Baltimore Con	2	
330	Belvidere	2	
4860	Booker	1	
1610	Belmont	4¼@3¾	
1000	Belle Isle	50c	
200	Champion	50c	
550	Challenge	2¢@2.15	
200	O Pacific	1.40@1¼	
990	Day	40@40c	
900	DeFrees	30c@50c	
335	Eureka Con	38@41	
800	Eudowment	95c@90c	
290	Graud Prize	6@5¾	
100	Gila	25c	
1400	Goodshaw	95c@1	
940	Hussey	40c	
370	Hillside	4¼@4	
945	Highbridge	2.05@2	
3835	Independent	3@4	
1633	Jackson	14@12¾	
1415	Kossuth	25@40c	
595	Leeds	1.20	
820	Leopard	1¼@1.45	
435	Lady Wash	3¢@2.90	
1020	Leviathau	1@1¼	
800	Lee	75c	
360	Morning Star	5@5½	
1470	Modoc	10@15c	
460	Manhattan	6¼@6¼	
720	Mono	2¼@3	
135	Martin White	7@7¼	
2250	McClinton	90c@75c	
50	Meadow Valley	20c	
270	Northern Belle	10½@10	
940	North Con Vir	12@13¼	
600	Newark	1¼	
775	New York	2@1.70	
1015	Navajo	1.60@1¼	
2305	Oriental	1½@2¼	
700	Prospect	30@25c	
845	Phenix	5½@5⅝	
2685	Phil Sheridan	2½@2	
100	Raymond & Ely	5¼	
600	Richer	1¼	
795	Scorpion	12¼@11¾	
185	Solid Silver	3½@3	
625	Sunmit	2½@1¾	
935	Bodie	75c@90c	
1400	Sitting Bull	1½@1¼	
200	Star	80@75c	
100	Silver King	15	
1160	Silver Hill	3¼@3	
350	Syndicate	2½	
50	S Xavier	1¼	
2155	Tiptop	2@1¾	
1900	Trojan	55@60c	
300	Tuscarora	5¢	
3565	Tioga Con	4½@4	
45	Vermont Con	2¢	
200	Woodville	50c	
2460	Wells-Fargo	50@60c	
385	Ward	1¼@1.65	

Tuesday A. M., Sept. 24.

915	Alpha	20¼@19¾	
1120	Alta	20@18½	
720	Best & Belcher	39@38	
4815	Belcher	11@12	
3035	Bullion	17@16¾	
750	California	15¼@15¾	
4305	Con Virginia	16@16¾	
2750	Con Imperial	1.20@1.40	
305	Confidence	12@11¾	
2595	Crown Point	10@11¼	
120	Chollar	65@66¼	
3540	Exchequer	6¼@5	
10	Gould & Curry	23	
115	Hale & Nor	31¾	
1200	Justice	10¼@10	
650	Kentuck	10@9	
1570	Mexican	79@76	
1470	Ophir	85@75	
1035	Overman	25@23	
390	Sierra Nevada	205@211	
1560	Savage	23@26	
20	Seg Belcher	37@38	
935	Union Con	143@154	
90	Utah	53@55	
390	Yellow Jacket	27@26¾	

AFTERNOON SESSION.

1775	Argenta	3¼	
1850	Andes	2¢@1.90	
200	Aurora T	2¾@3	
650	Belmont	4@3.85	
700	Belle Isle	55c	
1185	Bechtel	1½@2	
285	Bulwer	12¾	
1045	Bodie	24@26	
590	Benton	8@8½	
615	Belvidere	1.80@2	
1515	Booker	90c@1¼	
500	Blue Jacket	5	
555	Baltimore Con	2¢@1	
150	Pacific	1.40@1½	
110	Champion	1½	
1195	Caledonia	6¢@5¾	
1925	Challenge	2.40@2½	
700	Day	70@45c	
1510	Eureka Con	40	
1470	Endepeudent	95c@1	
75	Golden Terra	3½	
385	Grand Prize	6@5¾	
200	Goodshaw	95@90c	
810	Highbridge	2¢@2	
190	Hillside	40@50c	
190	Hillside	4½@4¾	
1470	Indepeuent	3½@3¾	
250	Jefferson	2	
1280	Julia	7@7¼	
1695	Jackson	9@10	
200	Keystone	7	
690	Lady Wash	3¢@2.90	
1240	Leopard	2	
600	Leeds	1.20	
4190	Leviathan	1.60@1¼	
870	Mono	3¢@3.10	
400	Meadow Valley	40c	
500	McClinton	95c@	
190	Manhattan	6	
250	Modoc	30c	
550	Morning Star	5½@5¾	
380	Northern Belle	10	
1280	New York	2½@2.30	
725	North Con Vir	12@10	
4190	Leviathan	1.60@1¼	
870	Mono	3¢@3.10	
400	Meadow Valley	40c	
500	McClinton	95c@

10	Utah	100	Leviathan
160	Yellow Jacket	50	Mackey
		20	Manhattan
	AFTERNOON SESSION.	45	Mexican
145	Alpha	200	Modoc
30	Alta	300	Monumental
1000	Andes	50	McClinton
30	Bodie	270	New York
120	Best & Belcher	20	North Con Vir
420	Belcher	700	N Sierra Nevada
140	Bullion	30	Ophir
115	Benton	20	Overman
125	California	60	Phil Sheridan
135	Con Virginia	90	Savage
90	Caledonia	200	Star
1300	Con Imperial	70	Succor
155	Crown Point	380	Silver Hill
10	Chollar	110	Solid Silver
165	Exchequer	250	Silver Prize
400	Gila	30	Sierra Nevada
300	Goodshaw	60	Tioga
260	Gould & Curry	970	Trojan
50	Hale & Nor	2300	Tuscarora
30	Independent	10	Utah
175	Bulla	220	Ward
260	Justice	400	Woodville
10	Joe Scates	120	Wells-Fargo
100	Kosuth	300	Yellow Jacket

California Board—Latest Sales.

Wed'sday, A. M., Sept. 25.			
80	Alta	200	Woodville
120	Andes	15	Ward
150	Ætna	70	Yellow Jacket
150	Alexander		
1400	Brilliant		AFTERNOON SESSION.
80	Belcher	60	Alpha
60	Bullion	650	Andes
40	California	225	Almaden Q
70	Best & Belcher	80	Alta
40	California	35	Alexander
400	Con Imperial	100	Ætna
60	Con Virginia	450	Brilliant
100	Crown Point	445	Belcher
30	Caledonia	110	Bullion
190	Exchequer	200	Con Imperial
150	Endowment	145	Crown Point
40	Gould & Curry	70	Caledonia
100	Goodshaw	165	Exchequer
40	Hale & Norcross	150	Endowment
120	Kosuth	1200	Greyhound
200	Leviathan	50	Gould & Curry
100	Lee	110	Hale & Nor
10	Lady Bryan	60	Julia
100	Monumental	250	Leviathan
50	Mexican	80	Mexican
250	Mt Hood	1800	Monumental
300	N Sierra Nevada	20	N Sierra Nevada
70	Newark	30	N Union
130	New York	920	Newark
60	Ophir	40	Ophir
100	Spaulding	60	Overman
60	Savage	160	Phil Sheridan
40	Sierra Nevada	60	Savage
220	Silver Hill	100	Sierra Nevada
150	S Xavier	470	S Xavier
570	Trojan	100	Twin Peaks
1900	Twin Peaks	250	Trojan
40	Union	200	Union Con
300	Wells-Fargo	500	Wells-Fargo

Mining Share Market.

The market has been rather insanely inflated during this week. Sierra Nevada has heen up to $214; Ophir to $98. These two risee may perhaps he reasonahly explained. Sierra Nevada assays have been very good, ranging from $399 to $700. In the main incline in the Ophir, at a depth of 2,166 feet, a new ore formation has been struck, giving license again to the sanguine prophecies, "reliable experts." But we have seen no' explanations of the general rise along the line to the south—Hale & Norcross from $16 to $44 in four days, and $22 of that from Saturday to Monday—Best & Belcher from $30 to $40 in five days—Gould and Curry from $18 to $23 in the same time—Savage from $18 to $28—Chollar Potosi, from $45 to $70—in short, a general rise along the whole line, which may he ascribed to the fever of gamhling, and not to anything happening in the mines. When it is said that such rises come from sympathy, it is merely intended to say just what we have expressed in the "fever of gambling." It is a kind of sympathy which will be of little consolation to those, who huy at these inflated prices expecting greater inflation. It has been hinted hy cautious conservatives, that the rise is the result of some cunning ring trick. Who can tell? Tuesday was the culminating point of most of the stocks from Utah south, to Alpha. Further south there has continued to be a general upward tendency. The jump in Alta, from $17 to $30, seems to he looked upon with great distrust, it heing based upon very untrustworthy reports.

Outside stocks have been entirely neglected hy the excited market. The overlookiug of so many valuable mines as are to he found away from the Comstock, presents further argument in favor of the opinion that the present inflation is the result of excitement merely. Bodie is recovering itself, having reached $26. The other Mono mines do not yet attract market attention. Wo notice that the San Xavier mine, of Arizona, has heen listed at the S. F. Exchange.

OUR AGENTS.

Our Friends can do much in aid of our paper and the canss of practical knowledge and science, by assisting Agents in thsir labors of canvassing, by lending their influence and encouraging favors. Wo intend to send none but worthy men.

J. L. Tharp—San Francisco.
B. W. Crowell—California.
A. C. Knox—Pacific Coast.
C. N. Webt—Santa Cruz, Monterey and San Benito counties.
A. C. Champion—Tulare, Fresno and Inyo counties.
W. D. White—San Bernardino county.
J. W. A. Wright.—Tulare, Fresno and Kern countics.
E. M. Denny.—Oregon.
H. E. Hallett.—Stanislaus county.
G. W. McGrew.—Santa Clara county.
Richard Allen.—British Columbia.
R. D. Nunnally.—Siskiyou County, Cal.
Dr. W. G. Aldan.—State of Nevada.
Edward Dugan.—Washington Territory.
Mrs. Carrie F. Young.—Nevada and Sierra counties.

For Printing Materials, the publishers of this pape patronize Marder, Luse & Co., Pacific Type Foundry and Printers' Supply Warehouse, 532 Clay street, San Francisco, Cal. Send them a stamp for specimen sheet, and say advertised in this paper.

Patents and Inventions.

List of U. S. Patents Issued to Pacific Coast Inventors.

[From Official Reports for the Mining and Scientific Press, DEWEY & CO., Publishers and U. S. and Foreign Patent Agents.]

By Special Dispatch from Washington, D. C.

Week Ending September 10th, 1878.

Check-Rein Hooks—David H. Clippinger, Brighton, Cal.
Steadying Gauge and Glass Tube Cutters — William Heyn, S. F.
Screw Cutting Lathes—Alpheus F. Cherry, Albany, Ogn.
Ore Washers and Amalgamators — John H. Hobart, Oakland, and John T. Best, S. F.
Hooks—Frank Kortick, S. F.
Detritus Pumps—Eugene Morean, S. F.
Furnaces for Roasting Ores—David J. O'Harra, Reno, Nevada.
Refining Base Bullion—Leopold Halback, S. F.
Trademarks—A. M. Fletcher and James McCoy, S. F., paint.

——The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

Note.—Copies of U. S. and Foreign Patents furnished by Dewey & Co., in the shortest tiue possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Union Reading Rooms, First Street, San Jose. Welcome to All!—Having lately been removed to the old hall of the City Zouaves, this institution is located in a pleasant and spacious apartment. The latest and best eriodicals of the day are found on its tables, frae to all. Also many choice volumes upon its shelves. Good music Is provided for every Wednesday evening's social. Admission [to these entertainments, 25 cents—to pay expenses.

Woodward's Gardene were nsver more attractive than at present. Besides three lions already mentioned, six monster living alligators, several iguanas and a boa-constrictor have just been added. New stars are constantly engaged for the Pavilion exercises. Rates of admission as uaual.

Examine the accelorative sndowment plan, as originated by the Mutual Benofit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.94. ' Lewis C. Grover, President; L. Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

Union Free Reading Room, Sal Jose, Cal., Sept. 20, 1878.

Mr. A. T. Dewey.—*Dear Sir:*—The package of assorted fileholders (your patent) are received as per order, and permit me to say they are far superior to any other handy fileholders that I sver saw. Truly yours,

S. H. Herring.

Settlers and others wisbing good farming lands for sure crops, are referred to Mr. Edward Frisbie, of Anderson, Shasta County, Cal., who has some 15,000 acres for sale in the Upper Sacramento valley. His advertisement appears from time to time in this paper.

Signal Service Meteorological Report.

Week Ending September 24, 1878.

HIGHEST AND LOWEST BAROMETER.

Sept 18	Sept 19	Sept 20	Sept 21	Sept 22	Sept 23	Sept 24
30.10	30.13	30.08	30.05	30.06	30.06	30.03
30.05	30.04	29.99	30.01	29.95	29.92	29.92

MAXIMUM AND MINIMUM THERMOMETER.

62	62	09	66	66	69	71
54	53	52	53	52	53	56

MEAN DAILY HUMIDITY.

74	76	77	80	80	70	63

PREVAILING WIND.

W	SW	SW	SW	SW	SW	W

WIND—MILES TRAVELED.

182	231	227	125	226	141	163

STATE OF WEATHER.

Fair.	Fair.	Fair.	Fair.	Fair.	Smoky	Smoky

RAINFALL IN TWENTY-FOUR HOURS.

Total rain during the season, from July 1, 1878, .01 in.

METALS.

[WHOLESALE.
Wednesday M., September 25, 1878.

Iron.—	
American Pig, ton	28 00 @30 00
Scotch Pig, ton	23 00 @30 00
White Pig, ton	23 00 @— —
Oregon Pig, ton	—@— —
Refined Bar	2½@ 3
Horse Shoes, keg	5 00 @— —
Nail Rod	—@ 7
Norway, Oval	—@ 7
Copper.—	
Sheathing, lb	34 @ 35
Sheathing, Yellow	21 @
Sheathing, Old Yellow	12 @
Composition Nails	24 @—
Composition Bolts	24 @—
Steel.—	
English Cast, lb	13 @ 14
Anderson & Woods, ordinary sizes	15 @— —
Drill	15 @— —
Flat Bar	14 @ 19
Plow Steel	8½@ 12½
Tin Plates.—	
10x14 I C Charcoal	7 50 @ 8 50
Banca Tin	23 @— 24
Australian	17 @ 17½
Zinc.—	
By the Cask	9 @— —
Zinc, Sheet 7x3 ft, 7 to 10, lb	9 @— 10
7x3 ft, 11 to 14	10 @— —
8x4 ft, 3 to 10	11 @— —
8x4 ft, 11 to 10	11 @— —
Nails.—	
Assorted sizes	3 15 @3 25

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by Sutro & Co.]

San Francisco, September 25, 3 p. m.

Legal Tenders in S. F., 11 a.m., 99¾@99.90. Silver, 1½@2. Gold in New York, 100⅜
Gold Bars, 890@910. Silver Bars, 8@15 ℔ cent. discount.
Exchange on New York, ¼; on London bankers, 49@49½. Commercial, 50; Paris, five francs ℔ dollar; Mexican dollars, 89@91.
London Consols, 94 13-16; Bonds, 103⅜.
Quicksilver in S. F., by the flask, ℔ lb, 41@41½c.

GENERAL MERCHANDISE.

[WHOLESALE.]

Wednesday M., September 25 1878.

RAGS—Jobbing.	
Eng Standard Wheat	—@14
Cal. Manufacture.	
Hand Sewed, 22x36	14½@—
24x36	—@—
23x40	15½@—
Machine Swd, 22x36	14½@—
Flour Sacks, halves	10½@11
Quarters	6 @ 7
Eighths	4½@ 4½
Hessian, 60 Inch	—@—
45 Inch	—@12½
40 Inch	12 @—
Wool Sacks,	
Hand Sewed, 3½ lb	47½@50
4 lb do	52½@—
Machine Sewed	50 @—
Standard Gunnies	14 @15
Bean Bags	8 @ 9
CANDLES.	
Crystal Wax	17 @—
Eagle	12 @—
Patent Sperm	30@—
CANNED GOODS.	
Assorted Pie Fruits,	
2½ lb cans	2 25 @2 50
Table do	3 00 @3 25
Jams and Jellies	3 50 @3 75
Pickles, hf gal	3 25 @—
Sardines, qr box	1 67½@1 90
Hf Boxes	2 50 @2 75
Preserved Beef,	
2 lb doz	4 00 @—
do Beef, 4 lb doz	6 50 @—
Preserved Mutton,	
2 lb doz	4 00 @—
Beef Tongue	6 50 @—
Preserved Ham,	
2 lb doz	6 50 @—
do Ham, ½lb doz	3 00 @—
COAL—Jobbing.	
Australian, ton	8 00 @—
Coos Bay	6 50 @ 7 00
Bellingham Bay	6 50 @—
Seattle	6 00 @ 6 50
Cumberland	14 00 @—
Mt Diablo	4 75 @ 6 00
Lehigh	13 50 @—
Liverpool	7 50 @ 8 00
West Hartley	10 50 @—
Scotch	10 50 @—
Scranton	11 50 @—
Vancouver Id	7 00 @—
Charcoal, sack	75 @—
Coke, bbl	60 @—
COFFEE.	
Sandwich Id, lb	—@—
Costa Rica	17½@ 17½
Guatemala	17 @ 17½
Java	23 @— 26
Manilla	17 @—
Greund, in cs	25 @—
FISH.	
Sac'to Dry Cod	5 @ 5½
do in cases	6 @ 6½
Eastern Cod	7 @— 7½
Salmon, bbls	8 00 @ 9 00
Hf bbls	5 00 @ 5 50
1 lb cans	1 45 @ 1 30
Pkd Cod, bbls	22 00 @— —
Hf bbls	11 00 @— —
Mackerel, No. 1,	
Hf Bbls	10 00 @10 50
In Kits	1 80 @ 1 90
Ex Mess	3 25 @— —
Pkd Herring, bx	3 00 @ 3 50
Boston Smkd H'g	70 @— —
LIME, Etc.	
Lime, Sta Cruz, bbl	1 25 @ 1 50
Cement, Rosendale	2 00 @ 2 25
Portland	4 00 @— —
Plaster, Golden Gate Mills	3 00 @ 3 25
Land Plaster, tn	10 00 @12 50
NAILS.	
Assted sizes, keg	2 90 @ 3 00
OILS.	
Pacific Glue Co's	
Neatsfoot, No 1	1 00 @ 00
Castor, No 1	1 10 @—
do, No. 2	1 05 @—
Baker's A A	1 25 @1 30
Olive, Flagniol	5 25 @5 75
Poszel	4 75 @5 25
Palm, lb	9 @—
Linseed, Raw, bbl	72 @—
Boiled	75 @—
Cocoanut	55 @—
China nut, ca	70 @ 72½
Sperm	1 40 @—
Coast Whales	40 @—
Polar	45 @—
Lard	50 @1 00
Oleophine	22 @ 22½
Devoe's Brill't	22 @ 23½
Photolite	@—
Nonpariel	31 @ 32½
Eureka	18 @ 42½
Barrel kerosono	20 @—
Downer Ker	37½@—
Elaine	37½@—
PAINTS.	
Pure White Lead	8 @ 8½
Whiting	1½@—
Putty	4 @ 5
Chalk	1½@—
Paris White	2½@—
Ochre	3½@—
Venetian Red	3½@—
Averill Mixed Paint, gal.	
White & tints	2 00 @2 40
Green, Blue & Ch Yellow	3 00 @3 50
Light Red	3 00 @3 50
Metallic Roof	1 30 @1 60
RICE.	
China, Mixed, lb	5½@—
Hawaiian	7 @ 7½
SALT.	
Cal. Bay, ton	15 00 @22 60
Common	10 00 @12 00
Carmen Id	12 00 @14 00
Liverpool fine	19 00 @— —
SOAP.	
Castile, lb	10 @ 10½
Common brands	4½@ 6
Fancy brands	7 @ 8
SPICES.	
Cloves, lb	45 @ 50
Cassia	22½@ 25
Nutmegs	85 @ 90
Pepper Grain	15 @ 17
Pimento	15 @ 16
Mustard, Cal., ½ lb glass	1 50 @—
SUGAR, ETC.	
Cal. Cube, lb	11½@—
Powdered	11½@—
Fine crushed	11½@—
Granulated	11 @—
Golden O	9½@—
Cal. Syrup, kgs	70 @—
Hawaiian Molasses	26 @ 30
TEA.	
Young Hyson, Moyune, etc	27 @ 30
Country pckd Gunpowder & Imperial	50 @ 60
Hyson	30 @ 35
Fooo-Chow O	35 @—
Japan, 1st quality	40 @—
2d quality	20 @ 25

LUMBER.

Wednesday M., September 25, 1878.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE RETAIL PRICE.	
Rough, M	13 00	Rough, M	18 00
Fencing	9 00	Fencing	18 00
Clear	23 00	Flooring and Step	28 00
Clear Refuso	13 00	Narrow	30 00
Rustic	23 50	2d quality	25 00
Refuse	18 00	Laths	3 50
Surfaced	20 00	Furring, lineal ft	¾
Refuse	14 00	**REDWOOD. RETAIL PRICE.**	
Flooring	20 00	Rough, M	18 00
Refuse	12 00	Refuse	14 00
Beaded Flooring	23 00	Pickets, Rough	15 00
Refuse	13 00	Pointed	16 00
Half-inch Siding	16 00	Fancy	22 50
Refuse	14 00	Siding	20 50
Half-inch Surfaced	20 00	Surfaced & Long Beaded	30 00
Refuse	14 00	Flooring	30 00
Half-inch Battens	16 00	Refuse	22 50
Pickets, Rough	11 00	Half-inch Surfaced	30 00
Rough, Pointed	12 50	Rustic, No. 1	30 00
Fancy, Pointed	18 00	Battens, lineal ft	¾
Shingles	1 75	Shingles M	2 00

PACIFIC MAIL STEAMSHIP CO.

The Company's Steamers will sail as follows, at 12 M.:

CITY OF PEKING.....October 1st.
For YOKOHAMA and HONCKONG.

GRANADA.....October 5th
For Panama and New York, calling at Mazatlan, San Blas, Manzanillo and Acapulco, touching at San Jose de Guatemala and La Libertad to land passengers and mails only.

Tickets to and from Europe by any line for sale at the lowest rates—also to Havana and all West India ports.

AUSTRALIA.....September 30th, at 12 o'clock, noon, or on arrival of the English Mails, for HONOLULU, AUCKLAND and SYDNEY.

$10 additional is charged for passage in Upper Saloon.

DAKOTA.....September 30th.
For Victoria, Port Townsend, Seattle, Tacoma and Olympia, connecting at Tacoma with Northern Pacific Railroad for Portland, Oregon.

Tickets must be purchased before 11 A. M. on day of sailing, at Wharf office.

For freight or passage apply at the office corner First and Brannan streets.

WILLIAMS, BLANCHARD & CO., Agts.

Mining and Other Companies.

Persons interested in incorporated ehares will do well to recommend the publication of the official noticee of their companiee in this paper, as the cheapest appropriate medium for the same.

Keystone Quartz Mining Company.—Principal

pical place of business, San Francisco, California. Location of works, Sierra County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 30th day of August, 1878, an assessment of fifty (50c.) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary at the office of the Company, northwest corner Pine and Sansome streets, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the eighth day of October, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the twenty-eighth day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

LOUIS VESARIA, Sec'y.

Office, northwest corner Pine and Sansome streets, San Francisco, California.

Hackberry Mill and Mining Company.—

The regular annual meeting of the stockholders in the Hackberry Mill and Mining Company, for the election of five Directors to serve during the ensuing year, and for such other business as may properly come before the meeting, will be held at the office of the Company, No. 306 Clay Street, San Francisco, Cal., on Monday, the seventh day of October, 1878, at the hour of 12 o'clock noon.

ED. B. PARTRIDOE, Sec'y.

Orion Mining Company.—Location of Prin-

cipal place of business, San Francisco, California. Location of works, Iowa Hill, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the fifth day of September, 1878, an assessment (No. 3,) of seventy-five (75) cents per share was levied upon the capital stock of the corporation, payable immediately in U. S. gold coin, to the Secretary, at the office of the Company, 28 Sansome Street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the fifth day of November, A. D., 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the 20th day of November, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

P. CONKLIN, Sec'y.

Office, No. 28 Sansome Street (up stairs), San Francisco, Cal.

Summit Mining Company.—Location of

principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the tenth day of September, A. D., 1878, an assessment, (No. 5,) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of said Company, 318 Pine street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the twenty-second day of October, A. D., 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the nineteenth day of November, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK, Sec'y.

Office, Room 6, No. 318 Pine Street San Francisco, Cal.

The California Fruit Growing Association.

—Location of principal place of business, San Francisco, California. Location of property, El Dorado County, California.

Notice is hereby given, that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 9) of three (83) dollars per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, No. 641 Sacramento street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 30th day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Monday, the 21st day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco, Cal.

POSTPONEMENT.—At a meeting of the Board of Directors of the California Fruit Growing Association, held September 23d, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till Saturday, the 26th day of October, 1878, and the day of sale of delinquent stock is hereby postponed to Friday, the 22d day of November, 1878.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco.

Vigorit Powder Company.—Location of

principal place of business, City and County of San Francisco, California. Location of works, California City, Marin County, State of California.

Notice.—There are delinquent upon the following described stock, on account of assessment (No. 1) lovied on the first day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. of Cert.	No. Shares	Amount
Louis McLane, Trustee	30	437½	$218 75
Louis McLane, Trustee	32	½ of 875	218 75
G W Crayson, Trustes	62	1312½	056 25
H H Shinn, Trustee	91	400	200 00
H H Shinn, Trustee	92	400	200 00
H H Shinn, Trustee	93	400	200 00
H H Sbinn, Trustee	94	112½	56 25

And in accordance with law, and an order of the Board of Directors, made on the First day of August, 1878, so many shares of each parcel of stock as may be necessary will be sold at public auction, at the office of the Company, Room No. 1, 109 California street, on Wednesday, the second day of October, 1878, at the hour of 2 o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

JAS. W. BAKER, Sec'y.

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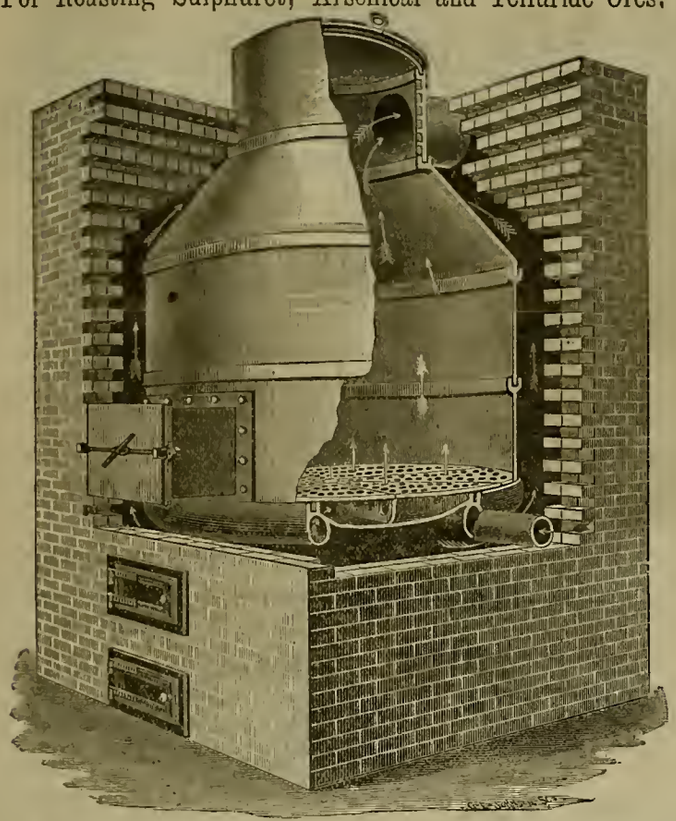

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This process has been tried and tested on a large scale in Boston and in Colorado on every variety of ore, including sulphurets of iron, copper, lead and antimony, and arsenical and telluride ores of high and low grade, and in all cases with the most complete success.

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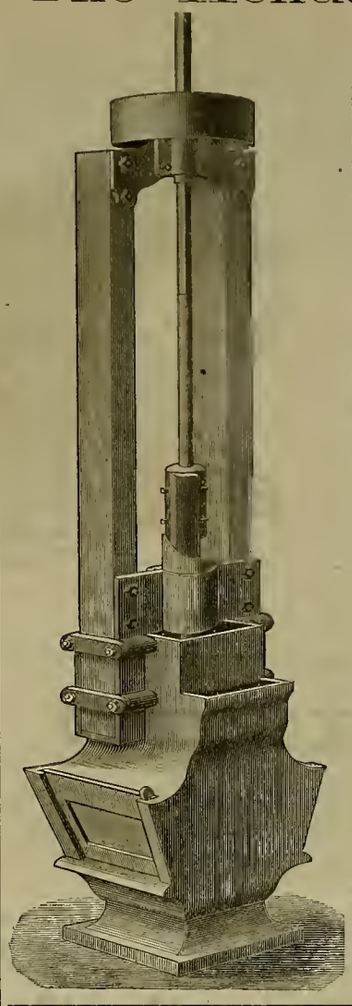

STEPHEN KENDALL, Patentee.

This Battery embraces the only genuine improvement that has ever been made in the process of reducing ores. The frame is all secured to the mortar, so that no extra framework is required. The stamp is rotated by a horizontal pulley on the top of the frame, and raised by the cam which is set horizontally on the girt timber. The upper end of the stem is made square, and works up through the pulley. When the stamp falls it crushes and grinds the ore fine by the continual rotary motion. The mortar has three discharge openings, and is adapted to either wet or dry crushing. A mill with an 800-pound stamp will crush five tons of average ore per day, shipping weight, 4,000 lbs., and requires about five horse-power. A 1,600 lb. stamp mill is in process of construction, which will give a capacity equal to any five-stamp mill. Several of them are now in successful operation in various parts of the country. For Prospecting Purposes this mill has no equal, as it can be set up and moved with such facility and operated at so small an expense. Address for further information,

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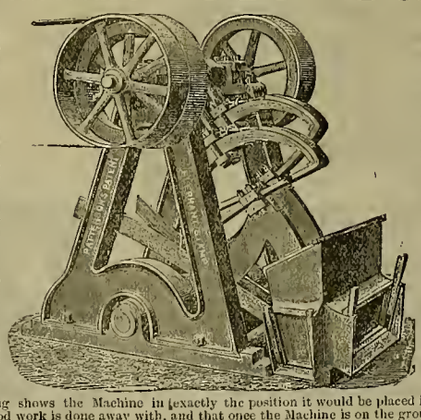
Wear.—The "Elephant" having only two pairs, Shoe and Dies, the wear in this instance is equal to one-sixth of a 12-Stamp Battery. There being no Cam Tappets, Cam Shafts or Guides, the consequent wear on these parts is done away with; the leather thorough-



brace, uniting the lever with the spring, would only require replacing at most, once a year.

Power.—The "Elephant" only requires a seven horse-power engine to drive it, where a 12-Stamp Battery would require from 18 to 20 horse-power.

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The above engraving shows the Machine in exactly the position it would be placed in a mine; the reader will therefore see that all wood work is done away with, and that once the Machine is on the ground it will take but a few days to set it up and have it in full working order.

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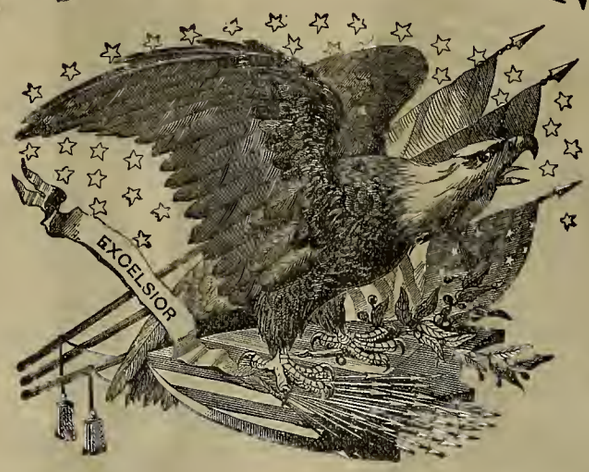

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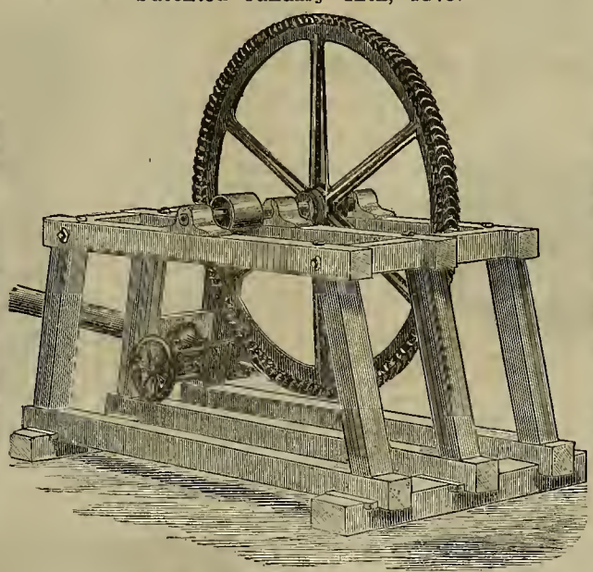

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1–Eight-foot wheel, running Keystone Con Mining Co.'s Mill, Amador county, Cal.; 40 stamps.
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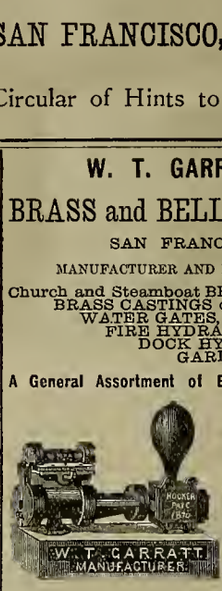

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Publishers. SAN FRANCISCO, SATURDAY, OCTOBER 5, 1878. VOLUME XXXVII Number 14.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of special mention:

BELL FOR TRAP SHOOTING.—H. P. Fletcher, S. F. It has bean the custom of lats to use fragile glass balls as marks for practics in matches in what is known as wing or trap shooting instead of sbooting at pigeons or other birds started from a trap as formerly. These glass balls are usnally thrown into the air from a spring trap mads for the purpose, and when auy of the shot from the gun strike the glass ball, it is broken, hy which it is known that the marksman's aim has been accurate. This styls of shooting has como greatly into vogus of late, both with shot guns and rifles, but it is readily understood that when so many glass balls ars destroyed the amusement is an expensive one. Mr. Fletcher provides as a substitute for the glass balls a circular hell or sounder mads of metal, which will indicate by sound whsn it is struck, bnt which may be used over and over again. It is thrown from an ordinary spring trap the same as the glass balls. The sounder is composed nf two hemispherical mstal bslls joined togethsr by a metal stem so as to form a sphere, a small space being left between them.

DRIVING ATTACHMENT FOR WASHING MACHINES.—T. A. Wilson, S. F. This invention relates to an improvsd apparatus for operating on clothes pounders or washing machines, and it is specially applicahle to a dsvice patented April 22d, 1873, by D. B. Ransom, the right to use which has been purchased by Mr. Wilson. This washing pounder has an arrangement of air passages and valved handle to facilitate its action and rsnder the operation of working more rapid and thorough. It was found in practice, however, that although the device was very efficient fnr the pnrpose intsnded, it is tiresome and laborious to operate. Mr. Wilson, then invented this operating mechanism for the pounder. It consists nf an arrangement of spur, pinion and crank shaft, operated by a handle, which gives a vertical motion to a pitman on which is sscured an operating har carrying the pounder on the outer end. The bar is so secured to the pitman as to have a motion about it and is capable of adjustment in any position. The arrangement materially lessens the labor of operating the clothes pounder.

LINK CONNECTION AND LOCK.—Frank Kortick, S. F. This link connection and lock is intended more particularly for use in connection with ths bits on barness, or as an attachment on ths wbiffletres by which ths tug is connected to them. Mr. Kortick's device is a hook which receives the link, the book being so pivoted that its center of motion is in the center of the circular head of the connecting bar, and the point of the hook lies so near the edge of this disk that it prevents the link or ring from being removed, unlsss the hook is turned to a point where a semi-circular notch is formed on the head, so that the ring may drop into this notch and allow the hook to swing past it, when it may bs removed. At all other times it will he securely locked in place. The advantages of this link are the single method hy which the connection is made or unmade, and the impossihility of unlocking it, excspt when desired.

ATTACHMENT FOR SCREW CUTTING LATHES.—A. F. Cherry, Oregon. This invention relates to an attachment for scrsw cutting lathe, and a novel method of smploying tbe sams by which the operator is enahled to gauge the scrsw threads to be cut and also to determine the point of commencement for every fresh cut of any screw thread required, and by which he is enahled to do away with the necessity of running the lathe backwards after each cut has been made, and then gauging evcry fresh cut of the screw correctly, to work a perfect and regular thread as desired. Greater rapidity will be attained by the use of this attachment when cutting a scrsw thrsad than by the usual msthod of opsrating a screw cutting lathe.

STEADYING GAUGE AND GLASS TUBE CUTTER.—Wm. Heyn, S. F. This invention relates to a novel construction nf an apparatus for cutting tubes, and it consists in an adjustible cutting dsvice, operating from the interior of the tube, and a steadyiug and cantering gauge for the length to he cut. The devics is of great conveniencs for tube cutting of all kinds, but is especially valuable whenever the exterior of ths tnbe is not easily got at. It is more especially intended for cutting glass tubes such as are employed for gauges, etc.

SAMPLE CARD.—S. Kutnow, S. F. This is a card for exhibiting patterns of clothing, and also a sample or samples of cloth suitable to be made into articles of clothing of the particular patterns represented, the whole combined with the business card of ths merchant, tailor, or dealer in cloths. It is intended more particularly for the use of traveling solicitors.

BLIND WIRING MACHINE.—Carl Hinz, S. F. This invention relates to certain improvements in that class of devices, which are employed to drive the wire staples which secure movable blind slats to the rod by which they are operated, and it consists mainly in a novel combination of operative parts. The construction is such as to secure accuracy and keep the slats and rods in proper position under the driver.

SEED PLANTER.—W. T. Easterday, Watsonville, Santa Cruz county. This invention covers certain improvements on a former one hy the same inventor, and consists of certain improvements, changes and additions, which simplify the construction of the machine, and render it more convenient to keep in order. A detailed descriptiou would be unintclligihle without the aid of engravings.

MESSRS. Blake and Walton, Philadelphia millwrights, havs just sent to the United States of Columbia two complete flour mills, as well as a lot of sugar machinery, which were purchased by a gentleman lately a resident of this city.

THE immense yield of the silver mines in the new district at Leadville, Colorado, has produced an extraordinary influx of miners and capitalists. Three railroads are extending branches towards Leadville.

Driving Nails or Spikes Under Water.

William Stack, of Oakland, has rscently patented through ths MINING AND SCIENTIFIC PRESS Patent Agency, an apparatus for driving nails nr spikss undsr water, an engraving of which is shown on this page. It is well-known that it is extrsmely difficult to drive nails or spikes under water, sven if it is only submerged a few inches. In constructing piers, wharves, or sea-walls, and in work of like character, it frequsntly happens that a considerabls portion of the work is delayed, wbich can only bs accomplished at low stages of the tids. If oails or spikes even be driven under water soms of this delay can frequently bs avoided. Again, it sometimes become necessary to remove articles which are submerged and which cannot be taken hold of, but which, if proper supnorts, or handles could be nailed on, could be grappled or raised. These difficulties are obviated hy Mr. Stack's device, which has been put in practical operation in ths construction of wharves and slips in the Oakland side of the bay.

Fig. 1 shows the application of the device, and Fig. 2 shows the construction. *A* is a metal tube of suitahle length, the foot of which may he serrated as shown, so that the points will engage with the wood when the tube is pushed or driven against it. The rod or driver, *C*, has a recess or cavity, *D*, at the lower end so as to rest on top of the nail or spike shown in Fig. 2. Where the tube, *A*, is pushed against tbe timber in the desired position, the spike or nail is dropped in at ths upper snd and slides down against the timber. The rod, *C*, is then slid down on top of the nail and hy alternately drawing out and forcing ths rod into the tube, the rod serves as a driver; or hy hammering on the upper end of thc rod the nail is driven into the wood. The tuhe answers hoth as a guide for the nail and driving rod. The tube can also answer as a guide for a screw-driving device on thc end of the rod, by which lag screws may be put in place under water as well as nails. Of course the tubs may be set in any position dsired, so that nails may be driven at an angle if necessary. The appliance will be found very useful in many cases for bridge building or similar purposes. The inventor may be addressed N. E. corner Fifth and Harrison streets, Oakland, Alameda county.

FIG. 2.

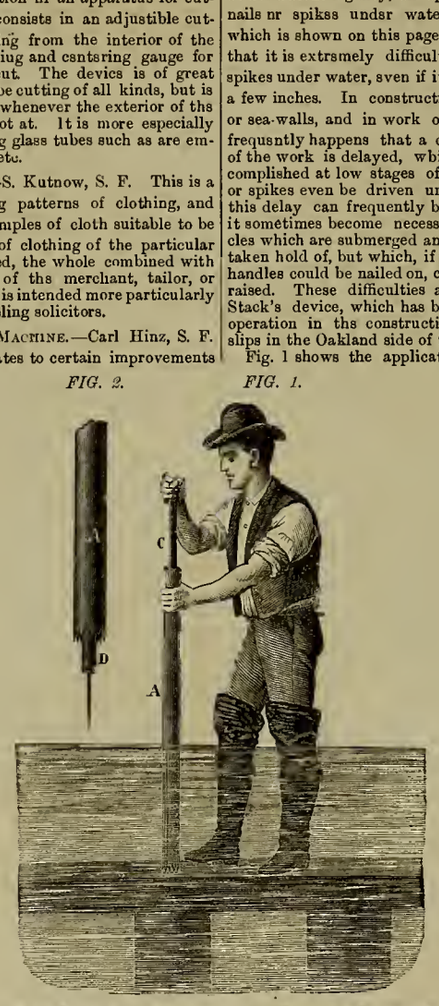


FIG. 1.

DEVICE FOR DRIVING NAILS UNDER WATER.

E. MERRIFIELD has purchased, conditionally, all but 400 of the 20,000 shares of the Nevada or Soggs' mine for $75,000.

Wythe's Manual of Microscopy.

We bavs greatly enjoyed the psrusal of a work which is a credit to scientific progress on this coast. It is "The Microscopist," a manual of Microscopy, etc., by J. H. Wythe, A. M., M. D., Professor of Microscopy and Biology in the Medical College of ths Pacific. Dr. Wythe snjoys the distinction of being a pioneer in microscopic work. For more than a quarter of a csntury a smaller manual which he wrote has beld a firm place in the estimation of microscopical students, and the present handsome volume is ths fruit of studies which have kspt the author well abreast of ths progress of microscopy since his smaller treatise was written. A particular interest pertains to the work on this coast because ths author is a Californian—a leader in medical science as well as in microscopy. He has done a prominent share of the scientific work which has given our Stats an honorable place in scientific annals.

Of the "Manual of Microscopy" we have not space at hand to speak in detail; suffice it to say that it is a handsomely printed volume of 259 pages, adorned with 205 plates and engravings carefully drawn and engraved. In its plan the text embraces both general and special points; for instance, the reader who desires to know what progress nicroscopy has made in the different departments of investigation, and the beginner with the microscope who desires to know how to make a cement cell, will both find the book answering their questions concisely and yet comprehensively. We find the hook particularly lucid on the construction of the microscops and its accessories. In this department Dr. Wythe is unexcelled. We think ths book may be beartily commended to the practical student and the general reader as an ahle exponent of the present condition of microscopical science. It is published by Lindsay & Blakiston, of Philadelphia, and can bs had, we presume, at the book stores in this city.

The Mines and the Courts.

J. C. Sunderling sues the California Con. G. M. & M. Co. in the Twelfth District Court to recover $16,187. 40 on a promissory note.

In the Fourth District Court, H. J. O'Railly and wife sue J. C. Flood and ths bonanza firm for $150,000 alleged to be duc on a contract for honanza stock. While the jury was being impansled in this case, N. A. Son, one of the jurors, said hs had been approached by an unknown man, who said if he got on the jury "there was some money in it." Judge Wheeler excused Sou from serving on tbe jury, and reqnested him to try and find the man and report him to the Court. Another juryman named Hathaway said that two men called at his store a fsw days ago and spoke of the case, but made no proposition to him.

The Secretary of the Interior in a letter to the Attorney-General September 26th, declines to advise the institution of legal proceedings to sst asids patents issued for the Tioga and Oscela mining claims in ths Bodie district, California.

There were filed Ssptemher 26th, satisfaction of a mortgage upon the Wells-Fargo mine of $4,000 and interest, made in favor of H. T. Fairhanks, and satisfaction of a mortgage upon the sams mine for $6,000 and interest, also made in favor of H. T. Fairbanks.

On September 21st, several men at work on the Pioneer mine, North Virginia, were driven off the grounds with shotguns. It seems that a majority of the claims and orders against the mine are in the hands of Messrs. Bass and Aurich, who probably did not relish having their claim taken possession of hy outsiders.

J. S. PHILLIPS has gone to Nevada to examine a very peculiar deposit of silver ore. The ore is found covering a large district. The silver is said to occur in very strange formation. We hope to hear further from Mr Phillips.

The Ocean Placers of San Francisco.

[A paper read before the Chemical Section of the California Academy of Sciences, August 30th, 1878, by S. B. Christy, University of California.]

Mr. President and Members of the Chemical Section:—The short papsr which I present this evening is perbaps better adapted to a geological or mining section than to our own, but in view of the liberal interpretation which was put upon our organization, I present tbese few pages to you.

It bas long been a favorite idea with me that tbe geologic study of the hills and valleys, rocks and coastlines, islands and sea bottoms of the Bay of San Francisco, with its surroundings, was the peculiar province of the residents of this region. But strangely enough, wbile extensive investigations bave been made of remote mountaiuous districts, there is very little to be found of value upon this most interestiug region.

It seems to me that geology, like charity, begins at bome, and so, in accordance with tbis belief, I present tbe few facts that I have been able to glean from reading and observation upon tbe gold placers, whicb bave been lately discovered on the ocean beach of San Francisco.

These beach sands are reported to have been prospected some 15 years ago, but though gold was discovered it was not in quantity sufficient to pay the expense of working. Much attention has of late been directed to the subject of beach mining, and within two months back the discovery of gold in paying quantities seeme to be established beyond doubt, chiefly owing to the exertions of Mr. John Frazer, the new discoverer, and other old miners and prospectors. Since the discovery the whole of the beach from north of the Ocean Side House as far south as Point San Pedro has been takeu up by various claimauts. Four of the claims are heing actively worked at present, and two of them are reported to have togetber taken out about $800 for two weeks' work.

As a discovery it is probable that it is not a very rich find, but as far as can be seen at present there seems to be sufficient gold to pay fair day wages. Tbe pay per man has heretofore varied from two to eight dollars, according to tbe statements of the miners.

The Nature of the Deposit

Is very much what is usual in such cases. There are alternating layers of magnetic iron sand aud of common quartz sand upon the higher parts of tbe beach, wbile lower down where the surf breaks, the sand becomes usually coarser and more full of pebbles. Layers of black sand are not infrequently found upon the top of the partly dried, undisturbed sand, owing to the removal of the lighter eilicious material hy the action of the wind. As one digs down tbe layers alternate white and black, the thickness of each varying from that of a knife edge to tbree and six inches. At lengtb, at a depth of from two to four feet, the "hard pan" is reached. Tbis hard pan is composed of a sort of clay sandstone, of which more hereafter. Upon this hard pan is usually found a layer of coarser sand or gravel, which, especially when found in depressions and crevices which favor a concentratiug action of the waves, is usually the "best pay" found. But some of the bigher layers of black sand are quite rich also. They seem to he formed upon a "false bottom," as the miners call it, by some high tide which makes a new deposit, wbile its waves are not violent enough to disturb the previous deposits.

The Concentrating Action of the Waves

Upon an inclined beach must be considerahle. The configuration of the heach is entirely changed after a storm, and the whole beach as far nn as the cliffs is entirely covered hy the surf during heavy weather. The action of the water on the sands is essentially the same as in tbe miners' pan. Tbe quartz sand, with a specific gravity of only two and onc-half, whilc that of the magnetic oxide of iron is usually ahout five; hence the separation of these two materials is tolerably complete. The other heavy materials, as gold and platinum, natuially remain with the magnetic saud.

Under the Microscope

The black sand shows itself to be composed of more or less perfectly rounded grains of magnetic oxide of iron, with a few silica grains and occasional fragments of what appears to be garnet. Mixed witb the black sand is the gold, which, under the microscope, is almost invariably bright, and in only a few cases presents a rusty appearance.

Tnc spccimen to wbich I call the attention of the Section, is part of the concentrations from the blanket sluice of the Frazer claim, which were afterwards concentrated still furtber on the shore. It is, tberefore, very much richer than the ore as it is found.

The specimens were mounted opaque with an asphaltum backing for me by Mr. X. Y. Clark, of tbe S. F. Microscopical Society. The gold, it will bs seen, is invariably in tbe form of oblong or elliptical scales, which are doubly concure, and are usually surrounded by a thickened rim.

A number were measured hy Mr. Clark, and gave the following dimentions:

0.0065 inches.	Largest.	0.0030 inches.
0.0060 inches.		0.0030 inches.
0.0070 inches.		0.0035 inches.
		0.0035 inches.

Smallest.

Average thickness of the rims of the scales, 0.001 inches.

A number of measurements made by myself of particles contained in tbe spscimen on exbibition gave the following resnlts:

Gold ..... 0.0108 in., 0.0098 in., 0.0049 in.

Platinum occurs also, though not in large quantities. Several fragments are discoverable in the present specimen. The fragments are usually more compact and less flattened tban the gold particles. One specimen measured 0.0044 inches.

Now as tbe particles of magnetic oxide are very nearly of the average diameter of the gold particles, and as, moreover, tbey are rounded, it becomes a matter of the greatest difficulty to separate tbem by wasbing in spite of tbeir great difference of specific quantities, which are as five to nineteen. The leaf-like form of the gold renders it practically as easily moved by water as tbe magnetic oxide. It is only by tbe skillful touch of an old miner that a good "color" can be sbown in the pan.

The Method of Treating the Ore.

Whicb varies all tbe way from notbing up to $25 or $30 per tou, is to either pass it with water down an ordinary hlanket sluice or to use a combinatiou of amalgamated copper plates, riffles, hanging plates, etc., sucb as the Russel Amalgamator described in the Mining and Scientific Press, August 17, 1878, p. 97. Both of these methods seem to work to the satisfaction of the parties interested. Accurate experimeuts as to their relative effectivencss have not beeu made as yet.

From experimeuts of my own, I find that the gold amalgamates very freely, as one would naturally infer from its brightness, and freedom from rust. Tbe finer particlcs, wben once allowed to dry, seem to become covered with a film of air, so that when again wet with water they float upon tbe snrface. Anotber curious fact is the great purity of tbe gold. Falknean and Reese report the gold which they assayed as from 950 to 953 fine. The miners frequently treat their concentration before amalgamating with a little nitric acid to remove the iron rust (which, by the way, does not seem to be present). It is not prohable tbat this dissolves the silver from the gold as these concentrations are still wet with salt water. It, therefore, appears to he more probable that the silver is removed hy the long action of the salt water upon those thin scales, which are only a thousandth of an inch thick in their thickest part. However this may be, it is reported to be the purest placer gold that has been found in California.

The Location of the Deposit

Is best shown hy Plate 14 of the United States Coast Survey Reports for 1869. The region is shown on the map from a couple of bundred yards north of the Ocean Side house uninterruptedly to Mussel rock, and then on tbe otber side of this point the auriferous sands seem to extend to Pt. San Pedro. These deposits have not been tboroughly prospected. From ahout one mile south of tbe Merced creek to Mussel rock there are steep bluffs from about 250 to 500 feet high. These bluffs form an elevated table land covered with a meager soil. Tbsy slope back to the valley, through which runs the Soutbern Pacific railroad. They are composed of alternate layers of a soft yellow sandstone and of conglomerates of small pebbles. There are occasional streaks, a foot tbick, of a firmer white sandstone, a specimen of which I suhmit. There is, more particularly toward Mussel rock, a stratum of a very earthy lignite which seems to be of no .value. At another point, near the Combinatiou claim, there is an outcrop, about six to eight feet thick, of a blueisb clay sandstone coutaining a large number of fossil shells.

Thie locality is thus described in Vol. I., p. 79, Geological Survey of California:

"Although the miocene tertiary sandstones, which form so conspicuous a member of the Coast ranges, are not exposed in the vicinity of San Francisco, there are somewhat extensive outcrops of rocks of a later tertiary in the low bills extending along the seashore, southeast of Merced lake, nearly as far as Mussel rock.

"According to tbe observations of Messrs. Remond and Gubb, there are two sets of strata here which helong to the pliocene and past pliocene epochs, and which are unconformahle with each other.

"Both these formations rest also unconformably on the metamorphic cretaceous, as does also the miocene in the region north of tbe Golden Gate, while this formation appears to be wanting throughout the northern end of the peninsula of San Francisco.

"The pliocene beds between Merced lake and Mussel Point are made up of a blueish sandstoue, of which the grains are cemented hy carbonate of lime, interstratified with hard, fine conglomerates, of which the pebbles are evidently derived from the adjacent jaspery rocks of tbe cretaceous age.

"These strata contain *Scutilla interlineata, Crepidula princeps*, hoth of whicb are extinct, together with several species still living on this coast. The Post Pliocene eeries consists of heds of gravel, sand and clay, with some soft sandstones and contains ouly shells of recent species, amoug whicb the genera *Tellina, Mytilus, and Buccinum* are represcuted. Of these two sets of heds, the lower, according to Mr. Remoud, have a northwest strike and dip to the northeast at an angle of 35°, while the upper have an incliuation of only 10°. This is ouly one of a uumerous class of facts which show tbat there bave been quite extensive disturbances of thc rocks along the coast within a very recent geological opoch."

The Origin of the Gold Deposit

Is a question full of interest and difficulty. Without attempting to solve the question myself, I sball present several possible explaua-tions, leaving futurs investigation to deoide the question.

In the first place, bowevsr, one tbing is certain. Tbe gold is "float gold," and has been brought some distauce by tbe carrying power of water.

To give an idea of the geology of tbe surrounding country, I quote again from tbe "Geology of California, p. 64." "Gold occurs on tbe eastern slope of tbis ridge, but probably not in paying quantity, although a considerable amount of ground bas been washed over."

Do., p. 72: "In the region to the southwest of the tertiary and metamorphic cretaceoue belt which has just heeu described as extending along Mt. Bache to Searsville, and forming the center and easteru edge of the Santa Cruz range, tbere is a higb range of granite hills, of which the southern termination is near the town of Santa Crnz, and where a great deal of prospecting for gold has beeu doue. It is stated on what is believed to he good authority, tbat at least one quite rich mass of auriferous veinstone has been obtained here. There does not, however, seem to be any prospect of permanent, profitable working for tbis metal at tbis point, as no well defined vein could be traced."

Do., p. 76: "The great regular ranges of mountains which form tbe peninsula appear to run out to the north of Pt. San Pedro, and uo more granite is seeu on its northern end after passing the mass of the *Cumbre de las Auras*. The extremity of the peninsula is occupied by short aud brokeu ranges or low hills, in wbich the regular trend to the northwest can be no longer detected, bnt whence the influeuce of the east and west line of depression, by which the Golden Gate has been opened and access given to the interior, is manifested in tbe most chaotic jumble of strata which it is possible to find in the State."

p. 76. "Tbe granite range of the *Cumbra de las Auras* disappears heneath the ocean, but rises again to the north of the Golden Gate, in the promontory of *Punta de los Reyes*." A study of these considerations together with the topography of the surrounding country, as is so well illustrated by the map of the peninsula of San Francisco hefore epecified, and the Coast Survey chart of the "Eutrance to San Francisco bay," together with the Geological Survey map of Ceutral California, euggests the following as three possible explanatious of the deposit:

(1). That it came from some sub-ocean quartz ledge water worn hy wave action. This bas some slight foundation in the fact specified that the granite range, gold-bearing near Santa Cruz, stretches beneath tbe ocean from Point San Pedro to Point Reyes. But this supposition is ou the whole hardly tenable.

(2). That tbe deposit is from tbe silts of the Sacramcuto river, whicb are carried out into the ocean and deposited when the tidal current ceases, and then washed upon the beacb. There seems to be eome foundation for this second theory. In the first place, *a priori*, we are all aware that a large amount of "float" gold must be in this way brought down the Sacramento river from the hydraulic washings which have gone on for so long a time. An examination of the map of the harbor shows very clearly how enormous an amouut of matter is deposited on the easteru side of the bay. In fact, it is probahle tbat the extensive tract of level laud on which are situated San Pahlo, Berkeley, Oakland, etc., has beeu deposited in a similar manner within a comparatively recent period of time. Again, a reference to the eoundings on the bar, as given on the Coast Survey chart, sbow in frequent places "hlack eand" (or mixtures of tbe same) as a bottom. I have not yet been ahle to ascertain from the Coast Survey office the exact nature of these sauds, but it altogether probable that the magnetic oxide is designated. The "hlack sand" seems to predominate on the bottoms west of the gold beach.

On the other band one would imagine that if it had such an origin, the black sands would have been found in still larger quantities on the beaches between Black Point and Fort Point, and between tbe latter and the Cliff House. But from a rapid reconnoissance of these hcaches this does not appear to he the case. This might, however, he explained if one knew the direction of the currents. But tbey are only spoken of on the chart as being too irregular to admit of a clear description.

The third hypothesis is that the gold comes from the hluffs themselves. Tbe fact that the deposits nearly always occur at and around their base incline one to this opinion.

The third hypotbesis is, that the gold comes from the bluffs themselves. The fact that the deposits nearly always occur at and around their base, incline one to tbis opinion. Several prospectors claim to have discovered coarse gold in thc canyons which run hack from the face of the bluffs. I could uot ascertain with certainty the truth of these statements. But independently of this there are many considerations that would seem to indicate that this should be the case. The cliffs as they are situated are admirably adapted to the concentrating action of the waves. They are, moreover, of exactly the same nature as the gold bluffs of Oregon, as described in a paper hy Mr. Chase—Proceedings California Academy of Scieuces, Vol. V., p. 246, and in anotber read hefore the Academy by Mr. W. A. Goodyear in 1872, aud published in Mining and Scientific Press, Vol. XXV, p. 371.

The hluffs are evidently of sedimentary origin, and a study of the topography of the peninsula of San Francisco would seem to indicate that San Francisco bay bad at ons tims discbarged tbrough tbe valley whicb runs from San Bruno, northwest to Lake Merced, or perhaps more directly where the bluffs stand at prescnt. Tbe level of the ancient river bed would be now cbanged by the same agencies whicb opened the Golden Gate, and which Prof. Whitney remarks as having greatly complicated tbe folding of the strata of the entire peninsula. The non-conformability of the strata before spoken of would seem to indicate the eame fact. But there are not as yet sufficient data to decide upon such a question.

It seems tbat in view of the provcd origin of tbe gold in the bluffs of Oregon, that tbere is justifiable ground for making a thorough exploitation of the bluffs themselves. Very probably they will not prove rich enough to work. But in case they did so prove they migbt be easily worked by the hydraulic process by water from Lake Merced. This could be doue by tbe pumps now idle, which were erected then last year during the drouth for the supply of San Francisco.

In this connection there comes to mind a statemeut which occurs in a book called "The Annals of San Francisco," publisbed in this city in 1855. On p. 154 is tbe following statement, wbich seems to show tbat some of these geological changes have been more recent than one would have supposed.

"We may observe here, that there ie a tradition among the Indians of California that San Francisco bay originally formed a fresh water lake. An earthquake, however, suddenly opened tbe line of mountains along the coast, when the sea rusbed in and changed the region to what it uow is. The eurplus fresh waters of the old lake were supposcd to bave been discharged into tbe Bay of Monterey by a great river flowing through the valley of San Jose and Santa Clara. This river was believed to pass near the Mission of San Juan, and to fall into tbe present stream of the Pajaro."

We would remark in conclusion that at tbis same region similar gold eauds have been discovered. Also that tbe water off the Bay of Monterey is reported to he of a remarkahle depth. But the consideration of this latter problem would lead beyond tbe limits of the present paper.

Pacific Coast Mineral Exhibit at Paris. Tbe *American Register*, Paris, says of our mineral exhihit at the exposition: Every specimen of ore, rock, or fossil comprising tbis rich and interesting collection, bears a neatly printed label stating the nature and origin of the product. Tbe grouping bas been done very systematically, and Henry G. Hanks, tbe Commissioner for California, bas well understood how to make the exhibit at once an attractive display for the curioue and most interesting field for the student or learned geologist. The most complete of the State exhibits is unquestionably that of Oregon. Prentice Mulford, writing to tbe *Bulletin* on the same subject, says: The Pacific coast and all persons interested, have no reason to complain of their mineral exhihit here. It has compelled marked and appreciative attention. It has compelled more attention tban the average of American exhibits here. On the occasion of Commissioner McCormick's dining with Prof. Archer of the Edinburgh museum, a few days since, he (the Professor) complimented it in the warmest terms. Tbe Director of the South Kensington museum, London, has also expressed himself in similar terms. Mr. Hanks receives tberefor a Diploma of Houor from tbe Paris exposition of 1878.

A Metallic Shingle.—The *Iron Age* describes a metallic sbingle, for which many advantages are claimed. They wcigh only one-fourth as much as slate. The material used is hcavy sbeet iron, and after the shingles are cut out aud struck up to ehape tbey are coated with a plumbago or graphite paint for protection, which gives them a color almost exactly the same as the dark Pennsylvania slate. This covering is claimed to he exceedingly durable, and tbey say that if a final coating is given after tbe sbingles are laid, so as to cover any scratches which may have been accidentally given, a roof so laid will last for years. Each shingle is 8 by 16 inches; 277 are required to lay a square, as each course lies six and one-half inches to the weather, with a three-inch lap.

Mechanical Equivalent of Heat.—After another year's investigation the British Association's committee on this subject confirm tbe old figures, whicb give 772.55 foot-pounds as the equivalent at the sea level, and the latitude of Greenwhich, of tbe heat which can raise a pound of water weighed in vacuo from 60° to 61° Fab. in a mercury thermometer where the permauent freezing point ie called 32 and the permanent boiling point of water is 212. The work at present in hand is tbe more accurate investigation of the true position of the freezing point and the boiling poiut of the thermometer when cleared from the effects of the imperfect elasticity of tbe glass of which it is composed.

Superheated Water in Locomotives.—On the railroad connecting Rveil and Marly-le-Roi, France, it is said that thc experimeut of ruuning the locomotives by means of superbeated water bas given very satisfactory results. The water was introduced at a temperature of 180° C. If the trial turned out as well as bas been alleged, a motive power of this kind, may for many reasons, be adopted witb advantage on street railroads.

MECHANICAL PROGRESS.

The Latest Improvement in Gas Motors.

The *Gaslight Journal* translates from a French authority an account of recent improvements in gas motors. We take therefrom a brief description of the one which seems best contrived. The motive power in a gas engine is obtained by exploding behind the piston a mixture of ordinary illuminating gas with seven or more times its volume of air. The heat developed by the complete combustion of the gas amounts to about 6,000 calories per cubic meter (674 British units of heat per cubic foot), and raises the temperature of the gaseous mixture, after the explosion, to from 1,200 C. to 2,800° C., according to the greater or less excess of air that it contains. Part of the heat of the burned gases is transformed into motive force, by their pressure against the piston, as they expand; but the greater part is taken, in all the older engines, by the walls of the cylinder, which thus tend to become rapidly heated, and are kept cool by a water jacket. One of the most promising recent improvements is that of Herr Otto, of Cologne. Herr Otto's engine resembles in its general arrangement a single-acting steam engine, with a horizontal cylinder open at one end, closed at the other, and provided with a heavy fly-wheel. The cylinder acts, at the same time, as the compressing pump for the mixture of gas and air. The piston, at the bottom of the stroke, leaves between it and the closed end of the cylinder a space, the compression chamber, the volume of which is generally equal to two-thirds of that swept out by the piston, or two-fifths of the total capacity of the cylinder.

The complete period of the action of the engine is that comprised in two revolutions of the main shaft, or four strokes of the piston. The successive phases are as follows: (1) The piston advances towards the open end of the cylinder, and draws in the mixture of gas and air. (2) The piston returns and compresses the mixture to two-fifths of its original volume. (3) As the piston reaches the end of the stroke the mixture is ignited and again drives it forward. (4) Lastly, the piston returns again, driving out before it the greater part of the burned gases, and a fresh cycle of operation begins.

Thus, of four successive strokes, forming one cycle, one only, the third, transmits motive force to the shaft; the second, in which the gaseous mixture is compressed, consumes force; and the first and fourth are indifferent. Hence the necessity for a heavy fly-wheel. The supply of gas is cut off by the governor when the speed becomes too great. The valves admitting gas and air are so arranged that a feebly explosive mixture of 18 parts of air to one part of gas is first introduced into the cylinder, and then a smaller amount of a strongly explosive mixture of seven parts of air to one part of gas. As two-fifths of the volume of the cylinder, next to the piston, are already filled with inert gases, the mixture, from being most strongly explosive next to the port of admission, becomes less and less so nearer to the piston; and its explosion is thus rendered less instantaneous than that of a homogeneous mass of strongly explosive gas, while its ignition is ensured by the strongly explosive portion being that fired first, and a great part of the heat of explosion is employed in expanding the mass of inert gases contained in the cylinder.

ENGLISH TREATMENT OF INVENTORS.—In the course of a recent discussion in England on the progress of telegraphy, Prof. Graham Bell said that he would not be understood to intimate that invention had left the shores of England, but he would express his own personal experience of governmental control with regard to inventions. In 1874 he invented a system by which 16 or 20 messages could be sent simultaneously on a single wire. He received in reply a printed paper that the Post-Office would take into consideration the invention at the expense of the inventor, and, in the event of the improvement being adopted, the remuneration would be left to the consideration of the Postmaster-General. Personally the effect of government control had induced him to bring forward his inventions in America, and the result was the electric telephone. He thought that government control was necessary, but he feared that in most cases it was destructive of invention.

AN IMPROVED LEVEL.—J. B. Dancer, of Manchester, England, has made some improvements in the dumpy level for surveyors. He rejects the ordinary spider lines and places in their stead a transparent crystal plate firmly fixed on the diaphragm, upon which fine lines are drawn with a diamond point. The brass tube containing the level is double, the outer one being loose. When turned around it protects the glass tube when the instrument is carried about. The eye-pieces are made to focus accurately and easily on the cross lines by making one tube screw into another.

CHEAP ICE MACHINES.—A Paris correspondent says that there are on view at the Paris exhibition, ice machines of French manufacture, which may be purchased retail at about £6 apiece, and which are capable of turning out from six to eight pounds of ice in 90 minutes, at a cost of one farthing per pound.

Plumbago as a Molders' "Facing."

We notice that the use of plumbago as a facing in molders' castings is exciting the attention of European metal founders. Although this material has been used to a considerable extent in the country for some time, it will doubtless interest our foundrymen to read what their European contemporaries say of it. We quote from letters written to the *Ironmonger* of London.

A founder in Cadiz, Spain, writes as follows: Having for upwards of thirty years, been casting church bells for different parts of Spain, also a great many for the Philippine Islands, I also had a great difficulty in finding a wash sufficiently strong to avoid the silver and tin employed in the bell metal penetrating into the loam, and causing an immense deal of trouble in the cleaning of the bell. Last week I cast a large bell for the cathedral here, to which I applied plumbago powder as a wash, mixed with whiting and salt. The result was more than I anticipated, as on taking the bell out the loam left it without even the trouble of touching it, but dropped off of its own accord. I have also applied it to the casting of heavy gun metal castings and cast iron pieces, and in all it gave good results.

An English founder writes: We have carefully tried the use of plumbago, both in our iron and in our brass foundries—with a decided benefit in the sharpness and face of iron castings—that is by using plumbago for dusting the molds. Plumbago, pure and simple, and the better the quality of the plumbago the better the result; but in brass (yellow metal) and pot-metal castings neither the pure plumbago nor mixtures of plumbago and meal-dust, or plumbago and tan (or wood) ash was so satisfactory as would warrant its use in that way, whilst for heavy gun metal casting pure plumbago gives a clean face and a fine skin. The use of plumbago for yellow or pot metals we have found to be the best by first dusting the molds with pea meal, and then on that a slight dust of plumbago. With this we get splendid castings, quite equal to any American, both as to sharpness and cleanliness, admirably suited for steam valves to be left in the rough on their bodies, and effecting a very great saving in trimming and finishing polished goods.

AMERICAN FILE MANUFACTURE.—At the present time, says the *American Manufacturer*, by far the greater part of the files manufactured and used in the United States are machine-made in every part. Hand-cutting is still carried on, but mostly in a small way. There are a great number of shops making hand-cut files, producing from one to two dozen per day, but they depend chiefly on the profits of recutting. The statistics of the file industry of the United States may be briefly summarized as follows: There are seven manufacturers making machine-cut files, operating together about 275 machines, which at the present time are probably averaging 1,500 dozen files per day. These several companies also produce together about 200 dozen hand-cut files, making a total of 1,700 dozen per day as the product of the seven principal file-manufacturing companies. The smaller manufacturers before mentioned make only for local consumption, and seldom sell to the trade. Of the whole number not included in the seven already mentioned, probably not more than fifteen manufacture for the general market, and their aggregate production would not amount to more than 500 or 600 dozen per day. Probably the total production of the United States is about 2,500 dozen per day.

THE FRENCH USE OF COPPER TUBING.—In describing a fine exhibit of copper tubing at the exposition, the *Iron Age* says that Continental locomotive builders do not make their boiler tubes and fire-boxes of iron or steel, but employ copper and brass rich in copper. This preference is justified, especially as regards the tubes, by the following reasons: Iron tubes can only be used when the feed water makes little scale, which adheres to iron more strongly because the formation of rust aids it. Iron tubes, they claim, do not conduct the heat so well, and as copper expands more than iron, the contraction, in a certain measure, helps to loosen the scale. Besides, it is urged that copper tubes last very long, and that it does not cost more to make a new tube from an old one than to buy a new steel or iron tube. How far circumstances may warrant the differences which exist in American and foreign practice in locomotive building we do not know, but the extensive use of copper tubes abroad has led to a development of this industry to an extent which has no parallel in this country, and American mechanics cannot fail to admire the variety and finish of these French products.

SELF-REGISTERING ELECTRIC RAIN GAUGE.—This instrument was shown at the meeting of the British Association by Mr. Yeates, a small stream of water being provided as a substitute for rain. The water trickles from the reservoir and falls into a double-balanced bucket. The balanced buckets empty themselves as they are filled, each filling being equivalent to one-hundredth of an inch fall of the surface of the water in the reservoir. The motion of the buckets as they empty themselves makes and breaks connection with an electric battery, and by this means each fall of one-hundredth of an inch is self-registered on a dial. On a second dial the inches appear, and the rainfall in inches and hundredths of an inch can thus be read off at once without the slightest trouble.

SCIENTIFIC PROGRESS.

Occlusion of Hydrogen by the Metals.

In his notes of interesting things seen at the Paris exposition, Prof. B. Silliman writes to the *Engineering and Mining Journal* of the occlusion of hydrogen by palladium. The late Dr. Graham, of London, the distinguished chemist and Master of the Mint, first described what he called the *occlusion* of hydrogen in the pores of the most solid fused and coined palladium—a property in virtue of which palladium can imbibe, so to speak, more than a thousand times its own volume of hydrogen gas and hold it with great permanence at ordinary temperatures. This is not a fact of merely curious scientific interest; nor is it peculiar exclusively to palladium; for Dr. Graham found that some meteoric irons, especially that of Lenarto, which he specially studied, held also many occluded volumes of hydrogen gas which had accompanied the meteor from the regions of space. Considering the enormous condensation of hydrogen occluded in palladium, Dr. Graham was led to the not improbable suggestion that this element, which others before him had suggested might be a metal in vapor, must exist in palladium as an alloy, and he was thus led to propose for the metal the name "Hydrogenium." This class of facts has quite recently received great expansion by the researches of Dr. Wright, of Yale, who has followed the subject into the domain of astronomy, and drawn important inferences respecting the tails of comets and nebulæ as connected with the occlusion not only of hydrogen, but other gases in meteoric stones and irons. This curious subject, so full of scientific interest and fertile of speculation, has a magnificent illustration in the present exhibit of Messrs. Johnson, Mathey & Co., who show a disk of palladium within which one thousand volumes of hydrogen gas are condensed by occlusion—a volume of gas which would be represented by a column of 2,000 millimeters in hight and 100 millimeters in diameter.

The original palladium disk had exactly 100 millimeters diameter and a thickness of precisely two millimeters. It was, before imbibing the enormous volume of hydrogen which it now holds, perfectly flat; and it was ganged by a ring within which it exactly fell. Now this disk is a concave mirror, the new form being occasioned wholly by the molecular displacement due to the hydrogen it has absorbed; it no longer enters its gauge ring, for its 100 millimeters diameter are now enlarged to 102-5 millimeters, and its original weight of 187-3775 is now increased to 188-2882 grams. This remarkable absorption of hydrogen has no visible effect upon the luster, color or tenacity of the palladium-alloy of hydrogen, if indeed it be an alloy. The hydrogen absorbed by palladium enters this metal, when it is made part of the circuit of a voltaic battery, the gas usually evolved at the positive pole being then taken into the substance of the solid metal.

ATMOSPHERIC NITROGEN.—At a recent meeting of the Society for the Encouragement of National Industries in France, M. Basset read a paper on the researches which he had made to discover a means of obtaining ammonia at a low price and on a large scale through the medium of the nitrogen of the atmosphere. This question, of such importance to agricultural interests, has been the object of M. Basset's studies for more than a quarter of a century. The problem he proposed to himself was to generate nitrogen under moisture in the presence of nascent hydrogen. After explaining the various methods employed in his attempts to provoke this reaction, M. Basset announced that he had ultimately arrived at complete success, and was then in a position to turn out ammonia on a wholesale scale at the rate of five farthings a pound, and sulphate of ammonia at about four-fifths of that price. At the same time he deposited in the office a full description of the system he adopts, which was referred for examination and report to the chemical committee of the society. It needed scarcely be said that if M. Bassett's reported discovery is capable of practical application on the scale that he confidently believes, a complete revolution is at hand in the artificial manure trades and kindred industries.

THE METRIC SYSTEM.—A dispatch from Paris says that the International Congress on weights, measures and coins, on September 4th, unanimously adopted a resolution deploring the fact that England, Russia and the United States had not yet adopted the metric system. American and English delegates afterward passed a resolution petitioning the English and American governments to appoint a mixed commission to consider the adoption of the system by both countries.

LITERARY NOTE.—The good things promised in the October *Popular Science Monthly* will be soon ready. The number will open with an illustrated popular article by Prof. J. S. Newberry, of Columbia College, on "The Geological History of New York Island and Harbor," and will also contain articles by Bain, Huxley, Spencer, Kirkwood, Brooks, and other eminent home and foreign writers.

OVERCOMING THE IRREGULARITIES IN THE PENDULUM.—At the late meeting of the British Association, Mr. Denny Lane, of Cork, described an isochronic pendulum which he had constructed, as follows: (1) Changes in atmospheric pressure are prevented from reaching the pendulum by a hermetically closed case which surrounds it. (2) Changes in temperature are prevented by a surrounded envelope of fluid, kept at a constant temperature by a thermostat, in which the expansion of the fluid acts on a mercurial column, which increases or diminishes the supply of gas to a Bunsen burner. This contrivance antomatically maintains an unvarying temperature around the pendulum case, so that all compensation for change of temperature is unnecessary. (3) As the temperature and pressure remain constant there can be no change in the viscidity of the air surrounding the pendulum. (4) The oscillations are maintained by an electro-magnet contained in the case, the current of which is interrupted for a portion of every oscillation by a contact-maker placed outside the case. This is actuated through the walls of the case, by a small permanent magnet attached to the foot of the pendulum. Thus the case need never be opened after once the pendulum is erected, and the pendulum touches nothing but the spring by which it is suspended, and the air by which it is surrounded. (5) The current of electricity operating on the electro-magnet is regulated by a rheostat, which maintains the current at a uniform force. It was urged, therefore, that the current being uniform, the arc should remain uniform, as the retarding and accelerating forces were constant, and all changes in heat and atmospheric pressure were prevented. In a rough experiment with Fuller's bichromate battery, the arc of the pendulum had not diminished the 300th part of an inch.

ANCIENT SURVEYING.—Two documents of great interest to geometricians have been discovered among the contract tablets in the British Museum. Attached to two terra-cotta deeds of sale of estates near Babylon are neatly drawn plans of the property. One sale took place in the reign of Darius Hystaspes; one toward the end of that of Nebuchadnezzar. The latter deed relates to a plot about 8½ acres in area, bounded on the north side by the canal of the goddess Banituo. The names of the owners of all the adjacent lands are given, and the greatest care is taken in giving the dimensions of these plots of land. The whole is divided into three pairs of parallelograms, and check dimensions are taken to test the accuracy of the work. A semicircular portion on the east side is most carefully measured, both radius and circumference being given. The value of these documents as bases by which to fix both the linear and area measures in use in Babylonia is very great.

COAST SURVEY WORK.—The Santa Rosa *Democrat* says that the party executing the primary survey on the north coast have finished their observations on the Gualala mountain, and are moving their camp to Cold Spring mountain, in the range east of Point Arena. The points observed from the new station will be Noyo Peak, Two Rock Peak, and the highest point on the Pine Ridge near Ukiah, Sanel mountain, Gualala mountain and perhaps Cahto mountain. The theodolyte at Noyo will be elevated on a frame scaffolding one hundred and thirty-five feet in hight, the tallest structure for this purpose ever used on this survey. The first observation was taken on the Cold Spring mountain on Thursday. The officers in charge of the party are B. A. Colonna, E. F. Dickens and J. F. Pratt.

SUB-CHLORIDE OF SILVER.—C. Lea has shown by recent experiments that the black body formed by the action of light upon chloride of silver is not metallic silver, but only a sub-chloride. Quantitative experiments have shown that after five days' exposure of a thin layer of chloride of silver to the direct action of the sun, only about one per cent. was reduced. Researches with bromide of silver tend to show that with it an actual reduction to metallic silver takes place, as the blackened precipitate treated with nitric acid immediately yielded considerable amounts of the silver to it.

A BONY RIVER.—In Dublin there is a warehouse of a bone mill which contains several 1,000 tons of fossils of the Jurassic period—teeth, vertebræ, fibula, jaws and limb bones, which are thrown indiscriminately into the mill, which is of enormous power, to crush the harder than flint petrified bones. These are dredged up from the river Bull, in North Carolina, the largest deposit of fossil remains ever discovered. For fifty miles the river runs through petrified bones. They are first loosened by enormous crowbars worked on the principle of pile drivers, and then dredged up. This river yields several 100,000 tons of fossil bones each year.

NEW CHEMICAL ELEMENT.—It seems probable that a new element will be before long brought to light. Recently M. Soret found in the ultra-violet spectrum of gadolinite lines which belong to the spectrum of no known metal, thus confirming the opinion expressed some time ago by Marignac and Delafontaine, that gadoliuite contained other bases than yttria and the oxides of erbium and terbium.

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

CALIFORNIA.

AMADOR.

MOORE MINE.—*Ledger*, Sept. 28: Opsrations havs now commenced in downright earnest looking to the dsvelopment of this promisiug claim. A contract for 40,000 feet of lumher has been let to F. Mace, and a quantity has already heen hauled on the ground. Several men are eugaged in grading at the mine, preparatory to the erection of a suhstantial building over the shaft. Powerful hoisting machinery is to be put up without delay. The property has fallen into the right hands to be worked with vigor.

ITEMS.—The Oneida mine has started to sink. The Montirichard mine is running nnder favorable auspices. The uew reservoir is all completed, and full of water. The Pennsylvania mine at New Chicago, is likely to he started again soon. Notices are up inviting bids for a contract to sink an additional hundred feet. The Centennial mill is about completed. The etamps were all in place last week. It will take some time, however, to get the water in. In the meantime sinking operations are making satisfactory headway.

CALAVERAS.

CHAMPION.—*Chronicle*, Sept. 28: The amount of water available in the West Point ditch has increased sufficiently to permit resumption of operations at the Champion mine. Stoping is being urged in all the levels, and the shaft is also heing pushed steadily down. The ore continues of excellent quality. The proprietors are building a mill, which it is expected to have in readiness to run in about four weeks. Upwarde of 800 tons of rock is already on the dumps of the mine, awaiting the completion of the mill. The upper country promises to be unusually lively, in a mining sense, this fall.

MURPHY'S.—Stockton *Independent:* Excitement is rife at Murphy's Camp over a rich strike of gold quartz on the north bank of the north fork of the Stanislaus, opposite and three or four miles distant from Murphy's. The quartz lies between the slate and the granite. Among the firet discoverers was a miner named Collier, who used to own the celebrated Collier mine at Murphy'e. He first took out two tons of rock, which was packed up the mountain on mulehack and taken to a quartz mill, yielding $500. The next lot of ten tone panned out $6,000. The ledge ie doubtless the uppermost in the county, as it joine the original granite of the mountains in which no leade exist. It may be therefore, that from this lead was washed the placer gold found on the Stanislaue below. Several locations have been made on the lead, and rich developments may be looked for soon.

COPPER. — *Calaveras Chronicle*, Sept. 28: Copper has some prospect of seeing a better day ere long. The Union company sent an expert up a short time ago to overhaul the machinery, etc., and report on same. Why these mines should remain dormant so long is truly a mystery. There are no suits pending, no indehtedness and no lack of ore. Copper is ranging at a good price at present. No company could ask for more natural advantages for mining purposes than this one has.

ITEMS.—Enormously rich rock continues to be taken from the San Joaquin mine at Mosquito, J. J. Holmes, proprietor. Heavier hoisting works are to be immediately put on the mine. Tbe 150-foot level of the Banner has been extended 80 feet, all the way in rich ore, without reaching the extremity of the pay chute. The level is still being run, with no indication of reaching the end of the rich ore. The shaft is also being sunk and is in the finest quality of rock. It is rumored that the San Joaquin hoisting works will be transferred to the Alhert mine, and new works put up on the former. A ledge over 18 inches wide and assaying ahove $100 per ton, has heen struck in the Buffalo mine near West Point. Everything prospers at the Gwin mine.

EL DORADO.

MINING INTERESTS.—S. F. *Call:* In mining there is a great deal of interest. A large number of hydraulic and placer mines are working all the time they can get water, which is scarce now. In quartz, there has been lots of prospecting, and some first-class mines are now heing opened. Near Kelsey they are opening eome good mines. One of them is a recent purohase by San Francisco men, and is one of the best, if not the best, looking and richest ledges ever found in the county. They are now erecting hoisting works, and an arastra for prospecting as they sink the shaft, which is to he sunk 100 feet and levels run each way on the ore body so as to find the extent of the ledge. The company also have a 10-stamp mill, purchased from the old Blue Lead mine. A rock soap mine is a curiosity, as the rock will clean clothes, silverware, metals, and is an excellent substitute for soap. Thero is a 6-foot ledge of it. Near Placerville tbe most of tbe mines are doing more or less work. The gravel claims are all working.

ITEMS.—*Mountain Democrat*, Sept. 28: The Esperanza mine, about one mile north of Garden Valley, has given promise of an excellent mine, so far as prospected. The ore hody is about three feet wide, and is what minére usually call "ribbon rock." The ore from top to bottom of the ehaft, whicb is about 20 feet deep, gives good results with mortar and pan. The Pocahontas mill and mine ie to commence work the 1st of Octoher, to continue during the winter. The McNaley mine is heing worked by capitalists from San Francisco. They have reached the hottom of ths old shaft and the rock is reported as looking well. A shaft at the Garden Valley mine is down 75 feet, and the lode is large, regular, and has well-defined walls. It prospects well.

MONO.

SPAULDING.—*Standard*, Sspt. 25: This mine has the sams footwall as that found in the Republic, Relief, Mono, Standard and Bodie, which are located along the hill in the order named, and carrying the same character of ore in each of them, makes it an indisputable and undeniahle fact that we havs here in Bodis district a continuous and well-defined ore channel which must extend to an indefinite depth. The veins found, varying as they do all the way from five inches to 20 feet, as found in Bodie, make it a matter of speculation, merely, when one talks of their probable size and extent. The last 20 feet sunk on the ehaft ehows a marked change for the better in the character of the ledge matter expoeed. The ledge is much better defined, with good quartz and clay, which eeems to harden and widen out as depth is attained, and from present appearances and indications, the next 50 feet will open out a body of rich ore.

CON. PACIFIC.—Engaged running tunnel which is run in 225 feet; stoping out ore ahove the tunnel and also taking out ore from the face. The ore vein is now 18 inches in width, of fine milling character. Work on Pacific No. 2 is heing done by sinking. Indications good for large hody of ore. On the second south extension of Pacific No. 1 work is being prosecuted vigorously with good results.

SOUTH STANDARD.—Engaged sinking in two places; one a double compartment shaft now down a depth of 200 feet, the other a single shaft which has attained the depth of 75 feet. The hoisting engine is working well, and everything ahout the mine is in good condition. As soon as lumber can be obtained, a building 26x48 feet will he erected over the shaft.

APOLLO AND CROSS.—This claim is situated on the west slope of Silver hill, aud is owned hy M. D. Annas, R. T. Blackwood, Robert Sourley and Henry Lent. The north line of the Apollo is 100 feet eouth of the south line of the Standard, and is west of and runs parallel with the South Burgess. The shaft is down 33 feet, and two ledges have heen found. The vein running north and soutb is about eight inches wide, and prospects well. The Cross ledge is 10 inches wide.

CONCORDIA.—Hoisting works for this mine are already on the ground, and will be in running order in 10 days. Contract for sinking 100 feet completed. Now eugaged cutting out the collar of the incline, preparatory to putting up the works.

CHIEFTAN.—From 50 level a winze ie being sunk on the vein, which showe splendidly. Some fine prospects of gold have been "borned" out from this mine, and every indication points to the near presence of a fine ore body.

ITEMS.—In the Reno an 18-inch ledge of fine looking quartz has been encountered. The May Belle shaft is heing eunk as fast as possihle. The bottom is in vein matter with good indications. The formation in the east crosscut of the White Cloud is favorahle. The Goodshaw shaft goes down eix feet per 24 honrs. It is understood that good rock is being now extracted from the mine and that a large hody of pay ore will soon he opened up. The formation of ledge in the Ajax is similar to that found in Silver Hill. The quartz containe a preponderance of silver.

NEVADA.

HUDSON MINE.—*Transcript*, Sept. 27: The mill at the Hudson mine is kept running night and day. Until Tuesday, it was being fed with rock taken from the same place in the tunnel where work was discontinued five or six years ago. For three days now ore from the surface has been put through. Altbough the rock from the tunnel was profitable, the surface yield is said to excel it in richness to a very great degree. Superintendent Murchie says that he has seldom eeen any better, and is highly elated over the prospects of the mine. Within a few days four or five extra men have been given employment, and undoubtedly the force will be again increased when developmentss have proceeded a little farther.

ITEMS.—The Boston mine, Woolsey's Flat, recently cleaned up $25,000 in gold dust from 25 days' work. The prospect shaft of the American quartz claim, on Centerville ravine, is now down 70 feet, and the ledge looking well. The water is now all out of the Knight of Malta shaft, and preparations are heing made to take out a crushing of quartz. The perpendicular shaft on the Ben Franklin claim, Oshorne hill, now down 80 feet, and in hard blasting ground, will strike the ledge in 30 feet more. The Orleans mill is kept constantly running on quartz from the Orlcans and Centennial mines. Everything is in running order again at the Murchie mine. The Independence ledge is now 15 inches thick.

SHASTA.

COPPER CITY.—Reading *Independent*, Sept. 26: The Extra Co. shipped during last week five bricks of hullion, averaging about 1,600 ounces each, which was the product of hut two pans. The new pans are in place in the company's mill, and started up on Tuesday with just douhle the amalgamating capacity they have had heretofore, and a $1,500 bar of hullion may be looked for daily hereafter. The Northern Light is heing prepared for winter so that work may progress throughout the stormy season. The new strike on Bully Hill, adjoining the Potter mins on the north, and owned hy James Sallee, is very rich. Thers are many business men coming here and anxious to huild, but cannot for want of lumhsr, and 100,000 feet of good lumber would find a market at once at a good price.

SIERRA.

SAVAGE.—*Mountain Messenger*, Sept. 28: The Savage Placer Gravel Co., havs commenced the erection of huildings for the winter, and work on the new tunnel is in rapid progress. It is estimated that 1,134 feet will have to be run to tap the line of the shaft, now down 130 feet, where it will be necessary to raise 390 feet to connect the two. 800 fcet of rim-rock is between daylight and gravel. Uppsr strata, lava, gravel cement, ahout 400 feet; then pipe clay. Hers channel has a grade of 30 feet, according to tbe survey, to the mill.

ITEMS.—It is rumored that a portion of the stockholders of the North Fork Mining Co. have purchased the interests of the Nevada county owners, and that the work of development will be proceeded with. Brueh Creek has struck rich rock iu a lower level of the mine.

TRINITY.

A GOOD SHOWING.—*Journal*, Sept. 28: From Henry Burns, Superintendent of the McGillivray D. &. H. M. C., we learn that the past year has heen a prosperous one for the corporation. The gross proceeds of the mine have been, in round numhers, $25,000, and the net profits realized foot up $12,000. When it is remenhered that these mines previously only paid running expenses, the exhihit this season must be regarded as excellent, and the credit therefor is in a great measure due to the economical and efficient management of Superintendent Burns.

TUOLUMNE.

THE HARRIS GRAVEL MINE. — *Democrat*, Sept. 28: Parties from San Francisco have spent some time this week examining the property known as the Harris gravel mine ahove Garrote. We learn they concluded the purchase on the report of the expert. This is a lafge hody of gravel which in places has yielded well. It ie the opinion of miners who have knowledge of the ground that, when properly opened, it will he a valuahle property.

SPRING GULCH MINE.—*Independent*, Sept. 28: This mine gives a hetter promise the more it is opened up. The old mill is undergoing repair. Under great disadvantages it paid hack a liberal amount of gold for the rock run through it last year. Next year it will do more and hetter work. The ore is moved on cars one mile down an incline to the mill, where water power is availahle for eeveral months.

NEVADA.

WASHOE DISTRICT.

OPHIR.—Gold Hill *News*, Oct. 2: Mr. Patton thinke the recent etrike a feeder to an ore body lying helow. From the similarity between this formation and the one in Sierra Nevada, experts pronounce it important.

CON. VIRGINIA.—Daily average yield of ore, 185 tons, which will be increased soon.

CALIFORNIA.—The north drift on the 1650 level from the Con. Virginia shaft ie heing pushed towards the Ophir line, and is now in quartz giving low assays. The nortb lateral drift from the main east drift to the C & C shaft is still in good ore. The daily average yield of ore is 200 tons, which is soon to be increased.

CALEDONIA.—The main south drift on the 1400 level is making rapid progress in a formation of promising vein matter. Tho north drift on the 1600 level is rapidly advancing in porphyry carrying streaks of lively quartz. The crosscut east on this level is also being driven rapidly on, and is enconntering material of a softer and more promising character.

SIERRA NEVADA.—The development in the incline of this mine continue to he of the greatest interest as they are of marked importance. The ore body has of late bulged into the course of the incline from the eouth and extended across the entire face. The ore encountered is very fine and richer tban that found in the crosscut run above. The 2200 level will be reached by the incline in a very few days, when the real value of the ore encountered in this part of the mine will be more definitely ascertained.

JUSTICE.—There is still ore in winze No. 2 from the 1150 level. Tbe crosscut on this level has heen driven on through the ground formerly in dispute with the Alta, and the ore body bas heen reached. Preparations are now heing made for stoping the ore for milling. The winze from the 1300 level is still cutting fine quartz carrying bunches of good ore. The crosscut on the 1400 level and from this winze is cutting favorable looking quartz. In crosscut No. 5 strong stringers of quartz show a near approach to the ledge. There has heen a marked improvement also of late in the south drift, 1300 level, the quartz assaying well especially in gold.

ALTA.—The mine is now prepared to handle all the water which is likely to he encountered, and crosscutting of the vein will be in order. The east drift on the 1550 level is very close to the vein, as is indicated hy the quartz, carrying ore, which has heen encountered. The formation cut to the north consists of quartz with ore in hunches. The drift to the eouth has been turned more towards the vein, and is also cutting quartz with spots of ore.

BULLION.—The main incline shaft below the 1840 level is making usual good progress and encountering an improved quality of quartz giving low assays. Since the dyke hss taken a more vertical pitch hetter indications of an ore hody are found.

GOULD & CURRY.—East crosscut No. 4, 1900 level, is heing pushed ahead as fast as possible, and now lacks ahout 65 feet of reaching the joint Savage winze. The face is in hard porphyry.

SOLID SILVER.—The force of men will hs increased, and as soon as water is out of the winze crosscutting the fine ore lsdge at the bottom will he commenced.

GOLDEN STANDARD.—Ground has been broken for the Golden Standard and Promontory new shaft. The site of this nsw shaft is wsll located.

SCORPION.—A division of property has been decided on, to take effect at once. The capital stock is to be increased to 100,000 shares of $100 each. The Scorpion silver mining company will retain 1,324 feet of the ground nearest the Union Con. and Sierra Nevada minee, and to which it is claimed belongs the ore body heing worked by the Sierra Nevada people. This ground will hereafter be known as the Scorpion mine, and will be divided into 100,000 shares. The balance of the property will he conveyed in equal parts (800 fect each) to four new companies for certain considerations. The names of these new incorporatione are to he the Keating, the Warsaw, the Garher, and the Thornton, each of them to consist of 100,000 shares of the par value of $100. The etockholders in the Scorpion mine (1,324 feet) will receive a dividend pro rata of the stock in tbe uew mines, each of which has 800 feet.

JULIA CON.—Nothing new to report on the 2000 level. Crosscut No. 1 has ite face etill in clay and porphyry, with some quartz coming in. The main south drift is advancing in favorable ground.

VERMONT CON.—Bottom of shaft continues in favorahle ground.

WARD.—Good advance made in the main shaft.

BELCHER.—Crosscut No. 1, opposite nortb incline is etill in a fine formation of very promising quartz and porphyry. Crosscut No. 2, 230 feet feet further eouth, is now in a fine formation of very promising quartz. The vein grows better toward the south, and the indications for an ore hody in that direction are excellent.

YELLOW JACKET.—Excellent work has been done during the past montb of Septembsr in sinking the new ehaft. In the old workings of the mine, at the 2400 level, the drift south from the winze north is in 292 feet, the face at present in bird'e-eye porphyry with occasional streake of quartz, all of which give fair assays.

UTAH.—Grading to enlarge the hoieting worke and to put in an incline engine and an extra set of boilers is being pushed rapidly forward.

UNION CON.—The east drift on the 1600 level is making good progress. The porphyry encountered is harder than formerly, but breaks well.

MEXICAN—The work of sinking tbe Mexican-Union Con. winze is making good progress.

HALE & NORCROSS.—Everything at the mine working well.

CON. DORADO.—New working shaft down about 100 feet; hottom in favorable working ledge porphyry, with streake of quartz.

SUTRO TUNNEL.—The Julia hranch ie making excellent advancement, the ground working well.

SAVAGE.—The 2100 level has so far resisted the long, strong pull of the pumps to free it from water. Still the expectation is daily to get in on that level. There is no change in the formation encountered in sinking the nortb winze on the 2000 level.

CHOLLAR COMBINATION SHAFT.—The drift on the 1593 level to connect with the Sutro Tunnel now lacks ahont 67 feet of connectiou. The rock continues hard, with occasional etreake of softer material. There ie not enough water to hinder operations.

OVERMAN.—The connection on the 1600 level is made and ventilation ie rapidly improving on that and connecting levels. It will take some daye yet to even up and smooth out the drifts ready for use.

BEST & BELCHER.—Tbe north lateral drift on the 1900 level is making about three feet per day. The face continues in hard porphyry showing etreake of etained quartz.

NORTH CON. VIRGINIA.—There is no change to note in the formations encountered.

NORTH BONANZA AND FLOWERY.—A good force of men are employed in the surface ore extraction. This ore pays well under the etamps, and is expected to defray the expensee of running the mine.

LEVIATHAN.—Face of north drift on the 750 level shows a strong vein of fine looking quartz which gives fair assays. Crosscutting will be commenced shortly.

CON. IMPERIAL.—No. 3 crosscut, on the 2400 level, shows a little improvement, more and hetter quartz coming in.

LADY BRYAN.—The 600-foot station is being opened and crosscutting at that point will soon show the true value of things. On the 350 level the north drift is running in a mixture of porphyry and low grade ore.

BENTON CON.— Crosscutting next in order.

SILVER HILL.—Crosscutting on the 800 and 900 levels is being done, increasing good prospects.

TROJAN.—The development levels of the mine are ehowing increasing good prospects as well as plenty of good ore.

SUCCOR.—On the 1040 level the face of the

northwest drift is in very promising vein matter. No bad trouble from water.

LADY WASH. CON.—The drift north from the 1250 level of the Alta will be continued on through this mine, giving a very good exploration at that depth.

CROWN POINT.—Some little improvement is met with on the 2360 level crosscutting.

ALPHA.—On the 2400 level, more quartz is coming in, with fair assays.

MORNING STAR.—The ore face in the main adit tunnel, will soon be arrived at again.

NEVADA ITEMS.—A. H. Ricketts, of Virginia City, has relocated a large ledge in the mountains to the northward of Fort Churchill, on which considerable work was done in the early days and which assays from $20 to $30 on the surface. The principal lode can be traced on the surface a distance of over 4,000 feet and which is in places of immense width. This lode has been christened the Marietta. Most encouraging reports come from the new Edison claim, Delaware district. Three or four San Francisco companies have lately purchased mines in Lake district. The Silver City, Lyon county, *Times*, reports talk of beginning work on the South Comstock, South End, Comet, Atlantic Con., Daney, Kossuth and Dayton. The Hoosac furnace will probably be started on Jackson ore. The daily output of the Hillside mine, Bristol, is about $3,000. The Falcon mine, in Rock Creek district, near Tuscarora, has been sold by the sheriff to satisfy a judgment of $248. The Paradise M. Co., recently incorporated to work the Mountain Bright mine in Mount Rose district, have listed their stock on the San Francisco Stock Board. A Frenchman, representing a wealthy organization who have a process for reducing copper ores, is looking about Nevada for favorable locations.

MONTE CHRISTO.—*Eureka Sentinel*, Sept. 27: After 10 or 12 miles of packing, 40 miles of freighting and several hundred miles of railroading, over three different roads—subject to various handlings and numerous chances for stealing—ore from the Mountain Queen, near Monte Christo, brings from $350 to $400 per ton. Mr. Spiker and another gentleman have this mine. They are down on it 150 feet, and have been drifting on the vein, which is small—varying from two to 18 inches in width. Jacobson & Corcoran are also shipping, from the same locality, nearly the same quality of ore.

ARIZONA.

BULLION SHIPMENTS.—The *Arizona Sentinel*, of Sept. 21st, publishes the following: Bullion shipments for the week ending Sept. 20th, 1878:

Sept. 14th, 2 bars Peck	$ 4,070
Sept. 15th, 5 bars Tiptop	8,097
Sept. 17th, 2 bars Peck	3,165
Sept. 17th, 1 bar B. & K	1,508
Sept. 17th, 10,928 lbs. Stonewall	90,000
Sept. 17th, 1,600 lbs. Pinal Mill	2,000
Sept. 17th, 1,500 lbs. Globe ore	3,000
Sept. 19th, 3 bars Tiptop	5,060
Total	$116,900

The shipment of 10,928 pounds of Stonewall Jackson ore is of the same rich stuff that has always attracted so much attention in San Francisco, and which has realized from $7 to $10 per pound. Our estimate of $90,000 for this lot, is probably below, rather than over, the real value. The 1,600 pounds of concentrations are from Baldwin's Pinal mill, and were made from one of the Silver King dumps; they are valued at over $1 per pound. Last week we noted shipment hence of $79,723 bullion, that figure included 25,000 pounds of Silver King concentrations, which we valued at that many dollars. Returns of sales of that lot show that it realized at the rate of $3,700 per ton, or $1.85 per pound. Therefore, we can add $21,250 more to that week's shipment, making the total for the week ending Sept. 13th, $100,973. Even then this does not include proceeds of over 2,000 pounds of Silver King "nuggets," which are melted at refinery, and from which we have heard no returns; they have usually realized $8 or $9 per pound.

COLORADO.

SILVER CREEK.—*Miner*, Sept. 21: This week there are no less than eight mines in good pay. Three weeks ago but one had any pay, and that was the Joe Reynolds; and to-day the Joe Reynolds is turning out more ore than it ever did, equally as rich as any ore heretofore taken out. The Highland Chief, leased from Gen. Gilbert by J. C. Skillman, Drake and Wheeler, the Hugo, the La Crosse, worked by Moss, Webster & Co., the Nil Desperandum and Thomas Moore are all in good pay. The Gold Belt, Terrible, Homestake and Monarch are looking well.

CLEAR CREEK.—The development of the Specie Payment mine progresses steadily with a force of about 20 men, and it is now looking better than it has for some time past. High Grade Tunnel vein carries from two to 16 inches of ore that averages about $188 per ton in gold and silver. Owens & Co., of the Victor, are taking out good ore, principally galena, but carrying large quantities of gray copper and some zinc. The Fall River mill is stamping auriferous quartz of that section with satisfaction. The Metropolitan, Seaton bill, owned by Haglund & Co., and worked by a party of Swedes, is a valuable property. The best ore carries 200 ounces in silver and four ounces of gold to the ton, and the second class about 75 ounces of silver, besides which there is some good grade concentrating ore. Galeniferous ore from the Amazon carries 200 oz. silver per ton. Mill runs on Chicago ore range from 250 to 460 ounces in silver. Albro ore yields about $100 per cord. The Old Chief has a vein in some places three feet wide.

LAKE CITY.—San Juan *Prospector*, Sept. 21: All three mills are running at their full capacity, and reducing a large amount of ore. Work is progressing finely on Lee's smelter at Capitol, and it is the intention to run this winter. Henson creek mines have shown up as well, if not better, than any mines in the San Juan, during the present season. Work has been closed for the present on the Dolly Vardeu mine. The ore was never richer than now, but the water comes in in such quantities as to make work impossible. Mr. Houghton intends to start a tunnel immediately to tap the vein at a depth of 300 feet.

GUNNISON COUNTY.—Denver *Tribune*, Sept. 25: The mines in this county are destined at an early day to be profitable to their owners and to add no little to the material prosperity of this region. They are in Washington gulch, where at placer mining the yield of gold is from $3 to $5 a day to the man—Union Park, Tin Cup gulch, and on the Elk mountain. It is said that while in the San Juan country proper (which embraces Hinsdale, Ouray, San Juan and La Plata counties) the ores are of higher grade than in this county, yet in the latter placer mining would be more lucrative than in the former, because of immense beds of excellent coal and iron ore suitable for fluxing in close proximity to the mines. Many of the mines on Elk mountain contain great quantities of ore that will mill from $75 to $100 to the ton—quite valuable because of the facilities for treating the ores. Messrs. Fluke, Sewell and others own a number of good mines there, for one of which they were offered last week $10,000 cash. Captain Hall hauled to Leadville a week or so ago a little over 1,600 pounds of carbonates from one of his mines in Union Park, and it milled over $1,000. In or near Washington gulch a smelter will be in operation in two weeks or three.

LEADVILLE.—*Eclipse*, Sept. 19: It is with no small satisfaction that we perceive the facts of the constant and rapid development of our mineral resources and the unprecedented growth of our city of Leadville. Leadville has now a daily production of 100 tons of high-grade ore milling from 70 to 400 ounces, and a capacity of from 100 to 300 tons a day of low grades, properly lead ores, not profitable to touch at present unless a need should be created for it by the smelters, which we anticipate will be the case ere long, and give a market for really valuable ore that has hitherto brought scarcely more than iron flux. From this we conclude that Leadville will ship no more lead than will necessarily be required to smelt the high grades, especially the silver-iron ores and hard carbonates, and the superabundance of good smelting ore is undoubtedly destined to make Leadville the great smelting pot of Colorado.

ITEMS.—Belcher, Iowa gulch, ore mills from $80 to $175 in silver, showing a fair percentage of lead. Placer claims in Cache creek yield rich returns in fine gold. Taber & Co., of the Winnemuck claim, paid $35,000 for a release from their hand. Two Boulder men have sold a mining interest for $10,000. Two tons of ore from the Last Chance, Camp Providence, assayed $650 per ton. The Atchison, Topeka & Santa Fe railroad is completed to Trinidad, 15 miles north of the New Mexican line.

BULLION SHIPMENTS.—Standard, Sept. 23d, $16,482.90; Northern Belle, Sept. 23d, $4,135.10; Leopard, Sept. 26th, $8,200; Hussey, Sept. 26th, $4,500.50; Hampton, Bingham, Sept. 24th, $3,000; Bodie, Sept. 26th, $14,000; total to date, $176,000; Sept. 29th, $12,200; Sept. 30th, $8,400; Silver Reef, $13,685.10; Germania, $4,000; $2,900; Butte, $7,481.51; Ontario, $6,254.44; $5,332.50; $2,746.62; $3,387.12; Tybo Con., Sept. 25th, $3,973.78; total for Sept. to date, $49,193.29; Endowment, Oct. 1st., $2,844.78; total to date, $30,120.70; Independence, Sept. 30th, $7,000; California, Sept. 28th, $82,268.30; total to date, $231,083.21; Con. Virginia, Sept. 28th, $66,947.56; total to date, $173,201.90; Indian Queen, Sept. 23d, $5,218.96; Cortez, Sept. 29th, $6,147.45; Manhattan, Sept. 28th, $11,800; Sept. 30th, $11,500; Christy, Oct. 2d, $6,903; Tybo Con., Sept. 27th, $7,594.30; Bodie, Sept. 23d, $9,972.13; Standard, Sept. 30th, $20,062.65; Northern Belle, Sept. 28th, $5,317.83.

MINING IN NEW SOUTH WALES.—The *Alta* comments on the following from official publications of this colony: The alluvial, or placer, mining in 1877 was nearly all done by deep drifting, hydraulic work on a scale common in California being unknown. Only 1,000,000 tons of auriferous gravel were washed, or less than each of two score of claims sends through its sluices in the Sierra Nevada. The average yield of this Australian placer ground is $1.50 a ton, while here the average yield in the placers does not exceed 40 cents a ton. The average yield of the auriferous quartz is $13 per ton. The gold miners number 7,000, of whom 1,500 are Chinese, and the average yield for each per working day in the year was about $1.15. In California the yield for each miner is not less than $4 per day, that is, of those engaged in paying claims. Coal is the most valuable mineral, the annual product amounting to $4,000,000, while that of tin was $2,500,000, that of copper $800,000, and of petroleum $1,300,000.

THE latest published statements of the number of adult males, employed in various occupations in the United States, put the miners at 153,106.

News in Brief.

COTOPAXI is in violent eruption.

UTAH'S grape crop is better than usual.

THE Odd Fellows' bank of Sacramento has suspended.

ENGLAND is getting up a war with little Afghanistan.

ANOTHER mill for crushing sugar-cane has gone to Salt River, Arizona.

GENERAL Sherman collected over 200 pounds of rich ore from the Prescott country.

BOSTON parties are developing a silver mine on farm land in Sussex county, N. J.

A 22-pound nugget of copper has been taken from a mine in Pennsylvania.

THE total number of yellow fever cases to Sept. 25th, 15,429; deaths, 6,751.

GENERAL HALBERT E. PAINE, of Wisconsin, has been appointed Commissioner of Patents.

THE volume of the Amazon is estimated at 7,000,000 cubic feet a second.

TURKEY may have to pay Russia a war indemnity of 310,500,000 francs.

THE Arizona bullion product this year will be in the neighborhood of $8,000,000.

BY recent surveys the Madeira river, in Brazil, is found to be navigable for 500 miles.

THE Tropic mine, near Idaho Springs, Colorado has been sold to Chicago men for $50,000.

FRENCH subscriptions to the yellow fever sufferers in the United States amount to $12,000.

THE British government has ordered the emancipation of all slaves on the island of Cyprus.

AN earthquake at Montefalco, in a province of Umbria, Italy, has rendered 143 houses uninhabitable.

LARGE deposits of fine marble have been discovered near Ishpeming, Lake Superior district, Michigan.

THE Mosquito Gulch ledge at Cariboo, shows rock that assays $720 to the ton, at a depth of 20 feet.

TRAINS on the Union Pacific run slowly at night for fear of displaced rails. Train robbers are still feared.

GENERAL SHERMAN says that he does not see how Prescott, Arizona, can get along without a woolen mill.

ON Sept. 29th, $50,000 worth of Silver King concentratione was forwarded from Yuma to San Francisco.

SINCE 1865 the spinning power of the world has increased from 2,000,000 to 3,000,000 pounds per year.

THERE seems to be an impression that life insurance in this country may be called upon to pay its own policy.

AN Indian soapstone quarry of considerable size has been discovered on Rock creek, just outside of Washington.

THE National banks charged off during the six months ending March 1st, 1878, losses amounting to $10,903,145.

FIVE hundred Russian officers, including 40 colonels, are accused with misappropriation of money during the late war.

THE excess of exports over imports indicates an increasing flow of specie and of American securities toward this country.

THE center of Ryer's island, in the Sacramento, is covered with debris to the depth of 18 inches by last spring's floods.

THE beach gold excitement has spread to Half Moon Bay and at least 12,000 feet of diggings have been taken up there.

THE net profits of the Western Union Telegraph Co., for the quarter ending September 30th, are estimated at over $1,000,000.

ONE of Custer'e men, who helped to bury him, positively denies the story that the remains interred at West Point are not Custer's.

SOME Italian ranchere while grading a road north of the Wells Fargo mine, struck a quartz vein assaying between $300 and $400 per ton.

CURTNER'S warehouse, at Warm Springs station, Alameda county, supposed to contain from 6,000 to 10,000 sacks of grain, was burned on September 25th.

THE Richmond M. Co., smelting works burned to the ground September 27th. The bin with 175,000 bushels of coal was destroyed. Total loss, about $85,000.

THIRTEEN years ago the United States debt was $7,825 per capita; to-day it is $4,157 per capita. Thirteen years ago, the interest was $429 per capita; now it is $197 per capita.

A SINGLE locomotive building establishment in this country will have constructed in 1878 no less than 300 locomotives, against 185 in 1877. Railway building is on the increase.

THE proposals of the committee for acquiring and completing the Oregon Central railroad have been approved by bondholders representing $2,811,100, in meeting at Frankfort-on-the Main.

THE wool clip of Oregon this year is about 6,580,000 pounds, being 1,500,000 pounds more than last year. The prices range from 13 cents for the poorest to 25 cents for the best quality.

PETROLEUM CENTER, Pa., once a town of nearly 4,000 inhabitants is now a deserted village of about 100 people. The oil wells are empty.

ELLIS SPEAR has tendered his resignation as Commissioner of Patents, to take effect October 31st. It is understood the position has been offered to Ex-Congressman Halbert E. Paine of Wisconsin, but he has not accepted.

HORSES, mules, cows and oxen, and all agricultural machinery and implements, may be imported duty free for one year into the provinces of Puerto Principe and Santiago de Cuba. The term may be extended another year.

New Incorporations.

The following companies have filed certificates of incorporation:

RENO, M. Co.—Mono Co. Directors—J. H. O'Brien, Daniel Brolley, Henry Phillips, J. T. McGeoghegau and Thos. Dovine. Capital, $6,500,000. Nevada M. Co., Mono Co., same Directors as Reno company.

NORTH KEYSTONE M. Co.—Storey Co., Nev. Directors—W. H. Sharp, Geo. Congdon, G. W. Osborn, Samuel Poorman and Chas. J. Collins. Capital, $10,000,000.

NEVADA CITY, G. M. Co.—Capital, $3,000,000. Directors—M. J. Shoecraft, J. M. Sprague, W. E. Mayhew, E. E. Smith, O. H. Lewis.

MARYLAND M. Co.—Bodie district. Capital, $6,000,000. Directors—G. E. H. Howard, E. C. Locke, J. N. Risdon, L. W. Mix, Otto Metchke.

ALTA M. Co.—Bodie district. Capital, $600,000. Directors—Same as preceding company.

SUPERIOR M. Co.—Capital, $10,200,000. Directors—E. R. Smith, N. Kimball, J. E. Mitchell, J. Poheim, J. Gibson.

INDICATOR M. Co.—Capital, $5,000,000. Directors—J. M. Johnson, J. A. Rice, J. Newlands, S. A. Chapin, J. A. Rohinson.

LORD AND ROBINSON S. M. Co.—Capital, $5,000,000. Directors—E. K. Shercnot, J. C. DeVoy, J. F. Davis, E. G. Frieland, C. E. Brinsmade.

PEMBERTON M. Co.—Capital, $600,000. Directors—B. T. Lacey, A. C. Hiester, E. P. Solomon, J. D. Gray, J. L. King.

AMADOR GRAVEL M. Co.—Amador Co. Capital, $1,000,000. Directors—Morris Speyer, W. B. Cummings, J. S. Van Winkle, W. H. Taylor and Samuel Hubbard.

MARIETTA M. Co., to prospect a ledge north of Fort Churchill, Nev. Directors—George A. King, Richard Rising, E. J. Pasmore, R. H. Lindsay and D. E. McCarthy. Capital, $10,000,000.

SILVER JACKET M. Co.—Gold Hill District. Capital, $10,000,000. Directors—J. D. Thompson, John Burns, Geo. S. Carrier C. W. Ham, L. W. Boyer and D. J. Mauning.

SANTA MINA G. M. Co.—Bodie district. Capital, $6,000,000 in 60,000 shares. Trustees—John Neale, F. Horner, G. B. Hibbard, J. H. Ferrall, J. H. Fish.

FAIRMOUNT M. and M. Co., to operate in Winnemucca district. Capital, $5,000,000 in 50,000 shares. Trustees—G. W. Terrill, I. C. Bateman, O. Merrill, H. H. Pierson and John Howell.

STANLEY M. Co.—Nev. Capital, $10,000,000. Directors—Robert Barton, J. J. Ayers, A. H. Rutherford, Charles H. Aitken and George Turner.

FLAGSTAFF M. Co.—Maynard district, Mohave Co., Arizona. Capital, $10,000,000. Directors—J. J. Ayers, C. M. Burleson, J. H. Backus, B. W. Reagan and J. F. Place.

LOLA M. Co.—Maricopa Co., Arizona. Capital, $10,000,000. Directors—L. L. Robinson, Robert Sherwood, Clinton Gurney, Alexander Forbes and John W. Gasbwiler.

NORTH GOULD & CURRY G. AND S. M. Co.—Storey Co., Nev. Capital, $10,000,000. Directors—M. Oppenheimer, Robt. Sherwood, J. M. Goewey, B. F. Dahl and C. H. Livingstone.

EMPIRE CON. M. AND M. Co.—California and elsewhere. Capital, $4,000,000. Directors—J. B. Fargo, W. L. Parkhurst, F. G. Smitb, D. L. Parkhurst and Delos Lake.

ROUGH AND READY CON. M. Co.—Mono Co. Capital, $10,000,000. Directors—John Tague, H. Mayers, E. E. McCammon, J. C. Chalmers and A. H. Rutherford.

GARBER M. Co.—Nev. Capital, $10,000,000. Directors—Robt. Sherwood, O. F. Giffin, C. F. MacDermott, J. P. Jackson and H. F. Cutter.

THORNTON M. Co.—Same place, same Directors and capital.

KEATING M. Co.—Same location, Directors and capital.

WARSAW M. Co.—Same place, capital and Directors, save that E. R. Warsaw is substituted for H. F. Cutter.

JOSEPH Clark informs the San Bernardino *Times* that he has struck a ledge of silver-bearing ore in the Arroyo San Antonio, eighteen miles from Pomona, which is eight feet in width, and assays away up in the hundreds.

THE amount of U. S. currency outstanding Sept. 30th was $363,402,220.

FROM January 1st, to August 1st, 900 miles of railroad was completed in the United States.

Signal Service Meteorological Report.

Week Ending October 1, 1878.

HIGHEST AND LOWEST BAROMETER.

Sept 25	Sept 26	Sept 27	Sept 28	Sept 29	Sept 30	Oct 1
29.92	30.00	30.09	29.95	30.00	30.08	30.11
29.83	29.93	29.94	29.86	29.94	29.92	30.01

MAXIMUM AND MINIMUM THERMOMETER.

66 / 56	62 / 53	64 / 55	66 / 53.5	64 / 52.5	62 / 54	68 / 55

MEAN DAILY HUMIDITY.

76	78	82	80	79	78	71

PREVAILING WIND.

SW	SW	SW	SW	SW	W	W

WIND—MILES TRAVELED.

151	232	200	276	263	194	158

STATE OF WEATHER.

Fair.	Fair.	Fair.	Cloudy	Rainy.	Clear.	Clear.

RAINFALL IN TWENTY-FOUR HOURS.

Total rain during the season, from July 1, 1878, .56 in.

The Atlantic and Pacific Forests.—No. 5.

[By Prof. Asa Gray.]

The difference in the composition of the Atlantic and Pacific forests is not less marked than that of the climate and geographical configuration to which the two are respectively adapted.

With some very notable exceptions, the forests of the whole northern hemisphere in the temperate zone (those that we are concerned with) are mainly made up of the same or similar kinds. Not of the same species; for rarely do identical trees occur in any two or more widely separated regions. But all round the world in our zone, the woods contain pines and firs and larches, cypresses and junipers, oaks and hirches, willows and poplars, maples and ashes and the like. Yet with all these family likenesses throughout, each region has some peculiar features, some trees hy which the country may at once he distinguished.

Beginning hy a comparison of our Pacific with our Atlantic forest, I need not take the time to enumerate the trees of the latter, as we all may be supposed to know them, and many of the genera will have to be mentioned in drawing the contrast to which I invite your attention. In this you will he impressed most of all, I think, with the fact that the greater part of our familiar trees are "conspicuous hy their absence" from the Pacific forest.

For example, it has no magnolias, no tulip tree, no papaw, no linden or hasswood, and is very poor in maples; no locust trees—neither flowering locust nor honey locust—nor any leguminous tree; no cherry large enough for a timher tree, like our wild hlack cherry; no gum trees (Nyssa nor Liquidamhar), nor sorrel tree, nor kalmia; no persimmon, or humelia; not a holly; only one ash that may he called a timber tree; no catalpa, or sassafras; not a single elm, nor hackherry; not a mulherry, nor planer tree, nor maclura; not a hickory, nor a heech, not a true chestnut, nor a hornheam; harely one hirch tree, and that only far north, where the differences are less striking. But as to coniferous trees, the only missing type is our hald cypress, the so-called cypress of our Southern swamps, and that deficiency is made up hy other things. But as to ordinary trees, if you ask what takes the place in Oregon and California of all these missing kinds, which are familiar on our side of the continent, I must answer, nothing, or nearly nothing. There is the madrona (arhutus) instead of our kalmia (hoth really trees in some places); and there is the California laurel instead of our Southern red hay tree. Nor in any of the genera common to the two does the Pacific forest equal the Atlantic in species. It has not half as many maples, nor ashes, nor poplars, nor walnuts, nor birches, and those it has are of smaller size and inferior quality; it has not half as many oaks; and these and the ashes are of so inferior economical value, that (as we are told) a passahle wagon wheel cannot he made of California wood, nor a really good one in Oregon.

This poverty of the Western forest in species and types may he exhibited graphically, in a way which cannot fail to strike the eye more impressively than when we say that, whereas the Atlantic forest is composed of 66 genera and 155 species, the Pacific forest has only 31 genera and 78 species.* In the appended diagrams, the short side of the rectangle is proportional to the numher of genera, the long side to the numher of species.

Now the geographical areas of the two forests are not very different. From the Gulf of Mexico to the Gulf of St. Lawrence ahout 20° of latitude intervene. From the southern end of California to the peninsula of Alaska there are 28°, and the forest on the coast runs some degrees north of this; the length may therefore make up for the comparative narrowness of the Pacific forest region. How can so meager a forest make so imposing a show? Surely not by the great numher and size of its individuals, so far as deciduous (or more correctly non-coniferous) trees are concerned; for on the whole they are inferior to their Eastern hrethren in size if not in numher of individuals. The reason is, that a larger proportion of the genera and species are coniferous trees; and these, being evergreen (except the larches), of aspiring port and eminently gregarious hahit, usually dominate where they occur. While the East has almost three times as many genera, and four times as many species of non-coniferous trees as the West, it has slightly fewer genera and almost one-half fewer species of coniferous trees than the West. That is, the Atlantic coniferous forest is represented by 11 genera and 25 species; the Pacific hy 12 genera and 44 species. This relative preponderance may also he expressed hy the diagrams, in which the smaller enclosed rectangles, drawn on the same scale, represent the coniferous portions of these forests.

Indeed, the Pacific forest is made up of conifers, with non-coniferous trees as occasional undergrowth or as scattered individuals, and conspicuous only in valleys or in the sparse tree-growth of plains, on which the oaks at most reproduce the features of the "oak openings" here and there hordering the Mississippi prairie region. Perhaps the most striking contrast hetween the West and the East, along the latitude usually traversed, is that hetween the spiry evergreens which the traveler leaves when he quits California, and the familiar woods of various-hued round-headed trees which give him the feeling of home when he reaches the Mississippi. The Atlantic forest is particularly rich in these, and is not meager in coniferous trees. All the glory of the Pacific forest is in its coniferous trees; its desperate poverty in other trees appears in the annexed diagram.

The diagrams on this page are made more instructive, and the relative richness of the forests round the world in our latitude is most simply exhihited, hy adding two or three similar ones. Two will serve, one for Europe, the other for Northeastern Asia. A third would he the Himalay-Altaian regiou, geographically intermediate hetween the other two as the Arizona-Rocky mountain district is hetween our Eastern and Western. Both are here left out of view, partly for the same, partly for special reasons pertaining to each, which I must not stop to explain. These four marked specimens will simply and clearly exhihit the general facts.

Keeping as nearly as possihle to the same scale, we may count the indigenous forest trees of all Europe at 33 genera and 85 species. And those of the Japan-Manchurian region, of very much smaller geographical area, at 66 genera and 168 species. I here include in it only Japan, Eastern Manchuria, and the adjacent horders of China. The known species of trees must be rather roughly determined; hut the numhers here given are not exaggerated, and are much more likely to he sensibly increased hy further knowledge than are those of any of the other regions. Propcrly to estimate the surpassing richness of this Japan-Manchurian forest, the comparative smallness of geographical area must come in as an important consideration.

To complete the view, let it be noted that the division of these forests into coniferous and non-coniferous is, for the

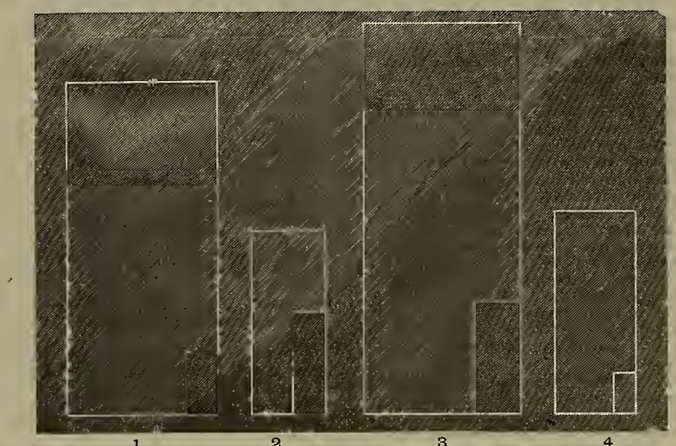
European non-coniferous	26 genera,	68 species.
" coniferous	7 "	17 "
	33 "	85 "
Japan-Manchurian non-coniferous	47 genera,	123 species.
" " coniferous	19 "	45 "
	66 "	168 "

In other words, a narrow region in Eastern Asia contains twice as many genera and ahout twice as many species of indigenous trees as are possessed hy all Europe; and as to coniferous trees, the former has more genera than the latter has species, and over twice and a half as many species.

The only question ahout the relation of these four forest regions, as to their component species, which we can here pause to answer, is to what extent they contain trees of identical species. If we took the shrubs, there would he a small numher, if the herbs a very considerable number, of species common to the two new world and to the two old world areas respectively, at least to their northern portions, even after excluding arctic-alpine plants. The same may he said, in its degree, of the North European flora compared with the Atlantic North American, of the Northeast Asiatic compared with the northern part of the Pacific North American, and also in a peculiar way (which I have formerly pointed out and shall have soon to mention) of the Northeastern Asiatic flora in its relations to the Atlantic North American. But as to the forest trees, there is very little community of species. Yet this is not ahsolutely wanting. The red cedar (*Juniperus Virginiana*) among coniferous trees, and *Populus tremuloides* among the deciduous, extend across the American continent specifically unchanged, though hardly developed as forest trees on the Pacific side. There are prohably, hut not certainly, one or two instances on the northern verge of these two forests. There are as many in which Eastern and Western species are suggestively similar. The hemlock-spruce of the Northern Atlantic States, aud the yew of Florida are extremely like corresponding trees of the Pacific forest; indeed the yew trees of all four regions may come to he regarded as forms of one polymorphous species. The white hirch of Europe and that of Canada and New England are in similar case; and so is common chestnut (in America confined to the Atlantic States), which on the other side of the world is also represeuted in Japan. A link in the other direction is seen in one spruce tree (called in Oregon Menzies spruce) which inhahits Northeast Asia, while a peculiar form of it represents the species in the Rocky mountains.

[To be Continued.]

*We take in only timber trees, or such as attain in the most favorable localities to a size which gives them a clear title to the arboreous rank. The sub-tropical southern extremity and Keys of Florida are excluded. So also are one or two trees of the Arizonian region which may touch the evanescent southern borders of the Californian forest. In counting the coniferous genera, pinus, larix, picea, abies and tsuga are admitted to this rank, but cupressus and chamæcyparis are taken as one genus.



1. European Forest. 2. Japan-Manchurian Forest. 3. Pacific Americau Forest. 4. Atlantic American Forest.

DIAGRAMS SHOWING COMPARATIVE NUMBER OF SPECIES AND GENERA IN DIFFERENT FORESTS.

FIG. 1.

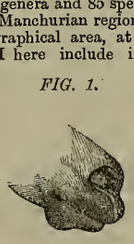


FIG. 2.

FIG. 3.

FIG. 4.

MANIFESTATIONS OF GLANDERS IN DIFFERENT STAGES.

FIG. 5.

EXAMINING THE NOSTRILS.

The Detection of the Glanders.

Editors Press:—Will you please describe in the next issue of your valuable paper the symptoms of the horse disease called glanders, in its incipiency and later stages?—A. L. S., Borden, Fresno Co., Cal.

We comply with this request at once, because no subject is at present more engaging the attention of horse owners. Just what state of distribution the disease is in either in city or country, we do not know, hut the reports of cases in this city and the cases in Santa Clara and Merced counties, where the disease has been communicated from horses to men, makes the detection of the disease in all its stages a matter of much public importance. Therefore we shall introduce both description and illustration that the subject shall he clearly intelligible, and in doing so shall draw upon an able work, "The Illustrated Horse Doctor," written hy Edward Mayhew, an eminent veterinary writer and member of the Royal College of Veterinary Surgeons of England. He, in common with other recognized writers, takes the ground that there is no cure for glanders because it is an ulcerative disorder which hastily disorganizes the parts which it attacks. The fact that so many cures for glanders are put forth by practical men who have had success with them may he owing to the fact that they had treated diseases which had some of the marks of glanders, hut not the disease in its aggravated form. When the disease is established heyond question by the marks which we will describe, the least should he killed, and all other animals removed from chance of contact with places he has frequented.

In the early stage it is difficult to pronounce positively upon a case of glanders. Ulceration of the nasal membrane would he confirmation of the worst douht; hut the ulceration may he situated so high up as to defy all our efforts to distinguish it. Yet running from the nose may be perceptible and the glaud may be fixed to the jaw. Both of these symptoms, although lawfully provoking our fears, are frequently attendant upon aggravated or upon prolonged colds. The only lawful test iu such cases is the administration of three doses of solution of aloes, eight ounces to the dose, allowing three days to elapse hetween each. If the horse be glandered, hefore the last purgative has set, the real nature of the malady will be apparent in the aggravation of the symptoms. If glanders he not present, a little careful nursing will generally remove all effect of the medicine.

The glanders is mostly ushered in by fehrile disturhance. The appetite is had, the coat stares and the pulse is quickened. A mash or two, however, apparently sets all right and the matter is forgotten. Soon afterward a slight discharge may issue from one nostril; but it is so very slight it excites no alarm. (See Fig. 1.) One of the lymphatic glands, on the same side as the moist nostril, alters in character. It may remain loose and hecome morhidly sensitive. Usually, however, it grows adherent to the jaw, turns hard, insensitive, and, from heing wholly imperceptihle in the healthy animal, enlarges to about the size of half a chestnut.

At a latter period, the discharge, retaining its clear appearance, hecomes more consistent, and, to a slight degree, the hairs and parts over which it flows are incrusted. It suhsequently adheres to the margin of the nostril, and then in the transparent, alhuminous fluid may he seen opaque threads of white mucus. This marks the second stage. (Sec Fig. 2.)

The next change takes place more rapidly. The transparent fluid entirely disappears and in its place is seen a full stream of unwholesome pus. (See Fig. 3.) At this time there is some danger of glanders being mistaken for nasal gleet. A little attention will, bowever, rescue any person from so imminent a peril. The smell of glanders is peculiar. It is less pungent, but more unwholesome, suggesting a more deep-seated source than characterizes the disease with which it has been confounded. The ejection of glanders, moreover, is ohviously impure, whereas that of nasal gleet generally flows forth in a fetid stream of thick and creamy matter.

When the third stage is witnessed, the disease is rapidly hurrying to its termination. The membrane of the nose changes to a dull, leaden color. The margins of the nostrils become dropsical and every hreath is drawn with difficulty. The defluction exhibits discoloration. Scahs, masses of hone or pieces of membrane, mingled with patches of hlood, next make their appearance, and the internal parts are evidently heing hroken up by the violence of the disorder. (See Fig. 4.)

The reader has been told what constitutes glanders. He has heen instructed how to recognize its more marked indications. There, however, remains to teach him the manner in which a suspected horse should he handled or examined. The animal's head should be turned toward the strongest light ohtainahle; if toward the hlaze of the noonday sun, so much the hetter. The examiner should then place himself hy the side of the creature's head, not in front, hut in a situation where, though the animal should snort, he is in no danger of the ejected matter falling upon him. With one hand tbe upper and outer rim of the nostril should he raised; when, grasping this part hetween the finger and thumh, no fear need he entertained. The case would be something

Seventeen Pacific coast gold mines yielded during August, $1,069,839; 16 silver mines, $638,633; three gold and silver mines gave $530,971; three hase metal mines, $428,008.

more than suspicious, wers any risk of contamination incurred. (See Fig. 5.)

The wing of ths nostril being raised, the examinsr must note the appearances exposed; this hs will best do hy knowing where to look and what to expect. His eye has nothing to do with the skin nor with the marks that appear upon it. The opening of the lachryinal duct (marked 1) often challenges observation by being well defined and particularly conspicuous; but that natural developemant does uot concern him; to that no atteution must hs giveu. The inspection must be concentrated upou the membrane (marked 2) mors intcrually situated than the skin seen at the commoncement of the nostrils. The skin, morcover, suddenly ceases, and is obviously defined hy a well-marked margin; there is, therefore, no difficulty in distinguishing the membrane by its fleshy and moistened aspect, as well as hy its situation. If, on this membrane, auy irregular or ragged patches ars conspicuous, if theso patches are darker toward their edges than in their centers, and if they, nevertheless, seem shallow, pallid, moist, and sore, the animal may be rejected as glandered. Should any part of tho membrane (after being wiped with a littls tow or wool fastened to a stick) seem rough or have evidently heneath its surface certain round or oval-shaped hodies, ths horse assuredly is glandered. Ths membrane may present a worm-eaten appearance, or be simply of a discolored and heavy hue. In the first case, the animal ought to ho condemned; in the secoud, it is opsned to more than suspicion.

No animal should he permitted to slowly perish of glanders. The disease, as it proceeds, affects the fauces, pharynx, and laryux; all bscomes ulcerated. Not a particle of food can he swallowed; not a drop of saliva can he deglutated; not a breath of air can he inspired, without the severest tortnre being experienced. As the disease proceeds, the ohstructiou offered to the hreathing grows more and more painful. Farcy hreaks forth, and, as a consequence, superficial dropsy is added to the other torments. Tho edges of the uostrils enlarge; the mombrane lining the cavities bags out, while the fauces and larynx contract; the discharge becomes more copious and the hreathing is impeded. Thus the difficulty of respiration is increased, just as ths condition of the lungs renders the necessity of pure air the more imperative. Ultimately, however, laborious breathing induces congestion of the hrain, and the wretched snfferer falls insensihle, it is hoped, to die of actual snffocation.

Jackson's Steam Well-Borer.

Mr. H. E. Hallett furnishes the following interesting description to the *Pacific Rural Press*, of Mr. Jackson's artesian well-horer, which bas recently heen in snccessful operation in Stockton:

This machine can be worked by steam, horse or man power. When run by an engine, 40 pounds of steam is nsed. Unlike ths "hydraulic well-borer," the earth is hoistcd to ths top of the well at every successive dspth of ons foot or 20 inches, depending on the nature of the soil. The auger is worked by hevel gearing on a dsrrick 30 feet in hight, whose base is an ohlong 15 feet in length by five feet in width. At one side is a table or platform. The shaft is made of heavy hydraulic tubing with inside couplings and runs through a hollow screw. A pinion on the right drives the shaft forward, while anothsr on the lsft revsrses the shaft.

Gearing underneath the platform is devised to hoist and lower the shaft without rsvolving the shaft. Underneath the platform is also a spool on which a wire cable is wound, on one end of which are nippers.

The auger is peculiar. There is one auger with three bits on the point of the shaft. The auger doing most of the work is on a hollow tuhing about 10 feet in length and fitting the shaft. At ths bottom of the tuhing is a ratchet nearly the same as the ratchet on the hayonet of a gun, and when the tubing is dropped from the mouth of the well, it takes its plac and is secured by the forward or drive motion of the shaft; reversing the shaft releases the tuhs.

A hollow, cylindrical compartment or large tube, holding one foot to twenty inches of soil is fastened to the tubing encircling ths shaft. A sand augsr in the form of a plats with short bits is at the bottom of this case, and fastened to the tuhs with a valve closing with a reverse motion of the shaft. Below the short compartment or cass is a bit on one side and a reamer on the other, hoth fastened to ths tube and held in place by a shoulder and a pin. The hit cuts the bors of the well after the small three-hitted auger on ths point of the shaft, and the reamer cuts a little larger for the case. Ahove ths short case are two reamers fastened to the tuhing on opposite sides, cutting the hore to the right diameter for the permanent casing. The earth cut hslow the short case is forced up into the cass and held by its compactness. Reverse the motion of the shaft and the tubing is released, the bit and reamers clossd, and the whole drawn up the surface and the case of earth emptied. The time occupied in ascending 270 fest was two minutes. The time occupied in descending the same depth (the tuhing is dropped) is hut 34 seconds, the whols operation bsing performed in two minutes and 34 seconds. It is claimed tbat 100 feet per day can be sasily bored witb this machine.

Useful Information.

On the Manufacture of Wood Gas.

A foreign exchange gives the following method of the manufacture of oxy-carbon gas, which may be of interest to soms of our experimentors: As soon as the retorts ars at a red heat, carbonates and woody substances are introduced into them. The latter at once ignite, the carhonates decomposing at a higher temperature, and the carbonic acid in the presence of the vapor of water which arises either from the moisture of the substances themselves, or is introduced for the purpose, is disengaged from the carbonates passing through the glowing embers and produces oxide of carbon by the following reaction:—$co^2 + c = 2\,co$; the mingled gases form ono of a much greater bulk and of a much greater heating power than would be derived from the wood alone. One kilogramme of wood gives 300 liters (10.56 cubic feet) of gas, and one kilogramme of carbonates, 500 liters (17.65 cubic fest), or a total for the two of 800 liters (28.21 cubic feet), of a gas having a very great heatiug power. In 100 parts 79 are oxide of carbon, nine hydrogen and eight proto-carhonated hydrogen (thess three gases giving ths maximum temperature which can bs got with large flamss); besides these, there ars 3.5 parts of carbonic acid and 0.5 parts nitrogen, but ths proportion of these inert gases is so small that they do not detract from the qualities of the gas. The gas on leaving the retorts is cooled hy ths ordinary methods, and is thus caused to deposit its tar and the pyroligneous liquids, and is then takeu direct to the gas-holders for use. Directly gas ceases to he giveu off, the charge is withdrawn, and a second one is introduced. Ths use of water to assist decomposition depends on ths condition of the materials employed. This gas can be used whether purified or not, in closed or open chambers, with or without ths aid of air or steam, and under any pressure, and for every manufacturing and domestic purpose, whether for heat or lighting. It is claimed that it can effect these objects at a saving of from 33⅓ to 80% for heating, and from 10⅞ to 25% for lightiug, over any other means at preseut known. It professes to effect this saving partly from avoiding the loss of heat ensuing on the combustion of solids, and partly from ths value of the products remaining after the manufacture of the gas, sucb as charcoal, tar, lime, etc. It is stated that 1,000 kilogrammes of wood (about one ton), and 1,000 of carbonates produce 800 cubic meters (28,254 cubic feet) of gas, weighing at the rate of 820 grammes to the cubic meter, 761 kilogrammes equivalent in heating power to 3,200 kilogrammes of average coal.

Valuable Products from Refuse Axle Grease

The economy of the French is illustrated by an exhibit at the Paris exposition by an sxtensive chemical establishment employed in extracting valuahle products from refuse axle grease. The French railroads generally make their own luhricators: the constitutents being 50% fatty matter, as tallow, palm, olive, arachide, or colza oils, 50% slightly alkaline water (say, 3° to 4° B.) caustic, soda, or carhonate of potash. After a certain time, depending on various circumstances and the exigencies of service, the residues from the boxes are removed, the hoxes cleaned, and the old grease disposed of to make the products exposed. The special treatment is the employment of steam, hoiling in kettles holding 3 tons each; giving fat acids (or acid fats) of straw color, easily saponifiable and well defined hy their melting points. The determination of this melting point is very important, hecause these fatty acids, free from glycerine, find their principal applications in the manufacture of stearic acid hy distillation; it is determined hy the ingenious method devised hy Dalican. These acid fats are also successfully employed in making soft soaps, and hard marhled soaps. After the separation of the fatty acids there are ohtained as secondary material, metallic sub-soaps, which, treated witb soda in iron boilers, give hard soaps, known as bronze soap. The residucs of this saponification are treated with sulphuric acid and give mixed sulphates of copper and iron, which, according to the state of the trade, and their richness in copper, ars either sold under that form, or treated for the extraction of the copper they contain. In this latter case they are treated in retorts under pressure, like the scoria of relining of Corocoro and Chile. The ohtaining of metallic coppsr is a comparatively easy operation. Several samples of copper huttons are exhihited. During the last three years this establishment has snt out 120,000 kilos. of these residues.

Experiment with Lithofracteur.—The following is a record of an experiment with ths newly introduced explosive lithofracteur in an English mius. The 180 fathom level was selected, and a hole was hored in the face of the end 6 ft. deep, slightly dipping, with 1½ in. borer, and into this was placed three charges of lithofraoteur, the first charge containing ½ lb., the second 1½ lb., and the third 2 lbs. These charges were fired separately, which burnt the bottom of the hole large enough to contain the quantity necessary for blasting a hole of such a depth, and the hole was then charged, in ths ordinary manner, with 21 lbs. of lithofracteur, and blasted, The face of tbe end was blown completely out for 7 ft. wide and 7 ft. high, gradually declining to 1 ft. at the farthest or inuermost point. The rock was brought out from 1 ft. deeper than the hole was hored, and the ground was shattered for 2 ft. further in. The charge altogether took about 25 lbs. of lithofracteur, and the hole was hored in an end that cost $100 per fathom for driviug.

Trade in the Yellow Fever Districts.—Notwithstanding the fierce epidemic which prevails at New Orleans, the daily journals of that city published, on the 1st iust., their customary annual review of ths trade and commerce of the port, which thsy assert has increased during the year, and is eveu now more active than the yellow fever reports would lead people to suppose at the North. There was an iucrease of 192,667 bales in the receipts of cotton over 1876-77, in sugar a decline of 38,738 hogsheads, in molasscs an increase of 41,348 barrels, but the leading feature of ths year was the progressive movement in corn and wheat, ths former showing au increase of 3,250,000 bushels, and the latter of 938,296 sacks in the receipts. Upon this showing the New Orleans papers found a hops of still larger gains in the movement of western graiu down the Mississippi, quickened as it is likely to bc hy the steady improvement of ths port, as the Eads jettics approach completion.

Good Health.

The Shape of the Shoe.

Editors Press:—Is thcre in San Francisco, or in the civilized world, a shoemaker who can and will maks a proper covering for a human foot?

Ths shape of our boots aud shoes are a foul blot upon our hoasted enlightenment. Why, a shoemaker's last bears about as much rsemblance to a natural foot as it does to a man's nose

Corns and hunions, and overlapping toes, which ought to be absolutely unknowu, are the rule among tbe grsat mass of white people, and of all the thousands of feet to he seen iu the streets of a city, scarcely one pair in a thousand are of the natural form, and that pair is the property of some barefooted hoodlum!

Have we not borne the tyranny of ths shoemaker long enough? Or is it the fault of fasbion alone? In any case, let some one in the land of freedom come forward with moral courage enough to make shoes of the absolute shape of his customers' feet, which for the very young, at least, would be a natural shape. Let the foot hs clasped as tightly as comfort will allow hehind the toes, but let the toes spread as God intended them to do. Above all, aholish the absurd practice of chamfering off the sole from tbe hall of the great toe, so as to compel that important part of the locomotive apparatus to take an unnatural position with reference to the axis of the foot, to the destruction of all grace and power in running or walking. The law of Nature is that a straight line drawn from the point of the great toe, through the centre of the hall thereof, shall, if continued hackward, pass exactly through the middle of the heel. Now, I will venture to say that there is not a pair of hoots or shoes to he found in San Francisco that will conform to this law, for if a straight edge be laid upon the sole, at the distance of half the breadth of ths great toe from the edge, aud parallel to tbat edge, it will invariably be found to pass, not as it should through the middle of the heel, but an inch or two inside of it.

This is the land of innovation and experiment. Will not some intelligent and spirited shoemaker try the experiment of making footcoverings to fit the feet, inwardly at least, and if fashion must he howed to, let the outside be adapted to its absurd requirements.

C. H. A.

San Francisco, September, 1878.

Neuralgia and Rheumatism.—A correspondent of the *Germantown Telegraph* says: A very simple relief for neuralgia is to boil a small handful of lobelia in half a pint of water till the strength is out of the herb, then strain it off and add a teaspoonful of fine salt. Wring cloths out of the liquid as hot as possihle, and spread over the part affected. It acts like a charm. Changs the cloths as soon as cold till the pain is all gone; then cover the place with a soft, dry covering till perspiration is over, to prevent taking cold. Rheumatism can oftcu he relieved by application to the painful parts, of cloths wet in a weak solution of sal soda watcr. If there is inflammation in the joints, the cure is very quick. The wash should be lukewarm.

Milk for Lead Poisoning.—A remarkable case is given in the *Journal de Medecine* of the effect of the habitual use of milk in white leadworks. In some French lead mills it was observed that in a large working population two men who drank much milk daily were not affected by lead. On the general use of milk throughout the works, the colio vanished entirely. Each operative was given enough extra pay to buy a quart of milk a day. From 1868 to 1871, no cases of colic had occured.

Appeal by the State Board of Health.—Our State Board of Health has issued an address to ths people on the suhject of yellow fever, which contains the following appeal: Experience teaches, that when epidemics prevail with sxceptional malignity, they often hreak through the ordinary restraints, especially when local causes favor their propagation. Heuce it is advisable, on this account, as well as for general purposes, that sanitary precautions be adopted, both hy individuals and families, and by boards of health and public authorities. The State Board of Health, therefore, urge upon citizens the necessity of using every precaution to secure perfect cleanliness and purs air in and around their dwellings, and upon the authorities to euforce the laws in relatiou to the cleansing of the streets and alleys, the purification of cellars, cesspools and privies, and ths ventilation of drains and sewers. Diphtheria still rages in a numher of localities on the Pacific slope, and its fatal incursions will be invited by damp and filth, and crowding and other insalubrious conditions. Besides, thero are other diseases from which our populatiou would be protected by the adoption of proper hygienic measures.

Ammonia Versus Malaria.—The Augusta (Ga.) *Chronicle* says: "Ths Georgia Chemical works, which are of a very extensive character, and manufacture annually large quantities of commercial fertilizers, are situated in the southern suhurbs of the city, on South Boundary street. This portion of the city is low and damp, and the people living there had always been suhject to ehills and fever and other malarial diseases. We say *had* been subject, for yesterday morning Mr. Lows, of the chemical works, informed us that the works had exterminated malaria in their neighhorhood. He contended that since the company commenced operations it had routed chills, etc.; and that persons living near thers who once suffersd a great deal, suffer now on South Boundary no more. The effect of the works on the health of the couutry adjacent had been as marked as it had been beneficial. There could he no douht as to the cause of the change. A practical test bad been applied in ths buildings of tbe company. Msn bad been employed there wbo were ague shaken and fever fired, hut who, in a comparatively short time, were entirely relieved of the companionship of their malarial friend. The theory is that the ammonia does the business.

Cooling and Purifying the Air by Means of a Driven Well.—At Messrs. W. D. Andrews & Bros.' iron foundry in Water street, New York, there may he seen in operation a novel apparatus attached to the pump of a driven well. It consists of a cylinder three feet in diameter and four feet high filled with charcoal, through which water from the well percolates. A revolving fan on the upper surface creates a draft, so that where the air enters the office adjoining, a strong, cool breeze is felt, reducing the temperature very decidedly comparsd with the extreme atmosphere, and ths supply thus furnished is perfectly pure. The water has a temperature of 55 degrees, while the air cooled hy it varies from 60 to 64 degrees near the spot where it is injected. On the occasion of a recent visit the outside temperature was 86 degrees; within, near the cold draft, 72 degrees. Wherever steam is available the pump and fan can he worked at a trifling expsnse. The question is suggested whether this method of purifying and veutilating through tbe instrumentality of driven wells may not hs applied to publio halls, court rooms, hanking offices, etc., so as to become invaluable—for example, in tbe new Court House building, wbere the foul atmosphere is extremely prejudicial to health.

Poisonous Gloves.—Neither in its application to paper-hanging nor ball dresses, in hat linings and hose, or even in violst powder, would manufacturers seem to have exhausted the infinite variety of arsenic. *Iron* says: A nice thiug in gloves, whicb we first heard of from Germany, is colored a fine marine blue; and a Major Von B., who bought apair, and exhihited, aftor wearing them, severe symptoms of arseuical poisoning, had them analyzed, when a considerahle quantity of arsenic showed signs of its presencs. Later, several young ladies in Leeds have heen affectsd in a similar way from the same cause; in one instance the symptoms, although local, were very severe. The criminal in such cases—for the man who makes and knowingly sells such deleterious goods is a criminal—is difficult to reach; and it is a real anomaly in jurisprudence that so many slight offences should he severely punished, while a man, for a paltry profit, may poison a whols neighhorhood with absolute impunity, and be paid hy bis victims for doing so.

A Violent Treatment.—A woman near Prague suffered so severely from gout in the arm that she could not ohtain rest or sleep, and the limb in which the disease had settled was rendered entirely useless. Her husband, having heard of a countryman who had heen completely cured of rheumatism after being accidentally stung by a hee, persuaded her to try this disagreeable remedy, which, as he pointed out, could hardly prove so painful as ths disease. She consented, and allowed three bess to bs placed on her arm and to sting her in several places. Surprising results ensued. The patient soon aftsrward fell into a long and deep sleep, the first real sleep she had enjoyed for six months, after which the acute pain disappeared; and when the swelliug produced hy the stings subsided the arm recovered the power of motion and the gout has not since reappeared.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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SAN FRANCISCO:
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The Week.

The Richmond fire, the Ophir inspection, and the Southern Pacific railroad rumor—these are the prominent topics of the week. The destruction of the Richmond reduction works is a blow to Eureka, to Nevada, and to the English holders, not only in the money loss, which may be $85,000, but in the delay in the development of the mine. A rich strike was reported but a short time ago, and everything was about in readiness to push work with vigor when this put back came. The stock tumbled in the London market, from $55 the day of the fire to $45 the succeeding day. Those that are alive to the lessons always taught by such disasters, may have noticed one little remark in one of the reports of the fire that awakens surprise. The mine is owned and worked by Englishmen, who are supposed to run in tip-top style everything that they undertake. Yet said report remarks that the fire probably originated in the blacksmith shop, which *has been on fire several times lately.* No further comment is needed.

When the courts have settled the Ophir inspection case there will be time enough to moralize on that. It is of very general interest.

The contracts for the continuation of the Southern Pacific railroad to Maricopa wells, about 200 miles east of Yuma, are already pending, and in a very short time the road will be pushed still further, even to the gulf. Not long ago an Arizona paper was advising the people not to have so expensive a luxury as a railroad. When this road is completed no doubt that advice will prove to have been very unwise.

The Pacific Coast at Paris.

"California and Oregon ars the only States in the Union that have received special prizes at the Paris exhibition." This is what our friends are proud to repeat now from day to day. And although the *American Register* tells us that "the most complete exhibit from any State is that from Oregon," Californians have reason to he particularly proud of their honors, hecauss those honors were gained in the face of great difficulties. It will he remembered that the California commission for the Paris exposition asked the Legislature for an appropriation of $30,000 to he applied in giving our State hecoming representation among the exhibits at the great fair. The Legislature waited long before acting on the matter, and then declined to make the appropriation. When this had news came hut one of the committees of the commission had advanced so far in its work as to justify its further procsdure at all odds. This was ths committee on mineral exhibit. This committes was aided financially hy a "puhlic spirited citizen," Mr. Mackey. With this aid as complete a mineral exhibit as was possihle under the circumstences was prepared end sent to Paris, in care of Henry G. Hanks, Esq. It is criticism enough of this collection to say that notwithstanding its acknowledged incompleteness, it has brought California a gold medal, and that it has led to the organization of a miuing and metallurgical company of $1,000,000 paid-up capital, for the purpose of investing in metellurgical works and mines on this coest. This alone should he a lesson to Californians. It shows what a well-prepared exhibit at a fair can really do for any section that is wide-awake and energetic enough to "put it through." Oregon may gain untold advantages in meny directions from her "most complete" exhibit, where we have gained in hut one, the mineral direction.

California gains all the credit for the mineral collection. It is true that the majority of the specimens were from our Stete, nevertheless the whole coast was represeuted. Out of about 1,380 specimens catelogucd, ahout 774 were from California. These came from all parts of the State, 45 counties out of our 50 odd heing named on the lahels. Nevada sent 340; Arizona, 120. Lower Califernia, Mexico, Utah, Oregon, Washington Territory, Montana, Dakota, Wyoming, Colorado, British Columhia, Alaska, the Aleutian Islands, are all named among the localities, and the "Pacific Coast" is stretched in three cases over to the Sandwich Islands, and in one instance away around to Brazil.

That with the material at hand Mr. Hanks has done the very hest that could he done, we may judge from his reputation and from the honors he has received at Paris. It is to he regretted that he and the remainder of the committee did not meet with more hearty co-operation at home. And that the other committees were left out altogether in the cold, we ehall no douht have at some time to mourn.

In the name of the State which he represented, Mr. Hanks presented to the French National School of Mines a duplicate collection, which will remain as a etanding emhlem of our mineral prowess.

THE RAIN PROPHETS.—We heve had our first rain of consequence, and those who are elways plenning for the hringings forth of to-morrow have commenced to look over the rain tahles of previous years, and to speculate on the prohahilities of success and failure thie year in the agricultural and mining industries. The Signal Service report .56 inches of rain since July 1st. This is a larger amount of fall for the same period than has occurred in any previous year eince 1849, excepting 1851. In 1851 there fell in the corresponding period 1.03 inches of rain. The whole rain year of 1851-52 gave 18.44 inches. In the first three months of the rain year 1853-54 there fell .50 inchee. The whole year gave 23.87 inches, which is .57 ahove the average since 1849. Three rain years since '49 that have had no rain during the first three months have given for the whole year ahove the average. On the other hand, at least three that have had no rain during their first quarter have fallen helow, one of them very much helow, the average. So the whole eeason does not turn on the first three months, and it is not yet time to worry and cry out for thirst.

MINING SALE.—Mr. I. S. Van Winkle has just returned to the city after having perfected the sale of his interest in the Nevada gold quartz mine, Nevada City, to Mr. E. Merrifield, for the eum of $75,000 gold coin. This mine is, perhaps, hetter known as the "Soggs" mine, and ie one of the oldest locations in the district. It has prodnced since first opened, a large amount of hullion. It joins the well-known Providence mine on the north, and is supposed to have the same ledge. There is a 15-stamp mill on the mine. The deepest point yet reached is 500 feet, hut the new owner iutends pushing the work and thoroughly developing the mine. The Superintendent is E. L. Montgomery.

TURKISH paper money is depreciating at an alarming rate.

Guide in Purchasing Timber Lands.

Those who wish to avail themselves of the provisions of the act of Congress of June 3d, 1878, entitled "An act for the sale of timher lands in the Stetes of California, Oregon, Nevada and in Washington Territory," must swear in some land office to the following: First, that the particular land desired is unfit for cultivation, and is valuable chiefly for timhsr or stone, as the case may he; that it is uninhahited; that it contains no mining or other improvements, sxcept such as were made for ditch or canal purposes, or snch as were made or helong to the applicant; that, according to the applicant's helief, it contains no valuahle deposit of gold, silver, cinnahar, copper or coal. The applicant must swear that he hes mede no other application under said act; that he does not apply to purchase the land on speculation, hut in good faith to appropriate it to his own exclusive use and benefit; and that he has not, directly or indirectly, mads any agreement or contract, in any way or manner, with any person or persons whatsoever, hy which the title which he hopes to acquire from the Government may inurs in whole or in part to ths henefit of any person except himself.

The applicant must have at least two respectahle and disinterested witnesses, who must answer under oath, among others, the following qnestions:

Are you acquainted with the land ahove described, hy personal inspection of eech of its smallest legal subdivisions? When and in what manner was such inspection made?

Is the land occupied, or are there any improvements on it, not made for ditch or canal purposes, or which wers not made hy or do not helong to the applicent?

Is it fit for cultivation? What causes render it unfit for cultivation? Are there any salines or indications of deposits of gold, silver, cinnaher, copper or coal on this land? If so, what are they and are they valuahle? Is the land more valuehle for mineral, or any other purposes than for the timher or stone thereon, or is it chiefly valuahle for timher or stone? From what fects do you conclude that the land is chiefly valuahls for timher or stone? Other questions relate to the address and occupation of the witness, his disinterestedness and knowledge as to whether the applicant ie seeking for his own henefit only, or that of some one else as well.

The applicant must present evidence in proof of his relation to the Government, *i. e.*, whether he is native born, is naturalized or has declared his intention. He must prove that notice of his intention to purchase has been published for the prescribed time, presenting a copy of the notice and affidavit of the publisher.

DESTRUCTION OF TIMBER IN THE SIERRAS.—The following is from the *Bulletin* of Sept. 23: The destruction of timher in the Sierras muet in a very few years hring ahout important changes. The various corporations engaged in milling and fluming, from Truckee on to the other side of Lake Tahoe, are taking all the available timher in their way. No provision is heing made for the reproduction of the forest growth which is heing stripped from the mountain sides. The young trees are not spared; even saplings are taken for cordwood. Already the effect of this denudation ie heing felt, hoth in California and Nevada, in the diminution of the mountain streams. Some of the companies engaged in stripping the Sierra are already finding difficulty in getting enough water to work their lumher flumes, and in two or three years they will he compelled to ahandon the flumes altogether. At the rate this denudation is proceeding we helieve that ten years hence Lake Tahoe will he rendered uninhahitahle, and that it will he destroyed as a place of popular resort, and as one of the most heautiful retreats on the face of the earth. Iu a few years the denudation of the Sierra upon this side must produce the same effects that it is producing in Nevada. The snows will no longer lie on the gronnd. The spring freshets of our rivers and streams will he violent and destructive. And in the early summer all these watercourses will fail. Then the minere will find their occupation gone. The dehris question will he settled without recourse to litigation, for it will no longer he possihle to employ hydraulic machinery in mining. Agriculture, too, will suffer iu the valleys, and those devastatiug processes will hegin which, in some provinces of France have rendered wide tracts absolutely unhahitahle, and have converted once fertile areas into howling wastes.

THE Sierra Nevada S. M. Co. are considering a proposition to increase the capital stock from $10,000,0000, divided into 100,000 sharee of $100 each, to $50,000,000, divided into 500,000 shares of $100 each.

A MAN named Buck, of Meriden, Conn., has invented a complete steam engine, out of fifteen grains of gold and silver, which will run for twenty minutes on the steam generated from three drops of water.

WITH four metallic qualifications a man may he pretty sure of success in the world. These are gold in his pocket, eilver in hie tongue, hrass in his face, and iron in hie heart.

A Triumph.

About two weeks ago an iron ship, ths *Jessie Osborne*, huilt in Glasgow, and only three years old, ran ashors a short distance from the North Heads. She went hows on, and struck in such a way that a large hole was hroken near the mizzen mast. The hole heing ahout six feet hy thres, and through an iron hottom, and the position of the wreck heiug unfavorahle, the underwriters made little or no attempt to save the vessel and sold hsr for the paltry sum of $2,500 to Captain Griffiths. This gentleman contracted with the Risdon Iron Works Co., of this city, for ths floating of the vessel. Mr. Joseph Moore, superintendent of this company, proposed the plan which finally resulted in succsss. The hallast and leakage sand were forced out of the vessel hy means of a powerful centrifugal pump. At the same time a force of carpenters made ths decks, hatchways and mast holes as tight as possihle, hracing them with heavy timhers. Compressors wsre then started, pumping air into the space hetween the first two decks. In ahout three hours the vessel, transformed into a sort of halloon, hegan to move easily. Whsn she floated clear she was taken into port hy three tugs and sefely docked for repairs. This is the first vessel taken from the rocks outside the Heads.

The owners will reap, heside ths triumph, quite a little rsward. The cost of getting the vessel off, and of the repairs, will amount to ahout $10,000. The vessel will then be worth ahout $70,000. The only unpleasant reflection connected with the whole affair is that the iron plates for repairing the damage must come from the East. The ingenuity, the greetest part of ths achisvement, is ours—why cannot we make the entire accomplishment a San Francisco triumph?

METEOROLOGICAL SUMMARY FOR SEPTEMBER.—The report of the U. S. Signal Service officer, of San Francisco, for ths month of Septemher is summarized as follows: The mean hight of herometer for the month was 29.97; mean temperature, 59.2; mean humidity, 76.1; prevailing winds, southwest; highest harometer, 30.134; lowest, 29.818; highest tempereture, 78°; lowest, 52°; monthly range, 26°; greatest velocity of wind 35 miles per hour; total numher of miles traveled hy wind 7,033; total rainfall, .55 inches. Rainfall in August during former yeare: 1871, .00 inches; 1872, .04 inches; 1873, .00 inches; 1874, .02 inches; 1875, .00 inches; 1876, .38 inches; 1877, .00 inches.

GOLD AND SILVER AMALGAMATION.—In the Forster-Firmin apperatus, as the pulp is fed into a pipe through a hopper, a stream of mercury of required size is introduced hehind it. Behind the mercury again a stream of steam, compressed air, water or other motor, is introduced, which divides the mercury into the smallest particles and then forces it into the pulp. Pulp, mercury and motor mixed, are carried thns forcihly into a chamher, impinging against the sides of which, they are etill more thoroughly mixed. From thie chamher the mixture passes into improved washers, and finally *from 98% to 100% of the precious metal is saved.*

THE important newe topic of the week is the assemhling of the Constitutional Convention in Sacramento. Thus far the contest of organization has occupied the attention of the delegates, and the election of Col. J. P. Hoge, president, hy a majority of one vote, shows a pretty even halence of opinion upon one point at least. A good choice was made for secretary in the person of J. A. Johnson, editor of the Oakland *Times*. We trust the Convention will proceed forthwith to husiness, for their time is short.

SAVING GOLD.—A new machine, called the "Gold Gleaner," cousists of a saucer-shaped copper pan, coated with quicksilver, and made hy very slight power to revolve on a vertical axis. The pulp to he treated is carried hy a stream of water into the revolving pan. The centrifugal force throws the upper stratum of water, together with the light particles of gangue, over the edge of the pan. The heavy gold particles sink into the cup-like central depression, or are taken up hy the mercury. It is said that a six-foot pan will work 100 tons a day and lose not a particle of gold. The inventor is Dr. Hill.

HOW DID HE GET THERE?—Quite a curiosity has come to our notice in the way of a living frog cast np hy an artesian etream on the property occupied hy Mr. Mannen, at the foot of D street. When thrown to the surface the frog was quite transparent, and could hardly he discerned in the water. It was large and lively. There was no poseihility of its getting into the well from the surface, and it must have heen brought up from the hottom.—*San Bernardino Times.*

THE Empire M. Co., of Contra Costa county, have lately struck the hest coal vein yet discovered in their mine.

Mines and Works of Almaden.—No. 3.

(Translated for the Press from "Annales des Mines.")

We see sometimes at the Almaden mine in the midst of the black schiste isolated beds of white magnesian limestone with a saccharoidal appearance, they are only lens-shaped strata (*lentils*) or pockets which cut through a gallery and are not to be found in another one 30 or 40 meters distant from the first. This same limestone forms also little veins and small lodes in the midst of the mass of rock, and not seldom small crystals of cinnabar are found in it.

Fossils are extremely rare in the *frailesca*, nevertheless they have incontestibly found *bilobites* either in the mass of the rock, or else in the fragments of black schiste which it encloses; it is therefore beyond doubt that the *frailesca*, at least at Almaden, belongs to the silurian age.

Let us now recapitulate what we have said of this formation, finishing by explaining its paleontological character, according to M. M. de Prado and de Verneuil.*

The primordial fauna was recognized by M. M. de Prado and Barrande at the eastern extremity of the Sierra Morena, but this fauna disappears near Almaden, where the second predominates. The presence in the schistes, in the sandstones, and in certain limestones of such fossils as *Calymene Tristani, Dalmanites socialis, Asaphus* and others already cited can leave no doubt upon the subject.

The question in dispute is the age to be assigned to the schistes and sandstones with *bilobites*. "The types (*echantillons*) of Spain," wrote M. de Verneuil, in 1855, "have the greatest analogy with those of the United States, but the latter belong to the sandstone of Medina and to the Clinton group, which I proposed to place in the upper silurian rocks, while in Spain we find them at the top of the lower silurian rocks. Let us add in haste, nevertheless, that the limits of the two strata are difficult to precisely establish, especially in Spain, and it is not impossible that the marine plants of the silurian epoch occupy the same position here as in America."

The upper strata of the silurian rocks actually exist in the Sierra Morena, but are reduced to the aluminous schistes which are characterized by the *Graptolites* and the *Cardiola interrupta*. M. de Verneuil has pointed it out some 30 kilometers northeast of Conduo. The point to be elucidated is, "What is the extension of the layers corresponding to the third fauna?" Several engineers, among whom I must mention Don Fernando Bernaldez and Don Ramon Rua Figueroa, occupied themselves with this question.†

The black schiates between Gargantiel and the ancient mine of the Cuevas contain in abundance, Graptolites, e.g., *Grapt. spiralis Barr and Grapt. palmens Barr.* There have been found in the schistes, well preserved samples of *Cardiola interrupta*, and very abundant species of *terebratula*, but always flat, much resembling *terabratula sumata*, and an *orthoceratite*, also much flattened, all species which never seem to be met together with well characterized fauna of the second system.

These geologists are, therefore, led to consider as corresponding to the upper silurian strata all those which contain *graptolites*, even without other fossils, as the black schists of Almaden, and others more to the west, where formerly cinnabar was prospected for, as those of the Arroyo del Lapiz, between Cuevas and Gargientiel, and those which are found a mile and a quarter to the north of Alamillo, and a mile and a quarter south-west of Guadalmes, then farther on in the Rio Javalon, near the Corral de Caracuel; in the last are found *graptolites terabratules*, and *orthaceratites* of the Arroyo del Lapiz with a *Cardiola fibrosa*.

Without being as certain as with the schistes with graptolites, one is inclined to consider that the quartzite with *bilobites* belongs also to the upper silurian. In the mines of Almaden one finds intercalated in the quartzites the aluminous black schistes, containing *graptolites*. If we have not as yet found there the *bilobites*, it is well to remark at least, that they have been found a little more to the west, at the quarry of the furnace yard, and that the fragments of this schiste which encloses the *frailesca* also contains the *bilobites*.

Therefore, even in acknowledging that the line of demarcation between the second and the third fauna is difficult to trace, one would today attribute to the latter the quartzites with *bilobites*, the black aluminous schistes with *graptolites*, and the frailesca.

If we admit this to be so, the strata of Almaden would succeed each other from north to south, although with several repetitions of the same strata, as is indicated in Fig. 3, when the letter F_2 marks the strata referred to the second fauna, and F_3 those referred to the third.

One can see that the primitive order of the strata is very difficult to establish. If we consider the quartzite as belonging to the lower silurian, it would form its upper stratum, if to the upper silurian it would form its base.

2. Devonian System.

In the devonian rocks the achistea are by no means as abundant as in the silurian; they are subordinate to the sandstone and do not present so great a development. Their color is a yellowish gray, greenish or reddish. They are grayish black at Guadalperal, although of a shade very distinct from the silurian.

It is the sandstone which is the most abundant; it is never very hard. Its color varies from white to yellowish and gray, without ever being black. There is also some which is red, being colored by peroxide of iron, but this is much less abundant than on the two slopes of the chain of Cantabria in the provinces of d' Oviedo and of Leon where it is largely exploited. In general, in the Sierra Morena, the devonian rocks are much more ferruginous than the silurian rocks.

It is in the sandstone that are found most of the fossils characteristic of this period, the most abundant are the following:

Terebratula undata, T. Mariana, T. reticularis, T. Orbiguyana, T. conceutrica, Spirifer subspeciosus, Sp. *Bouchardi*, Sp. *Verneuili, Leptæna Murchisoni, Productus subaculeatus, Phacops latifrons, Dalmanites laciniata*, etc.

The limestones of this layer are of a color nearly always grayish; they contain fewer fossils than the sandstone.

It is very difficult, in the absence of fossils, to determine whether one has to do with silurian or devonian rocks. One cannot say where the one begins and the other ends. We can say that the great masses of schistes are silurian, that the very ferruginous rocks are devonian, that these never attain a great hight, while the silurian quartzite, being more solid, has better resisted the action of denudation. It is this latter which crowns the numerous hills or "cerros," form great embattlemented walls, giving to the whole country a peculiar orographic appearance. In walking several leagues on the edge of these straight layers, one is obliged to admit that they are folded back upon themselves, thus repeating themselves, and that erosion has removed the upper part. But when one looks for those which correspond to this folding one cannot be sure of their identity, because their thickness often varies as does also the character of the rock. On the other hand the mines of Almaden have attained a depth of 285 meters below the town, without disclosing the least tendency to folding to the one side or the other in the always vertical layers.

The elevation of the rocks which occupy us has been accompanied with diverse accidents. Here we see beds which have been compressed laterally in the line of direction, which has produced singular foldings. There are interrupted strips which seem to have been strongly drawn out, and at the same time thrown back again, sometimes forwards, sometimes backwards. In the midst of the quarzite one sees fragments of schist, and in the middle of the schist one meets sometimes blocks of quartzite or of limestone. The layer of schist envelop these blocks, which indicates that the rock has not taken the structure which characterizes it after the occurrence of these accidents.*

The elements for a study of the upheavals which have successively corrugated the surface of Spain are still wanting. Above all it is necessary to have a good detailed geological map, and there is none. It will then be necessary to have a geological map on a scale less reduced than that of M. M. de Verneuil et Collomho, and from a geographical map less inexact. It is this task, the making up of a general geological map, that the commission of the geological map has undertaken.

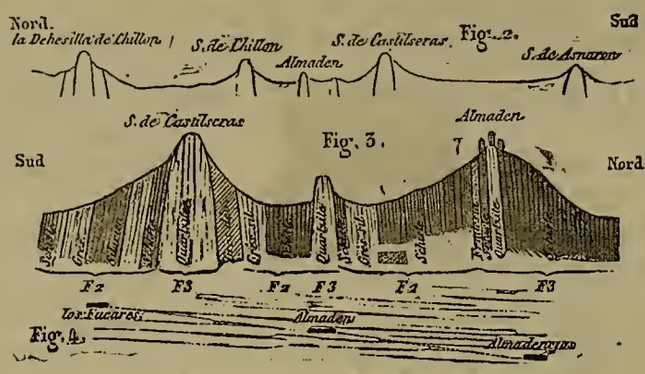
It is only when this first work will have been finished that one will be able to reconstruct with some certainty the history of the Peninsula at diverse epochs.

* C. de Prado, upon the Geology of Almaden, etc. (Bulletin of the Geological Society, p. xii., 1855.)

(To be continued.)

*Memoire already cited *Bulletin of the Geological Society* t. XII., 1855.

†*Memoria sobre las minas de Almaden y Almadenejos par* Don F. Bernaldez and Don R. R. Figueroa, Madrid, 1861.



. ALMADEN QUICKSILVER MINES.

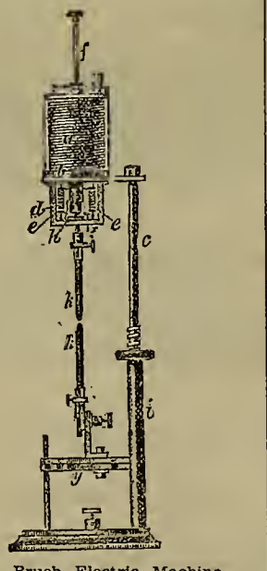


Fig. 2. Brueh Electric Machine.

Many lamps have been invented which accomplished this more or less perfectly, but they were all of such extremely delicate mechanism that they were liable to get out of order with the slightest change of adjustment. Such lamps, while admirably adapted to scientific research, as they gave excellent results in the hands of skillful physicists, were at the same time of no practical value on account of their extreme delicacy.

The Brush lamp seems to do away with this objection better than any other machine we have seen. It is simple in its mechanism and not liable to get out of order, while, at the same time, it is sufficiently delicate in its self-adjustments to produce a very equable current.

The lamp is shown in Figs. 2 and 3, in which *a* is a helix of insulated copper wire, resting upon an insulated plate, *b*, upheld by the metallic post, *c*. Loosely fitted within the helix is the core, *d*, partially supported by the adjustable springs, *e*. Or in the newer instruments by a piston moving in an oil dash pot for the same purpose. The rod, *f*, passes freely through the center of the core, *d*, and has at its lower end a clamp for holding the carbon pencil. A washer, *h*, of brass surrounds the rod, *f*, just below the core, *d*, and has one edge resting on the lifting finger attached to the latter, while the other edge is overhung by the head of an adjustable screw atop, *x*.

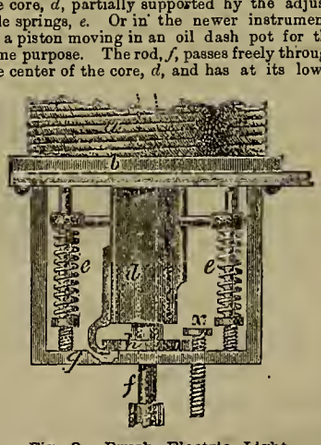


Fig. 3. Brush Electric Light.

The metal post, *c*, is supported and guided by a tubular post, *i*, secured to a suitable base plate. Attached to the lower end of the post, *c*, and passing out through a slot in *i*, is the arm, *y*, supporting an insulated holder for the lower carbon.

If now one conducting wire from the machine be connected to the base plate, and the other to the lower carbon holder, the current of electricity will pass up through the posts, *i* and *c*, through the helix, *a*, and rod, *f*, and the carbons, *k k*, thus completing the circuit.

The axial magnetism produced in the helix will draw up the core, *d*, and it, by means of the lifting finger, will raise one edge of the washer, *h*, which, by its angular infringement against the rod, *f*, clamps and lifts it to a distance controlled by the adjustable stop, *x*, but separating the carbon points far enough to produce the light.

As the carbons burn away, the increased length of the electric arc increases its resistance and weakens the magnetism of the helix, and therefore the coil, rod, and carbon move downward by the force of gravity, until, by the shortening of the arc, the magnetism of the helix is strengthened, and the downward motion arrested. When, however, the downward movement is sufficient to bring the clutch-washer, *h*, to the support, *l*, it will be released from the clamping effect of the lifting finger, and the rod, *f*, will slip through until arrested by the upward movement of the core, due to the increased magnetism of the helix.

The normal position of the clamp washer is within the edge under the adjustable stop, just touching the support *l*, the office of the core being to regulate the slipping of the rod through it. If, however, the rod through any cause falls too far it will instantly and automatically be raised again as at first, and the carbon points thus continued at the proper distance from each other.

In order to operate with longer carbons, thus obviating frequent changes, the sticks of carbon are electroplated with a thin film of copper so as to increase their conducting power. The slight irregularities in the production of this light seem to be due to the impurities which exist in the carbons. These are chiefly silica and iron. These substances seem to oxidize in the heat of the arc, and to form a fusible silicate which forms a stalagmite upon the negative carbon; this extending into the arc first increases the conductivity, thus widening the distance of the carbons, and then, as this takes place, melts and drops off, thus weakening the current and temporarily diminishing the light. This trouble will, however, be probably soon diminished by the production of carbons containing less than one-half of one per cent. of silica and iron.

The Brush Electric Light.—No. 2.

We next come to a description of the electric lamp itself. The difficulty of obtaining a simple lamp which would adjust itself for the varying consumption of its carbon has been the second great objection to the use of the electric light.

At the Palace Hotel

Our readers have a chance to judge for themselves of the practical working of the light. The large and beautiful court of the hotel, a room about 85 feet wide by 120 feet long by 140 feet high, has been lighted for the last two months back by four lights of about 1,000 candles each. The lights are each inclosed in frosted globes so that the illumination, instead of being of a blinding intensity, is almost as mild as that of the moon itself. The change of scene and atmosphere of the court, as one comes in from the raw air of a San Francisco evening, is as vivid as if one were ushered into a moonlight scene in the tropics. The lights are placed in the vertical plane running through the center of the court, two at about 40 feet from the floor and two at about 100 feet from the floor. They are arranged so as to divide the length of the hall into nearly equal thirds, *i. e.*, 40 feet apart and from the end walls.

Senator Sharon is so well pleased with the success of the whole apparatus that he has ordered another machine of 12,000 candle power; this, with the machine he has already, will give him control of a 16,000 candle light. This illuminating power it is proposed at present to utilize as follows:

There will be fixed in the following places in the hotel lamps of the Brush pattern:

In the court	4 Lights.
In the dining-room	3 "
In the restaurant	1 "
In the breakfast-room	1 "
In the kitchen	1 "
In front of hotel	1 "

The lamps being fixed, it is only necessary to move the key on the switch-board to turn off or on any one of these lights, or to concentrate it all in one, as may be desired. Some such plan as the following will probably be adopted: The two upper lights in the court will be switched into the dining-room until 8 P. M. At this hour, one of the dining-room lights, of 3,000 candle power, will be switched in front of the hotel, the other two will be switched back into the court. The other lights will burn continuously till 12 or one in the morning.

A 25 horse-power engine will be erected in order to furnish sufficient power in case it is decided to still further extend the application of the lighting.

There is no doubt that the subject of electric lighting is at last thrusting itself upon the public attention in a way, which will necessitate its consideration. In the lighting of large hotels, public halls, theaters, factories, mills, etc., there is no doubt but that it will prove a formidable antagonist to gas lighting. It might, perhaps, be well to suggest that the employment of a powerful electric-light upon Goat island, might do away with the necessity of the mournful fog-horn, which disturbs, at present, our sleepless citizens. In the navigation of the new Oakland harbor, also one or two such lights would be of great convenience to all concerned. We take pleasure in referring for further particulars to the President, Mr. Wm. A. Kerr, No. 903; Battery street, or the Superintendent, Mr. M. D. Law, at the Palace Hotel.

The following companies have been listed on the San Francisco Stock Board during the past few days: Fairfax, South Lady Bryan, Greer, Mt. Hood, Sabine, De Haro, Geo. Douglas, Vancouver, Yolo, Paradise Valley, Real Del Monte, Rustler, University, Santa Mina, Dudley, Jupiter.

RUPTURE.

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CALIFORNIA ELASTIC TRUSS COMPANY, W. J. Horne, Proprietor.—DEAR SIR:—I feel that I owe it to you and to humanity to write the fact that I have been SUBSTANTIALLY CURED of a bad case of Rupture of 30 years' standing, by one of your incomparable Trusses, which I purebased from you three months ago. I cannot describe the suffering, both physically and mentally, that I have undergone during that period; and now I feel like a new being. I have worn all kinds of Trusses, both Steel and Elastic, and never received any permanent relief until I tried yours. Its simplicity of construction, and facility with which it can be adjusted, and the ease and perfect freedom to the motions of the body with which it can be worn without causing any irritation, are its chief merits, and it is a perfect supporter. I have not had any sign of a return of the Rupture since the first day I put it on, and feel that I am PERFECTLY CURED. It is invaluable, and the fact should be known to the world. You can refer anyons to me on the subject of their merits.

I am truly yours, ALFRED J. BURKE,
Chief Mail Clerk S. F. *Daily Evening Post.*
San Francisco, July 20th, 1878.

Endorsed by the Medical Profession.

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California Elastic Truss Co.:

After practicing medicine many years in this city, during which time I have had an extensive experience in the application of all kinds of Trusses, I can and do recommend yours as the best in every respect, for it is as near perfection as modern science can make it. It has many advantages over the torturing steel-hoop Trusses, which inflict great injury on the hips and spine, bringing on other distressing ailments, such as lumbago, morbid affections of the kidneys and numbness in the lower limbs, all of which are avoided by wearing the California Elastic Truss. It is not only a perfect retainer, combining ease and comfort, but the pressure can be changed to any degree. It also remains in the proper place at all times, regardless of the motions of the body, and is worn night and day with perfect ease. It is superior to any of the Elastic Trusses now in the market, while it combines the merits of all. 1st—It is easily adjusted on and off with snaps, doing away with straps and buckles. 2d—The universal spring between the plate and pad prevents all irritation, which is a godsend to the sufferer. 3d—The pad is adjusted on and off in an instant, and can be changed for any other size and form most suitable to the case. In fact, it combines every quality essential to comfort and durability, and is unequalled in lightness, elasticity, natural action, and artistic finish. Many of my patients who are afflicted with hernia are wearing them, and all shall in the future, for I think the great ease by which these purely scientific appliances are made efficacious, is truly remarkable. You can refer any parties to me on the subject of their merits. I remain yours truly,

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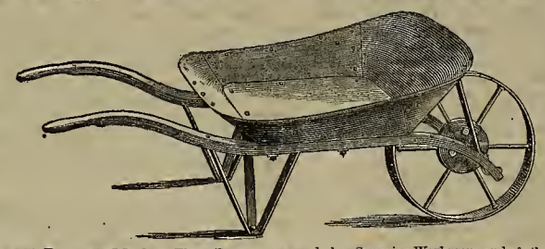

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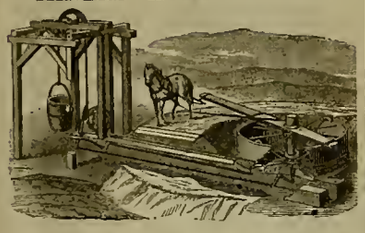

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Cost of 20 tons	$13 50
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From 2½ to 5 per cent. of salt is necessary.

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Flax, Hemp, Jute, Rope, Oakum and Bagging Machinery, Steam Engines, Boilers, etc. I also manufacture Baxter's New Portable Engine of 1877, of one horse-power, complete for $125; can be seen in operation at my store. Two horse-power, $225; two and a half horse-power, $250; three horse-power, $275. Send for descriptive circular and price.

Address J. C. TODD,
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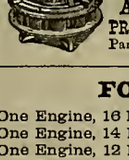
Mill and Mining Machinery OF ALL KINDS FOR SALE by BERRY & PLACE.

At the Old Stand, Market, head of Front Street, S. F.



BURNHAM'S STANDARD TURBINE WATER WHEEL.

WARRANTED BEST & CHEAPEST.
Also, MILLING MACHINERY.
PRICES REDUCED APR. 20, '78.
Pamphlets free. OFFICE, YORK, PA.

FOR SALE.

One Engine, 16 hy 36 Inches, Link Motion.
One Engine, 14 hy 30 Inches, Link Motion.
One Engine, 12 hy 24 Inches.
One Engine, 9 hy 18 Inches.

☞ Boilers to match each Engine. Each of the above will be sold at a very low figure.

ROBERT M. CONE, 226 Fremont St., S. F.

ICE! ICE!! ICE!!!

Ice at $1.00 Per Ton.

PICTET ARTIFICIAL ICE COMPANY, (Limited).

Room 51, Coal and Iron Exchange.

P. O. Box 3083, New York.

HARD PRINTING PRESS WANTED.—Parties having a second hand Washington or other hand printing press which they wish to dispose of, will please address this office stating price, size and condition.

IRON PIPE

In Store for Sale at Lowest Market Rates

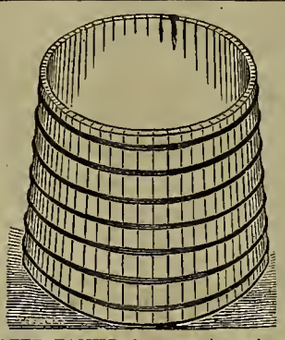
500,000 FEET

BLACK AND GALVANIZED IRON PIPE
—FOR—
GAS AND WATER.

Sizes From ¼ Inch to 6 Inches.

Brass, Wrought, Cast and Malleable Pipe fittings for Gas, Steam and Water.

W. W. Montague & Co.
110, 112, 114, 118 & 120 Battery St.,
SAN FRANCISCO.



WATER TANKS of any capacity made entirely machinery. Materials the best in use; construction excelled. Pan Staves, Tubs and Oak Guides for mining purposes a specialty.

WELLS, RUSSELL & CO.,
Mechanics' Mills, Cor. Mission and Fremont Streets.

Printing Type For Sale Very Low.

We have on hand some 400 to 500 lbs. of brevier, in good condition, for sale at a bargain. Will sell a part only if desired. Second-hand cases to match. Also a font of bourgeois in first-rate order, with cases. Also a cabinet and upwards of twenty fonts of good display type, not very old and but little used. Some of the fonts are large, of modern style, and what might be termed good substantial display type for advertisements and job printing.

A good proof press will also be sold at a greatly reduced price from cost.

We can fit out a good country printing office nearly complete at a moderate cost. Call and see the material.

DEWEY & CO.,
Publishers, No. 202 Sansome street, San Francisco.

LEWIS PETERSON. JOHN OLSSON.

PETERSON & OLSSON,

Model Makers, and Manufacturers of Emblematic Signs. Models for the Patent Office, in Wood or Metal, a Specialty.

NO. 328 BUSH STREET,

Bet. Montgomery and Kearny, (up stairs), San Francisco. All kinds of tin, copper and brass work made to order.

Business Directory.

WM. BARTLING. HENRY KIMBALL

BARTLING & KIMBALL,
BOOKBINDERS,
Paper Rulers & Blank Book Manufacturers.
505 Clay Street, (southwest corner Sansome),
SAN FRANCISCO.

ANDERSON & RANDOLPH,

JEWELERS,

(CLOCK TOWER BUILDING),

Cor. Montgomery and Sutter Streets,

SAN FRANCISCO, CAL.,

Call the attention of the public to their extensive display of

WATCHES, DIAMONDS, JEWELRY AND SILVERWARE.

The largest stock in the City at the lowest prices.

Goods sent to all parts of the Coast.

Watches repaired in a superior manner.

A. J. RALSTON, Pres't. PRENTISS SELBY, Supt.
H. B. UNDERHILL, Sec'y.

Selby Smelting and Lead Co.

Manufacturers of

Lead Pipe, Sheet Lead,

Drop, Buck and Chilled Shot, Bar Lead, Pig Lead, Solder, Anti-Friction Metal, Lead Sash-weights, Lead Traps, Block Tin, Pipe, Blue Stone, Etc.,

Office, 216 Sansome St., San Francisco.

Refiners of Gold and Silver Bars and Lead Bullion. Lead and Silver Ores purchased.

Shot Tower, corner First and Howard streets. Smelting Works, North Beach.

O. F. DEETKEN. WM. E. SMITH,

PIONEER REDUCTION WORKS,

No. 19 Channel Street, San Francisco, Cal

G. F. DEETKEN, MANAGER.

Highest price paid for GOLD, SILVER and Copper Ores.

Steel Castings,

From ¼ to 10,000 lbs. weight, true to pattern, sound and solid, of unequaled strength, toughness and durability. An invaluable substitute for forgings or cast-iron requiring three-fold strength. Send for circular and price-list to

CHESTER STEEL CASTINGS CO.,
EVELINA STREET, - - - PHILADELPHIA, PA.

San Francisco Cordage Company.

Established 1856.

We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes: Tarred Manila Rope; Hay Rope; Whale Line, etc, etc.

TUBBS & CO.,
611 and 613 Front Street, San Francisco.

CHROME IRON WANTED.

Parties having any vein or deposit of Chrome Iron will please send all particulars as to location, distance from railroad or other communication with this City.

Address, CHROME IRON,
SCIENTIFIC PRESS, No. 202 Sansome St., San Francisco.

TO OWNERS OF REBELLIOUS ORES.

Persons interested in mines of rebellious ore, or having on hand any ore that is not satisfactorily worked, yielding less than it assays, will do well to notice the following offer. The undersigned is in possession of a new secret process which he is willing to try on any ores sent to him. If a pound or more of ore is forwarded to his address, he will test it with his process, and acquaint the owner with the results and the cost per ton for working. Address,
S. P. BRESSLER, Elkhardt, Indiana.

SUSPENDED WIRE ROPE TRAMWAYS.

This system of transport is peculiarly adapted for the carriage of minerals over rough countries. Heavy gradients and long spans easily overcome, and cheaper than by any ordinary means.

Transmission of Power by Wire Ropes.

The power of water or steam can by this means be carried for long distances, with great economy.

For estimates and practical information apply to

JOHN SAMSON, Engineer,
No. 743 Pine Street, San Francisco, Cal

18 ELEGANT new style Chromo Cards, with name, 10c., postpaid. GEO. I. REED & Co., Nassau, N. Y.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending Sep. 12.		Week Ending Sep. 19.		Week Ending Sep. 26.		Week Ending Oct. 3.	
Alpha	16	13⅞	16	13⅞	20½	14½	24½	18
Alta	23	17	19	12½	20	16½	17½	15½
Andes	95c	65c	90c	75c	2	90c	1.65	80c
Aipa							50c	
Argenta	2½	2	2.90	2.05	3½	3	4½	3½
Atlantic								
Aurora Tunnel	3	2	2½	2	3	2½	3	2½
Baltimore Con	2	1½	2	1.95	2½	2	2.05	2
Belcher	16	12	12¼	9	13⅛	8	10¼	
Belmont	5	3¼	4.85	3.90	4½	3¼	4½	3½
Best & Belcher	30	23	34½	26	39	30	38	31
Bullion	13	8¾	14½	11⅜	18½	13	26	16½
Bechtel	1.60	1.05	1.30	95c	2	1½	1.95	1.75
Belle Isle	40c	35c	45c	40c	60c	40c	60c	45c
Bodie	37½	28½	27½	17	26	19	23¾	20
Benton	11½	9½	10	5½	9¾	8	9½	7½
Bulwer	13	11½	13½	11½	13	12½	16	12½
Boyle								
Black Hawk	1.90	1½	1	75c	1	75c		60c
Bechtel	3	2	2½	1½	2	1.80	2	1.60
Booker	1.65	1	1	75c	1½	90c	1	75c
Caledonia	4.55	3¾	4.20	3½	6	3.95	6¼	5½
California	12½	10½	15½	11¾	15½	13½	15	13½
Challenge	1½	1½	1.80	1.40	2½	1.60	3	2½
Chollar-Potosi	50	36	48	43	68	47½	70	58
Comanche								
Confidence	8¾	6½	10	8	13¾	9	14	11½
Con Imperial	1.10	1	1.15	1	1.75	1	1.95	1½
Con Virginia	13	11½	18	12½	17	15½	16½	15
Crown Point	12½	9	10½	8½	11½	9	12½	10½
Con Washoe	2	1½	1½	1	1½	50c	1½	1
Champion	80c	40c	60c	40c			20c	
Concordia	55c	45c	40c	40c			50c	30c
Dayton	40c	25c	40c	25c	50c	20c	30c	25c
DeFrees			50c	40c				
Daney	80c	40c	75c	50c	70c	45c	60c	45c
Day	42	40½	42	40	42	37	46	44
Eureka Con	6	4½	6½	5½	8¾	5½	11½	7½
Exchequer	70c	65c	60c	40c	1.10	40c	90c	75c
Endowment								
Gen Thomas	6¼	5½	6	5½	6	5½	6	5½
Grand Prize	40c	30c	30c	25c	30c	25c	50c	40c
Gila	50c	35c					50c	35c
Golden Chariot	4	3½	4	3½			3½	
Golden Terra	1½	50c	90c	80c	1	90c	1	80c
Goodshaw	18	11½	21	16	24	17½	29½	20
Gould & Curry	16	6½	17	13¾	44	17½	38	27
Hale & Norcross	5	4½	4½	4	4½	4	4½	4
Hillside	2.15	1.70	2.15	1.2	2.05	1.8	2.05	1.80
Highridge	7½	7½	10	9	9¼	9	9¼	8
Homestake	80c	60c	1	75c	70c	40c	80c	25c
Hussey	2¼	2.20	3½	2½	4	2.65	3½	3
Independent	8	6	7	5¾	7½	6¾	7½	6½
Julia	11½	9½	11¼	9½	12	9½	12	10
Justice	8	6	11½	7½	16½	9	15	12
Jackson								
Joe Scates								
K K Con	10	5½	9	7	10	7	11	8
Kentuck	30c	25c	75c	25c	80c	25c	45c	30c
Kossuth	6	6	7½	6	7		7	6½
Keystone	3½	2½	5½	3½	5	4½	5	1.20
Lady Bryan	5	2½	16½	3	3½	2.90	4	3
Lady Wash	2	1½	1.80	1.60	2	1	1½	1.20
Leopard	85c	65c	80c	60c	1½	70c	1.70	1.40
Leviathan	1.10	95c	1.20	1	2.10	1.20	2½	1½
Leeds	1½	1	75c	50c	1	75c	60c	40c
Lee	2	1.70						
Mac Belle	60c	50c	60c	50c	45c	10c	40c	30c
Modoc	7	6	7½	7	65	6	8½	6
Manhattan	7¼	6¾	7¼	7	7	6¾	8	7
Martin White	1.30	83c	1	70c	1.05	75c	90c	75c
McClinton	50c	40c	40c		40c	20c	90c	45c
Meadow Valley	59½	42	60½	55	96½	62½	99	78½
Meadow	2	2			2		1½	1
Mides	7	5	5	4	6	4½	8	6½
Morning Star	12	8	17	13½	64	16½	71	47½
North Con Virginia	3	1½	3	1.05	2½	1.70	2.40	2
New York	11	9½	11	9½	10⅝	9½	11	10½
Northern Belle	40c	53c	40c	30c	30c		40c	
New Coso	1.30	1.15	1.45	1.20	12	1½	1.60	1.45
Navajo	1½	1	1.20	1	60c		1	
Occidental	60	47	61	49	98	62	87	66
Ophir	3	1⅞	2⅞	1½	2¼	1½	2.60	1.30
Oriental	22	16½	19½	15	27	18	26½	22
Overman								
Panther	2½	2½	3	2½	6	3½	5½	4½
Phil Sheridan	3½	3	3½	2.60	22	2½	25c	75c
Prospect	50c	50c			30c	25c	85c	75c
Raymond & Ely	4½	4½	6	5	6	4½	9	6
Richer	4½	1½	2½	2	1½	90c	2.10	1½
Rock Island	50c	25c	40c	25c				
Rye Patch					1	75c		1
Rough & Ready	3½	2½	3	2	3½	2½	3	2.35
Savage	19½	13	21	16	27	19	29	22½
Seg Belcher	45	36	48	35	43½	35	44	37
Sierra Nevada	170	96	182	160	211	195	261	215
Silver Hill	4	3	3½	2½	3½	3	4	3½
Silver King					20	17	15	20
Silver Prize	15c	15c	15c	10c	15c	10c	10c	
Succor	2	1.70	2.60	1.70	2	1.90	2½	1.80
Summit	3½	2	3	2½	2	1½	2	1.65
Scorpion	15	9½	20	8	12½	5½	13	10
Solid Silver	5	4½	5½	4.70	4	3	3	2
South Bodie	1	50c	1	50c	1	75c	85c	70c
South Standard	80c	40c	85c	40c	90c	60c	75c	50c
Star	1	75c	1	50c	1	75c	90c	75c
St. Louis	80c	60c	80c	70c	75c	60c	1	70c
Syndicate	2½	2½	2		2		2	
Tioga Con	2.80	1½	3	1½	4½	3½	3.90	2.90
Tiptop	1.40	50c	1½	80c	2	1.30	3½	1½
Trojan	75c	50c	65c	40c	65c	50c	60c	40c
Union Con	115	77	115	102	157	1 2	193	149
Utah	51½	34½	52	40	58	44	56	41
Vermont Con	9	8	15½	14½	20	15½	12	10
Ward	2½	1½	1.80	1	1	1½	1.60	1.40
Wells-Fargo	90c	55c	75c	35c	60c	4 c	60c	50c
Woodville	75c	50c	65c	50c	65c	50c	90c	60c
White Cloud								
Yellow Jacket	25½	21½	25½	21½	30	24	38	28

Sales at S. F. Stock Exchange.

Friday A. M., Sept. 27.

665	Alta	17@16¾	
435	Alpha	18@19	
1030	Best & Belcher	31@31½	
2100	Bullion	17@18½	
1640	Belcher	10¼@11½	
2395	Con Virginia	15@15½	
995	Calfornia	14½@13¾	
105	Chollar	58½@59	
1625	Crown Point	10¼@11	
4355	Con Imperial	1.14@1.20	
1515	Caledonia	5½@5¾	
305	Confidence	11½@12½	
1265	Exchequer	7½@7½	
1335	Gould & Curry	21@20	
840	Hale & Nor	31@30½	
955	Justice	10½@10	
690	Julia	6½@6½	
360	Kentuck	8¼@8	
735	Lady Bryan	3½@4	
2135	Mexican	79½@78½	
775	Overman	22@23½	
1395	Ophir	7.07½	
630	Sierra Nevada	215@225	
480	Savage	23@23	
200	Succor	2	
1170	Union Con	150@143	
220	Utah	49@50	
1595	Yellow Jacket	29@28	

AFTERNOON SESSION.

1900	Argenta	3½@3.95	
200	Aurora T	3	
920	Andes	1.40@1.50	
770	Benton	8@7¾	
330	Bechtel	1.95@1.80	
235	Bodie	23@23½	
340	Belmont	4.60@4½	
410	Bulwer	12¾@13	
500	Belle Isle	60	
350	Belcher	2@1.90	
1840	Booker	95c@1	
50	Baltimore Con	2.05	
1030	Challenge	3@2.70	
50	Champion	11	
300	Con Dorado	30c	
1400	DeFrees	30c	
560	Day	60@55c	
220	Scorpion	11@10	
150	S Bodie	75c	
650	S Standard	50@40c	
3610	St Louis	90c@1	
525	Silver Hill	3½	
925	Solid Silver	2½@2	
2130	Sitting Bull	2½@2¼	
745	Tiptop	1.90@1	
1420	Tioga Con	3.90@3¾	
1800	Tuscarora	1½	
900	Trojan	60@50c	
160	Vermont Con	12@11½	
580	Woodville	70@60c	
396	Ward	1½@1.40	
755	Wells Fargo	50@60c	

Saturday A.M., Sept. 28.

1350	Alpha	20@21	
1750	Alta	17@16¾	
500	Argenta	3½@4	
1500	Belle Isle	50@55c	
360	Bullion	23½@23	
1865	Con Virginia	15½@15¾	
1165	California	14½@13¾	
360	Confidence	12½@12¾	
345	Challenge	70@66	
310	Crown Point	10¼@11	
655	Caledonia	5½@5½	
7710	Con Imperial	1.60@1.65	
70	Challenge	2.60	
15	Dayton	50c	
200	DeFrees	30c	
2080	Exchequer	9½@8½	
690	Endowment	1.45@1½	
415	Eureka Con	46@49	
1920	Gould & Curry	23½@24	
255	Grand Prize	60@62	
1210	Gila	40@30c	
400	Hussey	3½	
1621	Hale & Norcross	38@37	
1090	Highridge	2	
355	Independence	3.10@3	
690	Justice	10@10½	
1390	Julia	6@6¾	
75	Jackson	15	
330	Kentuck	9@8¾	
615	L Bryan	4@4.30	
100	Leopard	1.20	
1085	Mexican	99@95	
250	Meadow Valley	40	
20	Manhattan	6¾	
65	Modoc	30c	
125	New York	2½@2.40	
1100	Navajo	1.55@1.60	
125	Northern Belle	10¼@10	
1275	Ophir	8½@8¾	
595	Overman	23@23¼	
50	Occident	1	
210	Phil Sheridan	2½@2½	
85	Raymond & E	2.50	
1575	Savage	23@23	
20	Seg Belcher	42	
150	Succor	2¼	
265	Sierra Nevada	261@255	
600	Silver Hill	3½@3¼	
200	Star	90c	
100	Tuscarora	1.10c	
605	Union Con	150@152	
365	Utah	53@50	
1050	Yellow Jacket	30@32	

Monday A. M., Sept. 30.

1035	Alta	15½@16	
950	Alpha	23@24½	
3500	Bullion	24@25	
1150	Best & Belcher	38@37	
2450	Belcher	13¾@12¾	
705	California	14	
1685	Con Virginia	15½@15½	
590	Chollar	67@66	
1830	Crown Point	11½@11	
11850	Con Imperial	1.90@1½	
345	Confidence	14@13	
1915	Caledonia	5¼@6	
4795	Exchequer	9½@11¾	
2130	Gould & Curry	29@27¾	
1570	Hale & Nor	33@32½	
1975	Justice	10½@11½	
1890	Julia	7½@7¾	
400	Kentuck	9¼@9¾	
1045	Lady Bryan	4@5	
835	Mexican	93@95	
2110	Ophir	32@32¾	
610	Overman	25@26	
5	Seg Belcher	41	
1310	Savage	28@27½	
915	Sierra Nevada	250@23c	
300	Succor	2¼@2.10	
175	Utah	54@55	
880	Union Con	180@18	
1110	Yellow Jacket	38@3¾	

AFTERNOON SESSION.

955	Andes	1½@1.65	
1170	Argenta	4	
20	Aurora T	3	
1230	Bodie	23@22½	
225	Bulwer	13¾@13	
440	Bechtel	1.90@1½	
50	Baltimore Con	2	
100	Belvidere	1½	
1350	Booker	85c@1	
620	Belmont	4½@4½	
1850	Belle Isle	50@45c	
1550	Benton	9@9¼	
300	Concordia	65c	
900	Challenge	2½@3	
600	Coso Con	2½	
800	Con Washoe	2.10@2	
1150	Day	50@45c	
1135	DeFrees	30@25c	
130	Daytou	40c	
130	Eureka Con	48	
1070	Endowment	1.1@1.30	
400	Flowery	1.40	
455	Grand Prize	5½@5¾	
265	Gila	40@50c	
150	Golden Chariot	40c	
150	Golden Terra	3½	
1360	Gould & Curry	27	
1300	Goodshaw	75c@80c	
4300	Hussey	35c@40c	
80	Hillside	4	
100	Highridge	1.90	
50	Hamburg	2½	
1260	Independence	3c@3¼	
350	Jefferson	3	
2165	Jackson	14@15	
400	Kossuth	45c@40c	
2540	Leeds	2½@2¾	
220	Leopard	1.1@1.10	
1230	Sandy Wash	3½@3	
1745	Leviathan	1.1@1.70	
100	Lee	50c	
100	Monumental	15c	
365	Morning Star	8¾@7½	
800	Modoc	35c@40c	
200	Manhattan	6½@6	
1220	Mono	4@3¾	
210	Martin White	7½	
400	McClinton	90c@30c	
750	Meadow Valley	50@45c	
205	Northern Belle	10@9¾	
525	North Con Vir	8@7½	
2700	N Bonanza	1.1@1.40	
400	N Sierra Nevada	60c@65c	
630	N Ophir	2@1.60	
800	New York	2@1.90	
1000	Navajo	1.60@1¼	
140	Occidental	1	
800	Oriental	2@1¾	
3100	Paradise	2½@2	
100	Prospect	85c	
100	Phenix	2	
1700	Phil Sheridan	2½@2¾	
2475	Rustler	1	
150	Richer	1½	
130	Rough & Ready	3½	
225	Scorpion	12@13	
10000	Silver Prize	10c	
695	Solid Silver	3@2½	
1550	S Bodie	75c@85c	
1000	S L Bryan	1.1@1.50	
615	Sitting Bull	2½@2	
535	S Standard	65c@60c	
100	Star	80c	
50	Silver King	20	
1245	Silver Hill	3½@3¾	
80	St Louis	75@70c	
100	S Xavier	1½	
1260	Tiptop	1.80@2	
980	Trojan	55@60c	
900	Tuscarora	10c	
1535	Tioga Con	3½@3¾	
210	Vermont Con	10½@11	
200	Woodville	90c@85c	
850	Ward	1½@1.60	

Tuesday A. M., Oct. 1.

340	Andes	1½	
255	Alpha	23@22½	
320	Alta	17¾@17	
835	Best & Belcher	37@35	
690	Belcher	12@11½	
2170	Bullion	24@21	
980	California	15@14½	
1435	Con Virginia	16½@16	
2760	Con Imperial	1.80@1.95	
1170	Caledonia	6@6½	
1255	Crown Point	12½@11½	
200	Chollar	65@64	
830	Challenge	3@2¾	
200	Dayton	30c	
580	Gould & Curry	25½@24½	
605	Hale & Nor	34½@34	
1650	Justice	12@11¾	
785	Julia	7@7¼	
1315	Kentuck	11@10	
640	Overman	40c	
675	Phil Sheridan	2.80@2.70	
200	Sierra Nevada	260@253	
425	Succor	2.05@2	
965	Silver Hill	3¼	
530	Savage	27@27¼	
595	Union Con	185@188	
280	Utah	50@52	
165	Ward	1.60	
330	Woodville	65c	
350	Wells-Fargo	60c	
860	Yellow Jacket	34½@35	

AFTERNOON SESSION.

1150	Argenta	4@4¼	
225	Aurora T	3@2.80	
850	Belmont	4½@4¾	
1185	Bechtel	1½@1.80	
295	Bulwer	14@14½	
700	Bodie	22¾@21½	
1175	Beuton	9½@9	
270	Belvidere	1.60@1.70	
1080	Booker	75@90c	
1	Con Imperial	1.80	
400	Champion	1½	
100	Concordia	20c	
600	Coso Con	25@20c	
900	DeFrees	30c	
760	Day	50@60c	
100	E Grand Prize	20c	
305	Eureka Con	44@45	
2350	Endowment	1½@1	
1200	Flowery	1	
200	Gila	25@30c	
3.0	Grand Prize	55½@58	
1735	Goodshaw	70@40c	
250	Golden Chariot	50c@40c	
1300	Hussey	30@40c	
100	Homestake	9¼@9	
840	Indepeuodence	3c@3½	
530	Jefferson	2½@2¾	
300	Keystone	7@6¾	
350	Leopard	1½@1.30	
1325	Leeds	2½@1½	
3550	Lee	60@40c	
585	Leviathan	1.60@1¼	
1735	Monumental	15c	
90	M White	7¼@8¼	
3655	Mono	4@3¾	
1850	Meadow Valley	50@40c	
550	McClinton	60@75c	
895	Manhattan	8@6¾	
3255	Morning Star	7@7½	
450	Mt Hood	1	
625	N Bonanza	1½@1	
445	Northern Belle	10½@11	
1	North Con Vir	1½@1	
350	N Sierra Nev	1.10@1	
1320	Navajo	1.45@1.60	
670	N Ophir	1½@2	
2450	Oriental	1½	
100	Prospect	60c	
500	Plutus	2	
1000	Raymond & Ely	2	
1500	Rustler	1½@1.80	
630	Rustler	1@1¼	
290	Rough & Ready	3½@3¾	
500	Santiago	1	
1010	S Bodie	80@70c	
630	S Standard	75@60c	
345	Scorpion	12@12½	
100	Silver Prize	10c	
25	Syndicate	2	
800	Summit	1.90@2	
910	Sitting Bull	2@2.15	
1140	Solid Silver	2.60@2¼	
425	St Louis	80@75c	
150	S Xavier	1½	
1845	Trojan	50c	
1520	Tiptop	1.90@2	
100	Tuscarora	1½c	
1160	Tioga Con	3½@3¾	
450	University	1½	
200	Vancouver	1	
200	Vermont	10@10½	

Wed'sday A. M., Oct. 2.

675	Alta	17@16¾	
1240	Alpha	19@19½	
695	Best & Belcher	33@34	
3515	Bullion	18@16½	
1735	Belcher	11@11½	
4380	Con Imperial	1.1@1.60	
690	California	14@14½	
1525	Crown Point	15½@15¾	
360	Confidence	12@12½	
10	Chollar	58	
1145	Crown Point	10½@10¼	
1550	Caledonia	6@6¼	
1625	Exchequer	8½@8	
1335	Gould & Curry	21½@23	
1410	Hale & Nor	27@28¾	
1050	Justice	10½@10¼	
1165	Julia	6½@6¾	
615	Kentuck	9½@9	
650	L Bryan	3½@3¾	
3115	Mexican	85@84	
2530	Ophir	66@71	
750	Overman	24@23	
250	Succor	2.1.80	
625	Sierra Nevada	240@250	
700	Savage	23½@22	
50	Seg Belcher	36	
540	Union Con	170@179	
195	Utah	44½@41	
3340	Yellow Jacket	30@31½	

AFTERNOON SESSION.

1175	Andes	80c@1.10	
200	Alpa	50c	
680	Argenta	4½@4¾	
210	Belmont	4½@4¾	
295	Benton	8½@8¾	
195	Bechtel	1½	
630	Bullion	20@19¾	
50	Baltimore Con	2	
400	Black Hawk	75@60c	
650	Booker	75@90c	
1400	Belle Isle	60@55c	
125	Belvidere	1½	
1130	Caledonia	5½@6	
2075	Exchequer	7½@8	
2685	Gould & Curry	20@21½	
1235	Hale & Nor	28½@29½	
590	Justice	10½@11	
1905	Julia	7@7½	
755	Kentuck	8@8¾	
1065	Lady Bryan	4@3¾	
3365	Mexican	81½@80	
1935	Ophir	77½@73	
425	Overman	24@23	
255	Sierra Nevada	204@205	
915	Savage	23@24	
150	Succor	1.90	
65	Seg Belcher	40@41	
535	Union Con	140@145	
650	Gila	50c	
770	Goodshaw	75c	
200	Golden Chariot	40c	
1960	Hussey	50@25c	
880	Hillside	4½@4¼	
700	Highridge	1.80@1.90	
410	Independence	3½@3¾	
200	Jefferson	2½	
1205	Jackson	12@13	
1550	Kossuth	30c@40c	
1400	Lee	60@50c	
1495	Leopard	1.1@1.30	
1525	L Bryan	3½@3.20	
565	Leeds	1½@2	
90	Lady Wash	3½	
1755	Leviathan	1½@1.60	
100	Mt Hood	1	
1100	Mexican	85	
1100	Monumental	15c	
1100	Modoc	40@30c	
1600	Silver Prize	10c	
1430	Mono	4@4½	
1950	Morning Star	7@6½	
470	N Con Virginia	10½@9½	
385	Northern Belle	10½@11	
1000	Navajo	1½@1.45	
1	North Sierra Nev	3@3.50	
3415	N Bonanza	1.1@1	
50	N Ophir	1.1.80	
950	New York	2@2½	
950	Orleans	3	

SALES OF LAST WEEK AND THIS COMPARED

Thursd'y A.M., Sept. 26.		**Thursday A. M., Oct. 3.**	
370	Alpha	18½@19	
875	Alta	18@17½	
800	Best & Belcher	31@32	
1340	Belcher	11@11½	
1345	Bullion	15½@16	
1225	California	14@14½	
2085	Con Virginia	15½@15¾	
565	Crown Point	10½@11	
560	Chollar	56@53	
6010	Con Imperial	1.60@1.70	
3100	Confidence	11@11½	
1130	Caledonia	5½@6	
2075	Exchequer	7½@8	
2685	Gould & Curry	20@21½	
1235	Hale & Nor	28½@29½	
590	Justice	10½@11	
1905	Julia	7@7½	
755	Kentuck	8@8¾	
1065	Lady Bryan	4@3¾	
3365	Mexican	81½@80	
1935	Ophir	77½@73	
425	Overman	24@23	
255	Sierra Nevada	204@205	
915	Savage	23@24	
150	Succor	1.90	
65	Seg Belcher	40@41	
535	Union Con	140@145	
215	Alpha	20@19	
430	Alta	16½@17½	
460	Andes	1.85c	
635	Bullion	34@33¾	
330	Bullion	20@21¼	
1380	Belcher	10½@11	
165	Chollar	58@60	
775	Con Virginia	15½@16	
595	California	14½@14¾	
1810	Caledonia	5½@6¼	
290	Challenge	2½	
705	Crown Point	11@11¼	
2250	Con Imperial	1.1@1.65	
415	Confidence	12½@13	
700	Con Washoe	2½@2.10	
950	Gould & Curry	24½@23½	
695	Hale & Nor	31@30	
810	Justice	10½@11	
695	Julia	6½@6¾	
475	Kentuck	9¼@9	
450	Kossuth	35c	
100	Lady Wash	3½	
700	Lady Bryan	3.90@4	
1065	Mexican	83½@85	
490	New York	2@2½	
260	Utah	48@48½	
1505	Yellow Jacket	27@28½	

AFTERNOON SESSION.

1060	Argenta	3.60@3.80	
100	Aurora T	2.90	
1355	Andes	1.1@1.45	
265	Bulwer	12¾@13	
950	Bodie	24@23½	
4435	Bechtel	1½@2	
720	Belmont	4½@4¾	
870	Booker	95c@1	
100	Belvidere	1½	
810	Benton	8@7½	
650	Black Hawk	1½@1	
455	Belvidere	1.90@2	
1550	Belle Isle	65@55c	
345	Baltimore Con	2.15@2.10	
1200	Challenge	2½@3	
1200	DeFrees	60c	
950	Dayton	45c	
250	Day	60@65c	
700	Endowment	1.10@1.30	
950	Eureka Con	41½	
1035	Goodshaw	1.1c@90c	
755	Grand Prize	52½@54	
1650	Gila	30@25c	
50	Golden Chariot	35c	
100	Hamburg	2½	
1400	Highridge	1.90c	
1925	Hussey	60@40c	
540	Homestake	9½	
1020	Independence	3½@3	
1165	Jackson	12c@13	
500	Jefferson	2@2.05	
365	Kossuth	45@30c	
50	Keystone	7	
1440	Leopard	1.1@1.30	
1835	Leeds	2@2	
2725	Leviathan	1.1@1.40	
135	Lady Wash	3½@4	
1035	Mono	3½@3¾	
405	Morning Star	6@6½	
210	Manhattan	6½@6	
110	M White	7@6½	
360	Modoc	35c@30c	
1400	McClinton	95c@1	
1450	Meadow Valley	50c	
200	Monumental	15c	
255	N Con Virginia	9@10½	
1495	Navajo	1.1@1.60	
235	Northern Belle	10@10¼	
1035	New York	2½@2.30	
305	N Ophir	2@1.90	
1050	N Sierra Nevada	80c@75c	
500	N Bonanza	1	
2250	Oriental	2½@2	
100	Occidental	1	
1320	Phil Sheridan	2.40@2½	
100	Prospect	40c	
200	Phenix	4.90@4½	
800	Paradise	1½@2	
275	Raymond & Ely	2½@2	
500	Rough & R'dy	2½@3	
50	Red Cloud	1	
860	Overman	25@25½	

150	Richer	150	N Ophir
950	Rustler	2205	N Bonanza
295	Summit	3145	Oriental
350	South Standard	170	Paradise
420	South Bodie	200	Phenix
870	Solid Silver	200	Raymond & Ely
1600	Silver Prize	750	Rustler
2000	Silver Hill	245	Richer
1100	Syndicate	350	St Louis
1085	Sliding Bull	50	Star
735	Scorpion	1600	Sitting Bull
750	St Louis	100	South Standard
720	Star	50	Standard
50	Silver King	325	S Bodie
75	S Xavier	815	Solid Silver
1395	Trojan	300	Summit
1500	Tuscarora	600	Syndicate
2815	Tioga Con	245	San Xavier
470	Tiptop	110	Scorpion
350	Vermont Con	100	Silver Prize
70	Woodville	1600	Tiptop
560	Ward	50	Tuscarora
1870	Wells Fargo	950	Trojan
		370	Tioga Con
		100	University
		100	Vermont

Pacific Board—Latest Sales.

Wed'sday A. M., Oct. 2.

130	Alpha	50	California
80	Alta	100	Con Virginia
150	Best & Belcher	90	Caledonia
175	Bullion	350	Con Imperial
15	Belcher	20	Crown Point
55	California	200	Con Dorado
300	Crown Point	20	Confidence
1205	Con Imperial	150	Endowment
640	Con Virginia	205	Exchequer
20	Chollar	170	Gila
290	Caledonia	100	Hale & Curry
240	Exchequer	300	Globe
245	Gould & Curry	50	Golden Chariot
170	Hale & Nor	120	Hussey
40	Julia	50	Kentuck
140	Justice	20	L Bryan
100	Kentuck	230	Leviathan
105	Mexican	400	Mackey
330	Ophir	200	Monumental
20	Overman	10	Mono
130	Savage	450	N Sierra Nevada
50	Sierra Nevada	100	Overman
135	Silver Hill	390	Phoenician
20	Utah	1200	Silver Prize
125	Yellow Jacket	100	S Xavier
	AFTERNOON SESSION.	200	Trojan
50	Alta	125	Trenton
125	Andes	100	Ward
50	Belcher	185	Wells Fargo
420	Bullion	10	Yellow Jacket

California Board—Latest Sales.

Wed'sday A. M., Oct. 2.

40	Alta	120	Woodville
50	Belcher	30	Yellow Jacket
80	Bullion		AFTERNOON SESSION.
40	Best & Belcher	150	Almaden Q
100	California	100	Alta
390	Con Imperial	400	Atlantic
80	Con Virginia	150	Alexander
100	Crown Point	80	Belcher
40	Chollar	700	Bullion
50	Caledonia	90	Con Imperial
400	Coso Con	140	Crown Point
270	Exchequer	70	Caledonia
300	Favorite	140	Con Virginia
20	Gould & Curry	80	Exchequer
100	Goodshaw	320	Endowment
76	Hale & Norcross	125	Creybound
70	Julia	40	Gould & Curry
50	Justice	180	Woodshaw
150	Leviathan	900	Hillside
2600	Monumental	40	Hale & Nor
40	Mexican	150	Julia
205	Mt Hood	50	Mexican
255	N Sierra Nevada	3300	Monumental
5	New York	780	N Sierra Nevada
50	Ophir	100	New York
20	Overman	40	Opbir
100	Pacific	600	Prospect
200	Phil Sheridan	35	St Louis
150	Spaulding	140	Silver Hill
30	Savage	50	Spaulding
30	Sierra Nevada	220	S Xavier
100	Silver Hill	385	Trenton
120	S Xavier	40	Union Con
450	Trojan	150	Wells-Fargo
30	Union	150	Washoe Bon
1250	U Flag	10	Yellow Jacket

Mining Share Market.

An inflated market has lost some of its wind. That is the history of the week in this department. Not even a market can subsist forever on sympathy, and although the ore in Sierra Nevada has been reported from day to day as better and better, there has been a general tumble among the parasites. Compare our table of highest and lowest quotations with the list of daily quotations, and learn more than we can tell here.

Meanwhile the mines themselves work along regularly enough, and if there is ore left in the Comstock they will not be long in finding it. The surplus of money in the hands of those who have made realizing sales, combined with the further proofe of the richness of the region furnished by the Sierra Nevada and other strikes, has led to great activity—activity that is, it may be added, of the right kind—in as yet little developed neighborhoode of the Comstock. Witness the resurrection of the North Con. Virginia mine and the increased nnmber of mining claims recorded. This latter feature is very noticeable in the Bodie district, where important strikes have recently been made in the Tioga, Spaulding and South Bullion. Not only are new claims being staked out and recorded, but not long after the appearance of new names, there is announced the incorporation of a company, with capital, bearing those same new names coupled with a more business-like aspect than is found in the mere location notices of the proepector. If each new claim gives rise to a new company, and each new company lists its stock in the boards, we soon must have longer hours and perhaps new boards, so full will be the market.

THE Rochester tumbler works recently shipped eleven carloads of tumblers in one week. The works employ 300 hands, who are kept constantly busy.

IT is said that the general business outlook in New Orleans is good notwithstanding the epidemic.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch from Washington. D. C.

WEEK ENDING SEPTEMBER 17TH, 1878.

HOT AIR ORATES—Adna H. Buckhout, Oakland, Cal.
WEEDERS—Kenneth P. Grant, San Buenaventura, Cal.
TENT POLES—Harry C. Cushing, S. F.
UNLOADING NETS—Oscar Marshall, Stockton, Cal.
CAR TRUCKS—Georga Vincent, Stockton, Cal.
TRADEMARKS—Alexandor E. Mintie, San Francisco, Cal., medicinal preparation.

A Library for Inventors.

We have at our patent offices, No. 202 Sansome street, corner Pine, a complete set of Patent Office reports, containing engravings and claims of EVERY PATENT ever issued in the United States.

We have also a complete set of the MONTHLY VOLUMES issued by the Department, with full detailed description and large drawings of all the patents issued since the time when these volumes were first published.

A set of all the LAW BOOKS ON PATENTS is also on our shelves ready for reference. We have also the British Commissioners reports, Canadian Patent Office reports for all British North America, full files of MINING AND SCIENTIFIC PRESS, *Pacific Rural Press*, *Scientific American*, *Scientific American* supplement, *American Artisan* and other American and foreign scientific and mechanical journals, as well as mechanical dictionaries: chemistries, encyclopedias, and other works ol reference.

Inventors and patentees ara WELCOME TO EXAMINE at their leisure any of tha booke in the above eata, and wa shall be glad to give them any assistance in hunting up what they want.

Our library is the most completo of its kind on tbe Pacific Coast in avery raspect, and wa are continually adding to it as occasion damands.

DEWEY & CO.,
Patent Agents and Publishers,
No. 202 Sanaome street, corner Pine, San Francisco.

SAN FRANCISCO, October 2d, 1878.

Mrs. Caroline A. Williams, Sacramento House, corner 3d and Mission Sts., San Francisco. — MADAM: — It is with great pleasure that I now inform you of the complete cure ot a tobacco cancer on my jaw, whieh had troubled me for saveral months, and which was pronounced a very severa case, requiring a surgical operation I tried one bottle of "Aunt Carrie's Salve and Pila Ointment," and immediately after the first application I commanced to feel relisved, until now all pain is gona and no scar ie left. I cheerfully recommend tha "Magic Salve and Pila Ointment to all. Respectfully, G. R. EVANE.

FOR PRINTINO MATERIALS, the publishers of this papa patronize Mardar, Luse & Co., Pacific Type Foundry and Printers' Supply Warehouss, 532 Clay atreat, San Francisco, Cal. Sand them a stamp for specimen aheet, and say advartieed in this paper.

A COMMENDABLE ENTERPRIEE IN SAN JOSE.—Bro. Herring, lata of the *Agriculturist*, has charge of tha Union Frea Reading Room, San Josa. He is andeavoring to eatablish the institution upon an enduring basis for tha benefit of all.

Woodward's Gardens were never more attractive than at present. Besides thres lione already mentioned, six monster living alligators, several iguanas and a boa-constrictor have just been added. New atars are constantly engaged for the Pavilion exercieea. Rates of admission as usual.

EXAMINE the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.94. Lewis C. Grover, President; L Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

METALS.

[WHOLESALE.]
WEDNESDAY M., October 2, 1878.

IRON—		
American Pig, ton	28 00	@30 00
Scotch Pig, ton	28 00	@30 00
White Pig, ton	28 00	@— —
Oregon Pig, ton	—	@— —
Refined Bar	2½	@ 3
Horse Shoes, keg	5 00	@— —
COPPER—		
Sheathing, lb	34	@ 35
Sheathing, Yellow	21	@
Sheathing, Old Yellow	12	@
Composition Nails	24	@—
Composition Bolts	24	@—
STEEL—		
English Cast, lb	13	@ 14
Anderson & Woods, ordinary sizes	15	@— —
Drill	15	@— —
Flat Bar	14	@ 19
Plow Steel	8½	@ 12½
TIN PLATES—		
10x14 I C Charcoal	7 50	@ 8 50
Banca Tin	23	@— 24
Australian	17	@ 17½
ZINC—		
By the Cask	9	@— —
Zinc, Sheet 7x3 ft, 7 to 10, lb	9	@— 10
7x3 ft, 11 to 14	10	@— —
8x4 ft, 8 to 10	11	@— —
8x4 ft, 11 to 10	11	@— —
NAILS—		
Assorted sizes	3 15	@3 25

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, October 2, 3 P. M.

LEGAL TENDERS in S. F., 11 A.M., 99½@99.90. SILVER, 1½@1¾.

GOLD in New York, 100¾

GOLD BARS, 890@910. SILVER BARS, 8@15 ₱ cent. discount.

EXCHANGE on New York, ½%; on London bankers, 49@49¼. Commercial, 50; Paris, five francs ₱ dollar; Mexican dollars, 83@9f.

LONDON Consols, 94 13-15; Bonds, 108¾.

QUICKSILVER in S. F., by the flask, ₱ lb, 41@41½c.

GENERAL MERCHANDISE.

[WHOLESALE.]
WEDNESDAY M., October 2, 1878.

BAGS—Jobbing.		
Eng Standard Wheat	—@14½	
Cal. Manufacture		
Hand Sewed, 22x36	14½@—	
24x36	—@—	
23x40	15½@—	
Machine Swd, 22x36	14½@—	
Flour Sacks, halves	10@11	
Quarters	6 @ 7	
Eighths	4½@ 4½	
Hessian, 60 inch	—@—	
45 inch	—@12½	
40 inch	12 @—	
Wool Sacks,		
Hand Sewed, 3½ lb	47½@50	
4 lb do	52½@—	
Machine Sewed	50 @—	
Standard Gunnies	14 @15	
Bean Bags	8 @ 9	
CANDLES.		
Crystal Wax	17 @—	
Eagle	12 @—	
Patent Sperm	30@—	
CANNED GOODS.		
Assorted Pie Fruits,		
2½ lb cans	2 25	@2 50
Table do	3 00	@3 25
Jams and Jellies	3 50	@3 75
Pickles, hf gal	3 25	@ —
Sardines, qr box	67½@1 90	
Hf Boxes	2 50	@2 75
Preserved Beef,		
2 lb. doz	4 00	@ —
do Beef, 4 lb. doz	5 50	@ —
Preserved Mutton,		
2 lb. doz	4 60	@ —
Beef Tongue	5 50	@ —
Preserved Ham,		
2 lb. doz	8 50	@ —
Deviled Ham, 1 lb,		
doz	5 50	@ —
do Ham, ½ lb doz	3 00	@ —
COAL—Jobbing.		
Australian, ton	—	@— —
Coos Bay	8 50	@ 7 00
Bellingham Bay	5 50	@— —
Seattle	6 00	@ 6 50
Cumberland	14 00	@— —
Mt Diablo	4 75	@ 5 00
Lehigh	13 50	@— —
Liverpool	7 50	@ 8 00
West Hartley	10 50	@— —
Scotch	10 50	@— —
Scranton	11 50	@— —
Vancouver Id	7 00	@— —
Charcoal, sack	75	@— —
Coke, bbl	60	@— —
COFFEE.		
Sandwich Id, lb	—	@— —
Costa Rica	17½	@ 17½
Guatemala	17	@ 17½
Java	23	@— 26
Manilla	17	@— 5 50
Ground, in cs	25	@— —
FISH.		
Sac'to Dry Cod	5	@ 5½
do in cases	5	@ 5½
Eastern Cod	7	@— 7½
Salmon, bbls	8 00	@ 9 00
Hf bbls	5 00	@ 5 50
1 lb cans	1 45	@ 1 30
Pkld Cod, bbls	22 00	@— —
Hf bbls	11 00	@— —
Mackerel, No. 1,		
Hf Bbls	10 00	@10 50
In Kits	1 80	@ 1 90
Ex Mess	3 25	@— —
Pkld Herring, bx	3 00	@ 3 50
Boston Smkd H'g	70	@— —
LIME, Etc.		
Lime, Sta Cruz,		
bbl	1 25	@ 1 50
Cement, Rosendale	2 00	@ 2 25
Portland	4 00	@— —
Plaster, Golden Gate Mills	3 00	@ 3 25
Land Plaster, in 10 00		@12 50
Ass'ted sizes, keg 2	90	@ 3 00
OILS.		
Pacific Olue Co's		
Neatsfoot, No 1	1 00	@ 90
Castor, No 1	1	10 @ —
do, No 2	1	05 @ —
Baker's A A	1	25 @1 30
Olive, Flagnlol	5	25 @5 75
Possel	4	75 @5 25
Palm, lb	9	@ —
Linseed, Raw, bbl	72	@ —
Boiled	75	@ —
Cocoanut	55	@ —
China nut, ca	70	@ 72½
Sperm	1 40	@ —
Coast Whales	40	@ —
Polar	45	@ —
Lard	90	@1 00
Oleophine	22	@ 22½
Devoe's Brill's	22	@ 23½
Photolite		@ —
Nonpariel	31	@ 32½
Eureka	18	@ 42½
Barrel kerosene	20	@ —
Downer Kar	37½	@ —
Elaine	37½	@ —
PAINTS.		
Pure White Lead	8	@ 8½
Whiting	1½	@ —
Putty	4	@ 5
Chalk	1½	@ —
Paris White	2½	@ —
Ochre	3½	@ —
Venetian Red	3½	@ —
Averill Mixed		
Paint, gal		
White & tints	2 00	@2 40
Green, Blue & Ch Yellow	3 00	@3 50
Light Red	3 00	@3 50
Metallic Roof	1 30	@1 60
RICE.		
China, Mixed, lb	5½	@ —
Hawaiian	7	@ 7½
SALT.		
Cal. Bay, ton	15 00	@22 50
Common	10 00	@12 00
Carmon Id	12 00	@14 00
Liverpool fine	19 00	@— —
SOAP.		
Castile, lb	10	@ 10½
Common brands	4½	@ 6
Fancy brands	7	@ 8
SPICES.		
Cloves, lb	45	@ 50
Cassia	22½	@ 25
Ginger	25	@ 30
Pepper Grain	15	@ 17
Pimento	15	@ 18
Mustard, Cal., ¼ lb glass	1 50	@ —
SUGAR, ETC.		
Cal. Cube, lb	11½	@ —
Powdered	11½	@ —
Fine crushed	11½	@ —
Granulated	11	@ —
Golden O	9¾	@ —
Cal. Syrup, kgs	70	@ —
Hawaiian Mol'sses	25	@ 30
TEA.		
Young Hyson, Moyune, etc	27	@ 3[illegible]
Country pckd Gunpowder & Imperial	50	@ 50
Hyson	30	@ 35
Fooo-Chow O	35	@ —
Japan, 1st quality	40	@ —
2d quality	20	@ 25

Amusements.

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F. LYSTER ..... Acting Manager.
G. R. CHIPMAN ..... Treasurer.

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Tickets to and from Europe by any line for sale at the lowest rates—also to Havana and all West India ports.

CITY OF NEW YORK ..... October 28th, at 12 o'clock, noon, or on arrival of the English Mails, for HONOLULU, AUCKLAND and SYDNEY.
$10 additional is charged for passage in Upper Saloon.

CITY OF PANAMA ..... October 10th
For Victoria, Port Townsend, Seattle and Tacoma, connecting at Tacoma with Northern Pacific Railroad for Portland, Oregon.

Tickets must be purchased before 11 A. M. on day of sailing, at Wharf office.

For freight or passage apply at the office corner First and Brannan streets.

WILLIAMS, BLANCHARD & CO., Agts.

PROMPT AND SUCCESSFUL.—*Messrs. Dewey & Co:*—Gentlemen: Your Circular letter, 12th inst., informing me of successful termination of my application for patent received. Please accept thanks for the prompt and successful manner in which you have managed this business
Yours respectfully, J. H. CAVANAUGH.
Walla Walla, Dec. 24th.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Keystone Quartz Mining Company.—Principal

place of business, San Francisco, California. Location of works, Sierra County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 30th day of August, 1878, an assessment of fifty (50c.) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary at the office of the Company, northwest corner Pine and Sansome streets, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the eighth day of October, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the twenty-eighth day of October, 1878, to pay the delinquent assessmeut, together with costs of advertising and expenses of sale.

LOUIS VESARIA, Sec'y.

Office, northwest corner Pine and Sansome streets, San Francisco, California.

Hackberry Mill and Mining Company.—

The regular annual meeting of the stockholders in the Hackberry Mill and Mining Company, for the election of five Directors to serva during the ensuing year, and for such other business as may properly come before the meeting, will be held at the office of the Company, No. 306 Clay Street, San Francisco, Cal., on Monday, the seventh day of October, 1878, at the hour of 12 o'clock noon.

ED. B. PARTRIDOE, Sec'y.

Orion Mining Company.—Location of Prin-

cipal place of business, San Francisco, California. Location of works, Iowa Hill, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the fifth day of September, 1878, an assessment (No. 3,) of seventy-five (75) cents per share was levied upon the capital stock of the corporation, payable immediately in U. S. gold coin, to the Secretary, at the office of the Company, 28 Sansome Street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the fifth day of November, A. D., 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the 20th day of November, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

P. CONKLIN, Sec'y.

Office, No. 28 Sansoma Street (up stairs), San Francisco, Cal.

Pocaho tas Mining Company.—Location

of principal place of business, 411½ California street, San Francisco, California. Location of Works, El Dorado County, California.

NOTICE.—There are delinquent upon the following described stock on account of assessment (No. 14) levied on the 14th day of August, 1878, the several amounts set opposite tha names of tha respective shareholders, as follows:

Namsa	OLD ISSUE. No. Certificate.	No. Sharaa.	Amount.
Roberts, W G, Trustee	128	100	$450 00
Roberts, W G, Trustea	130	100	450 00
Roberts, W G, Trustee	131	100	450 00
Roberts, W O, Trustee	132	100	450 00
Roberts, W O, Trustee	133	100	450 00
Roberts, W C, Trustea	134	100	450 00
Roberts, W G, Trustee	135	100	450 00
Roberts, W C, Trustee	136	100	450 00
Roberts, W O, Trustee	137	119	535 50
Staples, A, Trustes	100	360	1350 00
	NEW ISSUE.		
Roberts, W C, Truetee	113	17,500	$26,250 00
Kohler & Chase, Trustee	122	89	133 50
Staples, A, Truetee	128	268	399 00
Staples, A, Trustee	125	270	418 50
Staples, A, Trustes	11	100	150 00
Staples, A, Trustee	27	100	150 00
Staples, A, Trustee	23	100	150 00
Staples, A, Trustee	117	50	75 00
Staples, A, Trustes	118	100	150 00

And in accordance with law and an order of tha Board of Directors made on the 14th day of August, 1878, so many shares as may be necessary of each parcel of such stock will be sold at public auction at the office of tho Company, Room 9, 411½ California street, San Francisco, Cal., on Wednesday, the twenty-third day of October, 1878, at the hour of one o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

M. C. SOUTHARD, Sec'y.

Office, Room 9, No. 411½ California street, San Francisco, California.

Summit Mining Company.—Location of

principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the tenth day of September, A. D. 1878, an assessment. (No. 5,) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of said Company, 318 Pine street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the twenty-second day of October, A. D., 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the nineteenth day of November, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK, Sec'y.

Office, Room 5, No. 318 Pine Street San Francisco, Cal.

The California Fruit Growing Association.

—Location of principal place of business, San Francisco, California. Location of property, El Dorado County, California.

Notice is hereby given, that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 9) of three (3) dollars per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, No. 641 Sacramento street, San Francisco, Cal.

Any stock upon which this assesament shall remain unpaid on the 30th day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Monday, the 21st day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

D. A. BROWN, Sec'y.

Office, No. 541 Sacramento street, San Francisco, Cal.

POSTPONEMENT.—At a meeting of the Board of Directors of the California Fruit Growing Association, held September 23d, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till Saturday, the 26th day of October, 1878, and the day of sale of delinquent stock is hereby postponed to Friday, the 22d day of November, 1878. D. A. BROWN, Sec'y.

Office, No. 541 Sacramento street, San Francisco.

IONE VALLEY, Cal., January 20, 1878.

MESSRS. DEWEY & CO.—*Gentlemen:*—I received my patent last night, and was glad to find that you were so prompt in the matter. I am pleased to give you the credit due you for the faithful and honorable manner in which you have discharged your duty in getting my patent. I shall hereafter recommend you to the public as having discharged your duty with honor. Yours, etc.,

W. W. CARLILE.

Iron and Machine Works.

THOS. PENDERGAST. HENRY S. SMITH.

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Marine, Stationary and Portable Boilers, Smoke Stacks, Hydraulic Pipe, Oil or Water Tanks, Ore and Water Buckets, Gasometers, Girders, Bridges and Iron Ship Building.

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Repairing promptly attended to at the lowest possible terms.

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STEAM ENGINES, BOILERS AND ALL

Kinds of Machinery for Mining Purposes.

Flouring Mills', Saw Mills' and Quartz Mills' Machinery constructed, fitted up and repaired.

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ALL STYLES OF FANCY HEAD BOLTS.

HOT AND COLD PRESSED HEXAGONAL AND SQUARE NUTS, WASHERS, BOLT ENDS, TURNBUCKLES, ETC., ETC.

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All kinds of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Bells and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch. ☞PRICES MODERATE.☜

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THOMPSON BROTHERS,

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WIND MILL. One of the best made in this State for sale cheap on easy terms. Address, W. T., care of Dewey & Co., S. F.

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VERTICAL ENGINES,	BABY HOISTS,	STAMPS,
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AUTOMATIC CUT-OFF ENGINES,	ROCK BREAKERS,	SETTLERS,
COMPOUND CONDENSING ENGINES,	SELF-FEEDERS,	RETORTS,
SHAFTING,	PULLEYS,	ETC., ETC.

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Hoisting Engines,

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MANUFACTURERS OF

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Car and Locomotive Axles and Frames, and Hammered Iron of Every Description.

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Marine Engines and Boilers,

Propeller Engines either High Pressure or Compound Stern or Side Wheel Engines.

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Hoisting Engines and Works, Cages, Ore Buckets, Ore Cars, Pumping Engines and Pumps, Water Buckets, Pump Columns, Air Compressors, Air Receivers, Air Pipes.

Mill Machinery.

Batteries for Dry or Wet Crushing, Amalgamating Pans, Settlers, Furnaces, Retorts, Concentrators, Ore Feeders, Rock Breakers, Furnaces for Reducing Ores Water Jackets, Etc.

Sugar Machinery.

Crushing Rolls, Clarifiers, Vacuum Pans, Air Pumps, Concentrators, Bag Filters, Charcoal Filters, Blow-up Tanks, Coolers and Receiving Tanks.

Miscellaneous Machinery.

Flour Mill Machinery, Saw Mill Engines and Boilers, Dredging Machinery, Oil Well Retorts, Powder Mill Machinery, Water Wheels.

Engines and Boilers of all kinds, either for use on Steamboats and made in accordance with the Act of Congress regulating the same, or for use on land. Water Pipe, Pump or Air Column, Fish Tanks for Salmon Canneries of every description.

Boiler repairs promptly attended to and at very moderate rates.

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Manufacturers of

ENGINES, BOILERS, MARINE AND STATIONARY. PUMPING, HOISTING, AND MINING MACHINERY INCLUDING BATTERIES, AMALGAMATING PANS AND SETTLERS, CONCENTRATORS, ORE FEEDERS, CRUSHING ROLLS AND ROCK BREAKERS. ALSO, WATER JACKET SMELTING FURNACES, FOR REDUCING LEAD, SILVER AND COPPER ORES, QUICKSILVER FURNACES, RETORTS AND CONDENSERS, ROASTING AND CHLORIDIZING FURNACES, SUGAR MILL MACHINERY, WATER WHEELS, ETC., ALL OF THE LATEST AND MOST IMPROVED CONSTRUCTION.

Agents for the Allen Engine Governor, Bailey Air Compressor, Howell's Improved White Furnaces, Walker's Compound Steam Pumps, Etc.

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The undersigned, owners of LESCHOT'S PATENT for DIAMOND POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING AND TUNNELING DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

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SWEET Chewing JACKSON'S BEST **NAVY Tobacco**

Awarded *highest prize* at Centennial Exposition for *fine chewing qualities* and *excellence and lasting character of sweetening and flavoring.* The best tobacco ever made. As our blue strip trade-mark is closely imitated on inferior goods, see that *Jackson's Best* is on every plug. Sold by all dealers. Send for sample, free, to C. A. JACKSON & CO., Mfrs., Petersburg, Va.

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Ores worked by any process.

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Special attention paid to Examinations of Mines; plans and reports furnished.

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CHEMICAL APPARATUS AND CHEMICALS, DRUGGISTS' GLASSWARE AND SUNDRIES, Etc.

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We would call the special attention of Assayers, Chemists, Mining Companies, Milling Companies, Prospectors, etc., to our stock of Clay Crucibles, Muffles, Dry Cups, etc., manufactured by the Patent Plumbago Crucible Co., of London, England, for which we have been made *Sole Agents for the Pacific Coast.* Circulars with prices will be sent upon application.

Also, to our large and well adapted stock of

Assayers' Materials & Chemical Apparatus,

Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.

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BORAX AND METALLURGICAL REFINERY.

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NORTH BEACH.) SAN FRANCISCO

Refiners of Borax, Alum, Nitrate of Soda, Saltpetor, Potash, Etc.

Sampling, Assaying or Analyzing of Minerals, small lots of ores bought or worked by any process.

Old Copper Plates bought or worked up. Deposits Bullion run into bars.

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SUMMER RESORT.

Exhiliarating Climate! Grand Scenery!!

☞Persons intending to spend a few weeks in the country during the summer months should stop at the Bridge House, on the South Yuba. Accommodation may be had for a few more boarders by addressing MRS. R. H. CULBERTSON, Emigrant Gap. House only one mile om the station.

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SCIENTIFIC BOOKS.

Catalogue sent free, by mail, on application.

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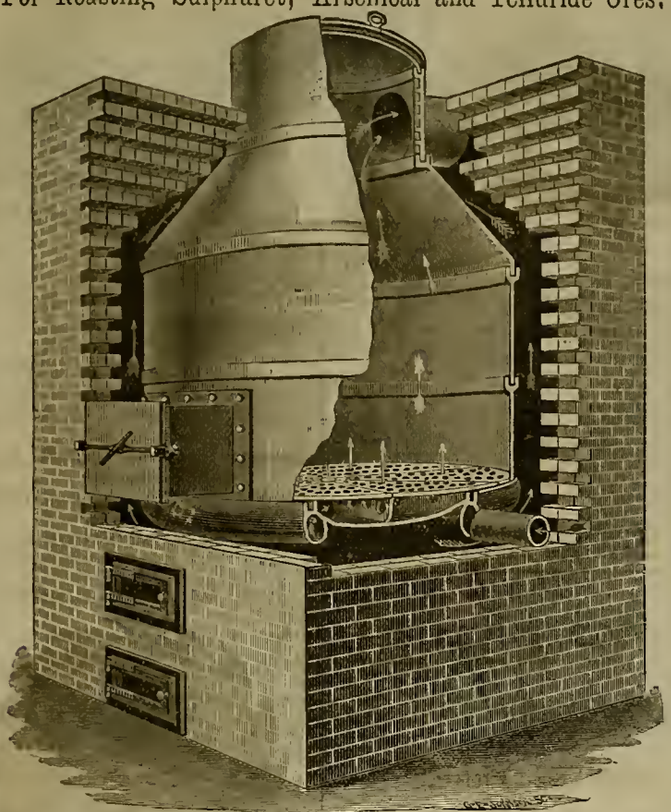
Z. A. WILLARD'S AUTOMATIC FURNACE

For Roasting Sulphuret, Arsenical and Telluride Ores.



The attention of scientific and practical men is called to Z. A. Willard's new method of treating sulphuret ores.

This process has been tried and tested on a large scale in Boston and in Colorado on every variety of ore, including sulphurets of iron, copper, lead and antimony, and arsenical and telluride ores of high and low grade, and in all cases with the most complete success.

The advantages claimed for the Furnace are: Perfect adaptation to the process. Simplicity and ease of construction. Cheapness—caused by shortness of time required in roasting, small amount of fuel needed, dispensing with skilled labor, and by the low cost and durability of the furnaces. Durability—the low heat used not injuring either iron or brick work. Economy of fuel—the amount used not exceeding one cord of wood to ten tons of ore. Economy of labor—no skilled labor, and very little labor of any kind, its automatic action only requiring one man to six furnaces. Perfect nature of roast—by which all the sulphur is burned away, the base metals oxidized and the precious metals set free. Ability, by reason of the perfect nature of the roast, to use chlorination (Plattner's method) for saving the gold in strictly gold ores. No loss by dust or volatilization.

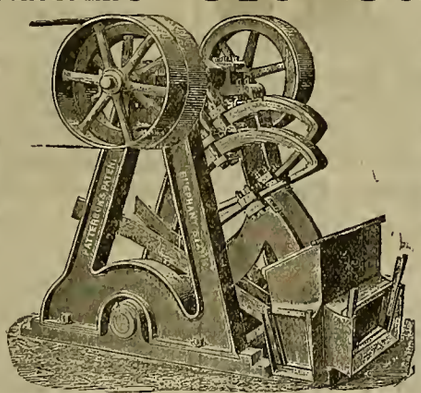
The cheapness and simplicity of this process renders it of vast importance in solving the question of the profitable reduction of low grade refractory ores.

Z. A. WILLARD, Patentee,

No. 1031 Market Street,

SAN FRANCISCO.

Elephant Ore Stamp.



We beg to call your attention to this engraving representing the Elephant Ore Stamp. The advantages claimed for this Stamp are as follows:

CAPABILITIES.—The "Elephant" is capable of crushing as much stuff as a 12-Stamp Battery of the present system, having crushed as high as 1½ tons of tough copper ore in one hour, through a No. 4 punched screen. The undersigned, however, will guarantee 20 tons per day of ordinary quartz through the same size screen.

WEAR.—The "Elephant" having only two pairs, Shoe and Dies, the wear in this instance is equal to one-sixth of a 12-Stamp Battery. There being no Cam Tappets, Cam Shafts or Guides, the consequent wear on these parts is done away with; the leather thorough-brace, uniting the lever with the spring, would only require replacing at most, once a year.

POWER.—The "Elephant" only requires a seven horse-power engine to drive it, where a 12-Stamp Battery would require from 18 to 20 horse-power.

PORTABILITY.—The entire Battery, including Mortar, will weigh about six tons, thereby causing an immense saving in the way of freight to such places as Arizona, Mexico, Cariboo and Bodie. As no part of the machine weighs more than 1,800 lbs., the handling of the machine is comparatively easy, and in places where it would be necessary to pack the machine on mules, it could be easily made in pieces not to weigh over three hundred pounds.

The above engraving shows the Machine in exactly the position it would be placed in a mine; the reader will therefore see that all wood work is done away with, and that once the Machine is on the ground it will take but a few days to set it up and have it in full working order.

The "Elephant" can be seen working every day from 2 to 4 P. M. at No. 342 Main St, near Harrison, San Francisco For particulars, apply to

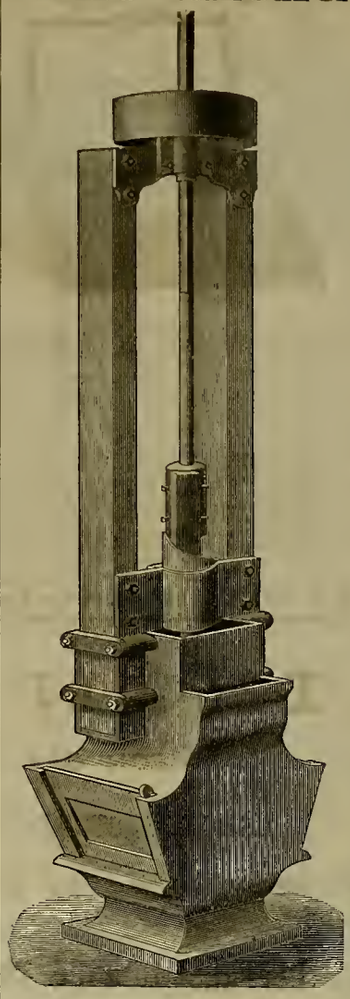
EDMUND WHITE, Care of A. B. Grogan, 705 Sansome St.

GOLD, SILVER AND COPPER MINING, Reducing and Concentration Machinery.

Hoisting Engines, Diamond Pointed Rock Drills. Manufactured by M. C. BULLOCK.

Address, FRASER, CHALMERS & CO., Chicago, Ill.

The Kendall Battery.



STEPHEN KENDALL, Patentee.

This Battery embraces the only genuine improvement that has ever been made in the process of reducing ores. The frame is all secured to the mortar, so that no extra framework is required. The stamp is rotated by a horizontal pulley on the top of the frame, and raised by the cam which is set horizontally on the girt timber. The upper end of the stem is made square, and works up through the pulley. When the stamp falls it crushes and grinds the ore fine by the continual rotary motion. The mortar has three discharge openings, and is adapted to either wet or dry crushing. A mill with an 800-pound stamp will crush five tons of average ore per day, shipping weight, 4,000 lbs., and requires about five horse-power. A 1,600 lb. stamp mill is in process of construction, which will give a capacity equal to any five-stamp mill. Several of them are now in successful operation in various parts of the country. For PROSPECTING PURPOSES this mill has no equal, as it can be set up and moved with such facility and operated at so small an expense. Address for further information,

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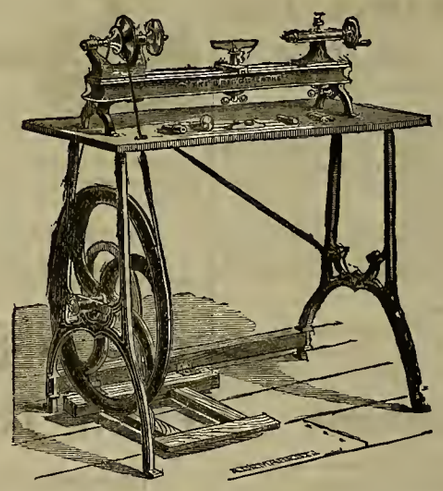

This Lathe will turn a piece of Wood or Metal 12 inches long and 6 inches in diameter.

It can be used with equal advantage for Drilling, Polishing, Sawing, etc. The length of bed is 24 inches; the spindle is made of steel, has a conical bearing, and can be tightened as it wears. The bed, head, tail-stocks and cone pulley are of cast iron and the centers of steel. The following pieces are furnished with the lathe: 2 T rests, 1 face-plate, 2 plain centers, 1 spur center for wood, 1 plain drill-chuck, 1 drill-pad, and 1 center left blank to turn down as a fitting for a universal chuck. The bench weighs 81 pounds, is made of iron, with a black walnut top, and has a driving-wheel measuring 22 inches in diameter, with three grooves for changes of speed.

PRICE OF LATHE, AS ABOVE, $25.

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—AND A—

Reduction in Temperature Below that of any Well Water Possible in the Vicinity.

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Patented December 18th, 1877.

WE CLAIM:

1st.—It holds the bed clothes firmly to the footboard without injuring them in any way. 2d.—If the covering is short, the clamps will hold them in place, when nothing else will. 3d.—Clothing can be adjusted when clamped at the foot as well in the dark as in the light. 4th.—For cribs and children's beds, it has no equal. 5th.—A woman can change clothing and make up three beds quicker and easier than she can make one without it. 6th.—When sheets are not to be changed, the clothes can be adjusted in two minutes. 7th.—Spreading on bedding with footboard turned down is as convenient as laying cloth on a table. 8th.—It hides all inequalities and leaves the bed covering much smoother than it can be made by tucking under. 9th.—The bedding can be thrown back over chairs to ventilate without opening the clamps, and adjusted again as easily as closing a book. 10th.—Turn down the footboard and the bedding can be removed in a body or separately much easier than from other beds.

The Fixtures Can be Applied to any Bed, New or Old.

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CORER AND SLICER.

Letters Patent No. 88,755.

This Machine is durable, easily adjusted and kept in order; does its work complete; slices the fruit of even thickness; so prepared, it dries evenly and quickly, say in 36 hours, thus avoiding a long exposure to the miller or moth producing the worms.

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P. S.—An engraving illustrating this machine will appear soon.

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CHARGES.—ASSAYING, $3; TESTING, $2 per metal.

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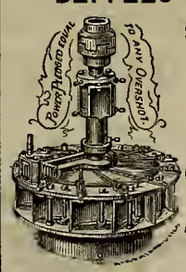

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For further information of the Reading Grant, see my advertisement which appears from time to time in this paper. Address the proprietor on the premises,

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Publishers.

SAN FRANCISCO, SATURDAY, OCTOBER 12, 1878.

VOLUME XXXVII Number 15.

California Mining District, La Plata County, Colorado.

(Written for the PRESS.)

Geographical Position.

This district is situated on the bead waters of the Rio La Plata, in what is known as the "La Plata Mountains"—a partially ieolated epur that projects southwesterly from the great San Juan range, and separated from it by a high plateau—deusely wooded with fir, and quaking asp timbor and underbrush. On this bigh plateau are found the principal sources of tho east fork of the Dolores river, flowing westerly, and of the Hermosa creek, flowing casterly into the Rio Las Animas, one of the principal tributaries of the Rio San Juan. Tho southerly slope of the La Plata mountains is drained by the Rio La Plata, and tho west flank by the Rio Mancos.

By reference to Hayden's drainage map of Colorado, the position and lines of approach to these mountains can be more clearly underetood than hy any description that can be written.

Geographical Features.

The central mass, or core of the La Plata mountain system, consists of Plutonic rocks of the porphyritic types common to tbe San Juan range, such as trachytee and gray feldspathic porphyrius—more or less fissile and friable. A large portion of tbis porphyritic central mass is thoroughly impregnated with iron pyrites, whicb greatly facilitates its disintegration on the exposed surfaces.

The internal forcee tbat produced the upbeaval appear to bave been exerted in a nearly vertical direction, pushing the porphyritic mass up tbrough the sedimentary beds of tbe carboniferous, Triassic, Jurassic and cretaceous ages, and lifting their ruptured edgee up to a high angle on the south and west flanks. On the north and east flanks of upheaval, tbe bedded formations appear to bave been lifted bodily to an elevation of 10,000 to 11,000 feet above tho sea.

Hesperue Peak is the highest point in the La Plata mountains, measuring 13,135 feet above tide water. The general level of tbe tablelands and foothille on the south and west sides ranges from 7,500 to 8,500 feet above the eea. The general outline of this mountain group is an oval, with its longest diameter ranging east and west, about 25 miles, by 15 or 20 miles north and south. The La Plata river has cut a deep canyon from north to south through tbe heart, or central core of the porphyry upbeaval, thus exposing to view the series of bedded structures above enumerated, giving a fine opportunity to study the metamorphic action of the igneous center upon the sedimentary beds in contact with it.

The mouth of the canyon, at the south base of the mountains, is narrow with precipitous eides, except a narrow bench along the west bank of the river. About two miles up the canyon the porphyritic rocks make their appearance in the form of dikes and wedge-like spurs radiating from the central core; also in flat intrusions between the separated beds of metamorpbic shales and sandstones, thus sbowing the manner in which the broken edges of the beds have been lifted apart, and tbe spaces filled with the porphyritic paste by lateral pressure. As the porpbyry is approached, the canyon widens greatly on the west side, forming a crescent-sbaped basin (about six miles long) in the heart of the mountains. This feature is owing to the facts that the central core of porphyry is eofter, and more readily denudcd hy eurface iufluences than tho surrounding metamorphic rocke. By reference to the geological section herewith prescnted, this feature of the canyon will bo readily understood. The section is taken along the west side of the canyon through the center of the basin in a line S. S. W. to N. N. E. At the north end of the basin the river deflects to the nortbeast, while the section line cuts through tbe east flank of Mt. Hesperue.

In tbe engraving *A* represents tracbytic porphyry; *B*, carboniferous beds; *C*, trias, red sandetone; *D*, jura and permanian beds; *E*, cretaceous sbales and sandstone; *F*, lowcr coal measurcs; *G*, upper or great La Plata coal measure; *H*, bouldcr bed. Nearly all the surrounding bigh peaks are capped over with porphyritic dobris, showing that tho igneous core origiually overtopped all tho surrounding country, but owing to its loose texture and the sulphide of iron with which it is so thoroughly impregnated, it has crumbled away more rapidly than the metamorphic rocks, hence the basin now occupies the position where the original mountain overlooked all the neighboring elevations.

GEOLOGICAL SECTION, N. S—THROUGH LA PLATA MOUNTAINS—LOOKING WEST.

The geological section was not taken by actual measurement, but from careful examinations of the different rock formations and estimate of their approximate thickness and relative positions. The order of occurrence as marked in the section is correct. That portion of the section extending south of the La Plata mountains, showing the coal measures, is somewhat shortened, but correct as to tbe order of occurrence of the beds.

The coal bed marked *F* is the lower coal measure of the cretaceous age, and is stratigraphically identical with the "Castle valley" coal measure in Utah. The large coal measure marked *G* in the south end of the section is in the middle zone of the cretaceous beds, and corresponde in character and position witb the "Spring valley" coal fields in Utah. This coal measure is of great economic value to La Plata county and southwestern Colorado. It varies in thickness in the southern portione of La Plata county—from 10 feet up to 50 or 60 feet between the floor and roof. Where the Los Animas river crosses tbe outcrop there is over 40 feet thick of good clean coal that will make excellent coke. It is exceedingly rich in bitumen and gas. Tbe area covered by this great coal measure is estimated at over 600 square miles within the bounds of La Plata county, and ie cut across by the Pinos, Florida, Animas, La Plata and Mancos rivers, thus giving excellent facilities for easy and cbeap exploitation.

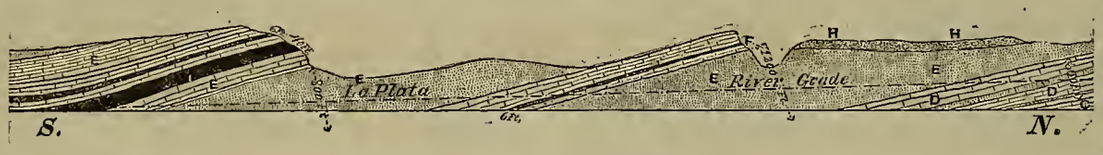
This brief outline description of the physical features and geological formations of La Plata mountains, and the coal measures of the "mesa" country south of them, will give a good general idea of their salient features so far as the rock formations and their relative positions are concerned.

Tbc mines in the La Plata mountains are exceedingly varied in character, both as to structure, and the metals contained in them. Gold, silver, lead, copper, zinc, iron pyrites, tellurium, platina, etc., are fonnd in the croppings of numerous veins and deposits in and near the porphyritic rocke. Some of the best defined veins are found in the metamorphic beds near tbe porpbyry dykes tbat radiate from the central core of the mountain system. Many of tbe lodes are in deep-seated true fissures, and carrying oree rich in gold and silver. There are a few bedded deposits, or rather impregnated beds, of very promising character. Tbeee are confined exclusively to the metamorpbic beds near tbe porphyry dykes, and the flanks of tbe central core of upheaval. As a general rule, however, the veins are small, ranging from six inches to two feet; in a few exceptional cases the veins are larger. A majority of the locations made will not he worth working at present, or at any time in the near future. There are probably a dozen or two of the best locations that will pay to work now, if the proper amount of care and skill is brought to bear upon tbeir development and general management.

The local facilities for working tbese mines are the best that I have seen in any of the numerous mining centers of the San Juan country. They are within a few miles of the "Mesa" country at the southwest base of tbe mountains, where the climate ie mild, timber and water abundant, and the stock range for cattle, sheep, and horses, is not excelled in quality or extent in southweetern Colorado. There is rich farming land enough on the La Plata, Mancos, and Dolores rivere to make sevcral hundred good farms, and a climate unsurpassed for health and purity of air by any part of the globe. These important local advantages ought to insure the early development of the mines in the La Plata mountains. The greatest preeent needs are good roads, cheap transportation, and rapid communication with the great business centers of the country. All these aids will come when tbe great natural resources of La Plata county are eeen and understood by intelligent farmere, enterprising miners and capitalists.

J. E. CLAYTON, Mining Geologist.

La Plata county, Col., Sept 30th.



CONTINUATION OF SECTION SOUTH—SHOWING COAL MEASURES.

Mr. L. C. PARKE, of the firm of Parke & Lacy, agents for tbe Burleigh drills and other mining machinery, 417 Market street, returned this week from a five montbs' tour to Europe. During his trip he visited England, France, Austria, Italy, Switzerland, etc., and spent a couple of weeks at tbe Paris exhibition. The trip was made solely for pleasure, but he bad an opportunity of comparing at different places, especially at the exposition, the European mining machinery with that manufactured in this country, and says there is nothing they have that we want. In the matter of rock drills particularly, their machinery is clumsy and cumbersome in the extreme. Mr. Parke looks well and hearty after his vacation from business.

The Mines and the Courts.

In the Nineteentb District court, in the suit brougbt by Hugh J. O'Reilley against J. C. Flood and the bonanza firm, to rccover $150,000 for sale of his interest in the Wbite & Murphy mine to tbe defeudants, tbe proceedings were euddenly concluded by Judge Wheeler granting a nonsuit on the ground that O'Reilley had been Superintendent of tbe Wbite & Murphy company, and had bought tbe mining claim witb the White & Murphy money, and taken a deed of the claim in his own name; that by the evidence, the statement of O'Reilley to tbe contrary notwithstanding, it was fully shown by letters and accounts of O'Reilley witb the defendants, which were produced in evidence, that the Consolidated Virginia company was grantee of the White & Murphy company, and that O'Reilley was bound to convey to tbe Coneolidated Virginia company, witbout any cousideration, and therefore his claim to recover from Flood & O'Brien $150,000 as a consideration for conveying the claim to tbe Consolidated Virginia company under an agrcement with Flood, could not be sustained, because such agreement was without consideration, it being the duty of O'Reilley under the agreement to convey tbe claim to the Con. Virginia company witbout heing paid therefor.

In the Eleventh District court, Judge Williams rendered a decieion in the case of the Lincoln mining company vs. Antoine Vessalovicb et als. This case involved tbe ownership to some mineral ground in the bed of Sutter creek, within the limits of tbe town site of Sutter. The Lincoln company claimed the ground by reason of a title under the town site, wbicb deed was given hy T. M. Pawling, tbe County Judge, in 1871, and had heen used by the company for several yeare as a place for the deposit of tailings, but never worked as a placer mine. In 1870, the defendant, Vessalovich, put up two notices, claiming 2,000 feet of the ground, whicb claim was duly recorded, but from tbat time up to 1877, he was prevented from working the claim in consequence of a dam erected by tbe Amador mining company, known as the Badger dam, which obetruction he had no authority to remove, until in 1877 he purchased the said dam from the Amador mining company. The pointe at issue in the euit were whether title under the town site would hold good against claims located prior to the granting of the town site, and whether the fact that defendants bad failed to perform tbe work required by law upon their claim was an abandonment of their rights under the circumstances. The judge decided in favor of the defendants. As the decision is of considerable importance to other localities in this county, we summarize the main points covered by it as follows: 1. That the act of Congress granting town sites exempts from the grant all placer claims located prior to the purchase of the town site. 2. That placer claims located subsequent to the town site are uot good againat parties claiming under the town site. 3. That the mining customs of the district provide for the holding of a claim without work, so long as an obstruction existed; so that although the claim was located in 1870, and remained unworked until 1877 by reason of an obstruction, the mining laws sustained the right of the parties to the claim.—*Amador Ledger.*

THE San Jose M. M. and D. Co. have increased their capital stock from $250,000 to $500,000, divided into 100,000 shares of $5 each.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—EDS.

Eureka Mine, Fresno County.

EDITORS PRESS:—Having seen a small article in your paper regarding the Eureka mine near Pine city, located hy Baker, Lingo & Co., I, the discoverer, take pleasure in sending you a few facts in regard to farther developments of the mine. We ran an open cut that tapped the vein at a depth of 15 feet on the foot wall, ran tbrough the vein 10 feet, and found no banging wall. We took out 16 tons of ore, average assay, $141.35 in silver. It was splendid smelting ore, requiring no other metals to work it. We have also located water right and timher for smelter. There is an ahundance of both water and timher.. Considering the facilities for working the ore, and the showing on top, we have one of the hest prospects I ever have seen. I send you a small piece of ore and will send you a better specimen soon. The hoys are now at work on a tuunel to tap tbe veiu at a depth of 90 feet. Respectfully yours,

J. S. LINGO.

Coarse Gold, Fresno Co., Sept. 25, 1878.

Yosemite Ramblings.

F. C. S., has handed us journal notes on a trip to Yosemite. A party of four started from San Francisco with their own team and "camped it" np to the hig valley. Tbey went from Oakland down the hay, through Pacheco pass, across the "hot and dry plains" of the San Joaquin, and via. the Mariposa road to Yosemite. They stopped on the way to take a look at the hig trees. Reaching the valley they camped temporarily at Bridal Veil meadows, but finally located more permanently at the north end "under Union point." It seems that, making this camp headquarters, the party made numerous little excursions ahout the valley, visiting all points of interest and climbing to any eminence that promised a good view.

"As it is said that the tour around the Yoemite valley can he made on the summits of the mountains, it was proposed by a friend that we should try to accomplish the feat. It was agreed that we should start from Inspiration point, travel as far as possible, and at the expiration of four days return to the valley proper." We gather from the notes that this little expedition was not a complete success. Tbe adventurers lost their way, made at least one complete circle of wasted travel, were forced to throw away much of their "pack," and when they returned to the valley were tired and torn.

Utilization of Bittern on the Pacific Coast.

Tbe following is an abstract from an article prepared by Mr. F. W. Morse, of Chico, Butte county, at the University of California. It is based upon an analysis made hy him of bittern from a salt works on San Francisco hay. It is of interest to both practical and scientific men. As will be seen, it opens the question of the further development of an old, if not the establishment of an altogether new industry on our coast:

The subject of bittern being eo closely connected with that of salt, it seems surprising that all of its constituents and properties were not known and studied hy chemists long before it did receive their attention. The most ancient records in history have frequeut references to salt and its various uses. Frequent theories were advanced as to its constitution and chemical properties. Altbough earliest history has recorded its uses and properties, yet in no case does it give the manner of its production, or the source from whence it came. The earliest mention of producing salt from sea water was ahout the time of the Conquest, when a detailed account of the methods of its production was given.

Hazling island and the Firth of Forth have long been noted for tbeir production of salt from sea water. The inhahitants of all countries living near the seasbore have some means of extracting tbe salt from the water.

The methods of procuring it vary with the surrounding circumstances. As the sea is the source of salt for the inhabitants of the sea coast, so the inhahitants of the interior have a corresponding source, from which they derive tbsir supply. The evaporation of old inland seas has formed immense beds of salt, and are now being mined by tbe inhabitants of the inland towns.

These salt beds being the insoluble constituents of the ancient seas would, hy the study of tbeir products, show to the chemist of what the original seas were composed. More recently these have become a subject of thoughtful study, and careful analyses have been made of their products. It was in these salt beds that the first attempt was made to utilize the waste products, hence the first study of hittern. The cost of producing the salt was considerable, as it was mostly concentrated hy artificial evaporation. The salt was first redissolved and then recrystallized, leaving tbe more soluble salts hehind. All the products less soluble than salt are deposited with it, and the remaining liquor is what is generally called "hittern" or "mother liquor." Bittern, therefore, is the residue left after the salt has heen taken from the mixed products of the old salt heds; or it is the liquor left after salt has heen extracted from sea water. It is a transparent liquid, of a slightly yellowish color, with a specific gravity of 1.2791.

From the various analyses of sea water one can, by making use of the degreee of solubility of the different salts it contains, almost determine the salts which form thé bittern. All the soluble salts are still in solution, and all those salts which have reached the point of their solubility bave heen deposited and exist as impurities of the salt. It may not be out of place to give an outline of the changes which the water uudergoes in passing from the sea to tbe condition in wbich we find it.

Varying temperatures and other causes would, of course, complicate the changes and make it too complex to he treated in detail here. The following, taken from a work on the production of salt from sea water, is a connected view of the more apparent changes.

The average density of the sea water as it enters the ponds for solar evaporation is ahout 1.025. As the evaporation continues the density constantly increases. When the solution attains a specific gravity of 1.143, the least limit for the solubility of calcium sulphate is reached, and that immediately begins to deposit, as a white crystalline layer, on the hottom of the ponds. This may continne until all the Ca SO⁴ has been deposited, or until the eolution has reached a density of 1.21. Up to the density of 1.286 the evaporation takes place in the open air, the salt heing deposited nearly pure hetween the densities of 1.21 and 1.286. The liquor I analyzed was drawn off the soil before it reached a density of 1.286. The evaporation could be continued further without injury to the salt and yet be quite profitable to the produeers, as the salt is deposited quite pure until the solution has reached a density of 1.2992, and may he deposited, although not pure, when at a density of 1.32. From a specific gravity of 1.286 the evaporation becomes more difficult and must he conducted over clayey soil and where great surfaces and shallow depth of liquid can be exposed to the heat of the sun.

Solar evaporation continues until the liquor reaches a density of 1.321, heyond which the salt becomes mixed with too much magnesium salts to be of usc as common salt. The further changes will be taken up when speaking of the commercial importance of hittern.

From the above we see that all the sulphate of calcium would have been deposited before reaching the specific gravity of the hittern in band. The presence of the large amount of chlorides of magnesium and sodium would also make it impossible for sulphate of calcium to remain in the eolution, as a solution coutaining 22% to 23% of these chlorides cannot contain a trace of that salt. The analysis gives no trace of it in the bittern, but a good test for its presence was found in the original salt.

By the usual processes of qualitative analysis, the following constituents were found. potassium, sodium, irou, magnesium, aluminium, chlorine, bromine, sulphuric and phosphoric acids, organic matter and water. Bromine, aluminium and phosphoric acid were in such small quantitics that it was almost impossihle to determine their amounts, it requiring, in the case of aluminium, a large quantity of bittern to get even a test for its presence.

Some of the details of the analysis are here given. The specific gravity of the hittern was found to bc 1.27913. The following interesting remarks are made about the test for iodine: "In the course of the qualitative analysis, a careful search for iodine was made, hut in no case was there the slightest trace discoverable. Its wide distribution in sea water would lead one to expect that at least a trace of it could he found in hittern. Many of its salts hring quite eoluble, it would remain iu solution even after the liquid had reached a density greater than 1.2791. Moreover the presence of the large amouut of chlorides would also tend greatly to increase the soluhility of the salts of the iodine. However, if the iodine existed, as it usually does in the ocean, as an iodate of calcium, it may possihly have been deposited with the salt."

Regarding the organic matter, he says: "It would be quite impossible to determine the exact organic compounds which form the organic matter. The greater part is probably the result of decomposition of vegetation near the ponds. Crenic and acrylic acids have heen found in sea water and may form a very small part of the organic matter in this case.

"The iron present may be considered as only a trace. Iron seldom, if ever, exists in sea water. It is supposed by some chemists that a small amount of sesquioxide does exist, but in determinahly small quantities. In this hittern it was prohably taken up from the soil on which the salt was deposited."

The result of the quantitative analysis was as follows:

Magnesiuu	6.210%
Chlorine	19.124%
Sulphuric acid	2.553%
Potassiuu	1.437%
Sodium	.924%
Ferric oxide	.017%
Organic matter	1.356%
Water	68.379%
Total	100.000%

Traces only of aluminium, bromine and phosphoric acid.

The manner in which these elements are combined to form the salts of the bittern is quite uncertain. Considering the affinities of the elements and the order in which the prohahle combinations would naturally be deposited if subjected to evaporation from a saturated solution, I bave concluded that tbe elements above enumerated are combined as follows in the bittern:

Chloride of sodium (common salt)	2.35 %
Chloride of potassium	2.741%
Chloride of magnesium	21.935%
Sulphate of magnesium	3.400%
Ferric oxide	.017%
Other matter	1.356%
Water	68.379%
Total	100.178%

The commercial importance of hittern has hut recently become known. Formerly the liquor was immediately returned to the sea after the salt was crystallized out, the salt being considered the only element of iuportance. The ease with which the salts of potassium and magnesium are now extracted, makes it a very profitahle husiness to he carried on in connection with tbe regular salt trade. A firm on the Mediterranean sea was the first salt company which made use of tbese salts.

They have since made it quite a subject of study to adopt means of working all these secondary products, uutil now, they use all the sodium, potassium, magnesium, chlorine and sulphuric acid.

The water they use, at a density of 30°, contains only 16.6 chloride of magnesium, 4.6 chlorido of sodium, and two sulphate of magnesium to 100 parts of water.

By this means a very small amount of potassium and magnesium existing in the sea water can he extracted with profit, as the water must first he concentrated to obtain the salt. To make the work successful the climate must he adapted to the particular purpose. The difference in temperature hetween day and night must be enough to allow the sulphate of magnesium to he deposited at night and the salt during the day. The following ie a synopsis of the method pursued by the Mediterraneau salt works: It may he divided into three parts according to the product sought. 1st. Is a mixture of sulphate of magnesium and chloride of sodium. 2d. A douhle sulphate of potassium and magnesium. 3d. A douhle chloride of potassium and magnesium. At the point of saturation of these double salts they are deposited almost pure.

The first product yields sodium and magnesium, simply hy redissolving and allowing the sulphate of sodium to crystallize at a low temperature, the sulphate of magnesium remaining in solution. The secoud product consisting of double sulphates of potassium and magnesium, are separated in a similar manner, it heing only necessary to dissolve the crystal of the double sulphates in hot water and allow the different salts to crystallize out while cooling.

Various other methods of separation may be adopted; one known as Le Blanco's process ie often used when it is desired to use the potassium in the manufacture of carbonate of potassium.

After the double salt is separated from the bittern, the further working depends eutirely upon the salt we wish to manufacture from it.

The third product is probahly of the most importance. Consisting entirely of double chlorides, it is only necessary to change them into simple chlorides, and hy the action of a moist atmosphere the chloride of magnesium absorhs moisture and runs off, leaving the chloride of potassium almost pure. Or they may be separated hy resolution and recrystallization. The chloride of potassium being deposited pure when the evaporation is not carried so far tbat the double chlorides are deposited. By repeating the process all the chloride of potassium may be eeparated, leaving pure chloride of magnesium. From this pure chloride of magnesium, maguesium compounds and hydrochloricacis is manufactured. Even the bromides in the sea water can be saved by proper treatment with sulphuric acid and hinoxide of manganese.

To determine whether the bittern under consideration will ever be of any commercial importance, we must consider all the natural advantages of the situation, the means of disposing of the products, and see if there is sufficient of the salts to warrant an investment of this kind.

The analysis shows a very large proportion of chloride of magnesium, which, hy the proper treatmeut, could easily be separated from the bittern as a third product, and would he quite free from the other impurities.

From this chloride hydrochloric acid and magnesium compounds could be ohtained hy the usual method of treatment. It contaius fully as large quantities of the important constituents as that worked from the Mediterranean sea. Its density is somewhat greater than that already worked at the Mediterranean sea, hut the per cent. of chloride of magnesium is correspondingly greater. It contains chloride of potassium in considerable quantities, while the other has no notice of it at all. It also has a much larger proportion of sulphate of magnesium.

As far as the products iufluence its commercial value, it certainly would pay, as it is richer than the hittern we compared it with, and yet that is worked with profit. When we tako into consideration the natural advantages of the situation, it hecomes a much more complex problem. Its disadvantages may he so great that it will never be of much importance.

The Atlantic and Pacific Forests.—No. 6.

[By PROF. ASA GRAY.]

But now other and more theoretical questions come to be asked, such as these:

Why should our Pacific forest region, which is rich and in some respects unique in coniferous, be so poor in deciduous trees?

Then the two hig trees, Sequoias, as isolated in character as in location—being found only in California, and having no near relatives anywhere—how came California to have them?

Such relatives as the Sequoias have are also local, peculiar, and chiefly of one species to each genus. Only one of them is American, and that solely Eastern, the Taxodum of our Atlantic States and the plateau of Mexico. The others are Japanese and Chinese.

Why should trees of six related genera, which will all thrive in Europe, he restricted naturally, one to the Eastern side of the American continent, one genus to the Western side and very locally, the rest to a small portion of the Eastern horder of Asia?

Why should coniferous trees most affect and preserve tbe greatest numher of types in these parts of the world?

And why should the Northeast Asian region have, in a comparatively small area, not only most coniferous trees, hut a notably larger number of trees altogether than any other part of the northern temperate zone? Why should its only and near rival he iu the antipodes, namely, here in Atlantic North America? In other words why should the Pacific and the European forests be so poor in comparison, and why the Pacific poorest of all in deciduous, yet rich in coniferous trees?

The first step toward an explanation of the superior richness in trees of these antipodal regions, is to note some striking similarities of the two, and especially the number of peculiar types which they divide hetween them. The ultimate conclusion may at length be ventured, that this richness is normal, and that what we really have to explain is the absence of so many forms from Europe on the one hand, from Oregon and California on the other. Let me recall to mind the list of kinds (*i. e.*, genera) of trees which eurich our Atlantic forest but are wanting to that of the Pacific. Now almost all these recur, in more or less similar hut not identical species, in Japan, North China, etc. Some of them are likewise European, hut more are not so. Extending the comparison to shrubs aud herhs, it more and more appears, that the forms and types which we count as peculiar to our Atlantic region, when we compare them, as we first naturally do, with Europe and with our West, have their close counterparts in Japan and North China; some in identical species (especially among the herbs), often in strikingly similar ones, not rarely as sole species of peculiar genera or in related generic types. I was a very young botanist when I began to notice this; and I have from time to time made lists of such inetances. Evidences of this remarkable relationship have multiplied year after year, until what was long a wonder has come to be so common that I should now not be greatly surprised if a Sarracenian or a Dionæa, or their like, should turn up in Eastern Asia. Very few of such isolated types remain without counterparts. It is as if nature, when she had enough species of a genus to go round, dealt them fairly, one at least to each quarter of our zone; hut when she had only two of some peculiar kind gave one to us and the other to Japan, Manchuria, or the Himalayas; when she had only one, divided these hetween the two partnere on the opposite side of the table. The result, as to the trees, is sees in these four diagrams. As to number of species generally, it cannot be said that Europe and Pacific North America are at all in arreare. But as to trees, either the contrasted regions have been exceptionally favored, or these have been hardly dealt with. There is, as I have intimated, some reason to adopt the latter alternative.

We may take it for granted that the indigenous plants of any country, particularly the trees, have been selected by climate. Whatever other influences or circumstances have been brought to hear upon them, or the trees have brought to hear on each other, no tree could hold its place as a member of any forest or flora which is not adapted to endure even the extremes of the climate of the region or station. But the character of the climate will not explain the remarkably paucity of the trees which compose the indigenous European forest. That is proved by experiments, sufficiently prolonged in certain cases to justify the inference. Probably there is no tree of the northern temperate zone which will not flourish in some part of Europe. Great Britian alone can grow double or treble the numher of trees that the Atlantic States can. In all the latter we can grow hardly one tree of the Pacific coast. England supports all of them, and all our Atlantic trees also, and likewise the Japanese and North Siheriau species, which do tbrive here remarkably in some part of the Atlantic coast, especially the cooler-temperate ones. The poverty of the European sylva is attrihntable to the absenco of our Atlantic American types, to its having no magnolia, liriodendron, asimina, negundo, no æsculus, noue of that rich assemhlage of legu-

Continued on page 230.

MECHANICAL PROGRESS.

Bar Iron Direct from the Ore.

We have made mention before of a direct process for making bar iron direct from the ore as invented by Du Pay, and we learn from the *American Manufacturer* that favorable progress is being made with the process. The following is an outline of the process: Iron ore, carbonaceous matter and a very little fluxing material in the proper proportions are ground and mixed together wet, to the consistency of mortar, under heavy chilled iron wheels. A large pan will hold 1,000 pounds of ore, and the whole mixture will be completely ground in twenty minutes, by two men who first pass the large lumps of ore through a Blake crusher. The mixture is then shoveled into annular sheet iron cases (No. 26), which may have neither tops nor bottoms. They are placed close together on a truck, and remain there for a few hours, when they become compact and solid. The truck, holding enough of these cases for a charge, is brought in a convenient position to slide them on to a broad "peal," and, one by one, in a few minutes the operator places the whole charge into the furnace. He then has nothing to do except to regulate his fire and damper until the ore is well reduced to metallic iron. He then piles two or more together, and withdraws them to the squeezer, or he may work them off separately. After thus being compressed into a well-made bloom they are passed through the rolls without reheating, and come out smooth muck bar, five or six inches wide and three-fourth inch thick. In place of squeezing, the lump of metal, if preferred, may be forged under the hammer. Being quickly made into a bloom, either by hammer or squeezer, by throwing them again into the furnace, the waste heat they then receive, gives, at a low cost, a high quality of reheated iron.

An English Tribute to American Inventors.

The great English "opinion maker," the London *Times*, in its review of our exhibits at the Paris exposition, pays the following tribute to American inventive genius: The activity and insight of the American inventive genius develops more that is new and practical in mechanism than all Europe combined. The New Englander invents normally; his brain has a bias that way. His mechanizes as an old Gresk sculptured, as the Venetian painted, or the modern Italian sang. A school has grown up whose dominant quality, curiously intense, wide spread and daring, is mechanical imagination. It is not the professed mechanic or ironmaster who invents, any more than the schoolmaster or the farmer. As Tintoretto left his dyeing to become a great painter, the American, be he bank clerk, pedagogue, backwoodsman or plowman, turns in his busy brain some problem of his own, suggested by his experience of ill or too slowly done work, and like Archimedes in his bath, he suddenly finds it and rushes away with his "Eureka" to some place where he can make his model or get it made—more frequently the former for want of funds to get it made. There was a want the man had felt, an ideal to be worked out, and in his meditation suddenly the thing flashed on him, and is complete in all its essential parts from that moment.

EXPORTS OF AMERICAN WINDMILLS.—We read that the exports of windmills from Eastern manufactories are quite large. A portion of the cargo of a bark which lately loaded at New York for New Zealand consisted of 50 large windmills, ordered by parties in New Zealand, and chiefly for raising water on stock farms, where the wells are sometimes 200 feet deep. They are required to supply tanks at the railroad stations, and for various agricultural purposes. Cuba and South America are both good export markets for this sort of machinery, windpower being in growing favor on the sugar estates of Cuba to pump molasses, and windmills are occasionally used for similar purposes in the sugar warehouses at Havana and Cardenas. English windmills are made after the old Dutch fashion, with broad fans, and the general construction is heavy.

BESSEMER GAINS A POINT ON SIEMENS.—The English correspondent of the *American Manufacturer* announces the abandonment by Mr. Siemens of the manufacture of Siemens-Martin rails, apparently on account of the great cheapening of Bessemer. Bessemer rails are said to be being delivered at port of lading at the unprecedented low price of £5 13s 6d, and forebodings are expressed that the steel rail makers will yet find a way of still further depreciating the cost of their product. Siemens-Martin steel is about to be used for sheets for the use of the tin plate makers, and it appears to be only a question of time now when Bessemer and Siemens-Martin steel shall be so cheap that they will take the place of wrought iron for almost every purpose.

AN IMPROVEMENT IN SOLDERING IRONS.—A novel soldering iron, the invention of M. Paquelin, was recently described before the Academy of Sciences, Paris. Its distinctive feature is a platinum receptacle, in which heat is instantaneously generated with air and petroleum vapor or air and coal gas.

Mechanical Piracy.

In its letters from the Paris exposition, *Iron* has the following statements: Some of the American exhibitors have been complaining of wholesale piracy on the part of Swedish and other manufacturers, and in some cases the castings of American machines have been used right in the sand, the copyists not even effacing the pattern maker's numbers, etc. There is a reaper made by Adriance, Platt & Co., which is thus copied by a Swedish and by a Canadian firm, the copies being exhibited in competition with the original. Messrs. Fay & Co. say that a British firm has thus copied their wood-working machinery. There is one thing to say, in this connection, that any machine with castings copied directly from American models will be dangerously weak, as the marked superiority of the American cast-iron enables machines to be built there much lighter than is safe to copy with inferior metal.

But the worst case of "cheek" that has yet come to view is that of the "K. K. Privilegirte Hombeker und Marienthaler Eisenwaaren Industrie und Handels Actiengesellschaft," of Moravia, in Olmuz. This "imperially and royally privileged" establishment shows, in the Austrian annex, padlocks suspiciously American in model and finish, their duplicates being exhibited in the United States section by Mallory & Wheeler. Close inspection shows that these are not merely copies of this firm's American locks, but are really *made* by the Connecticut firm referred to, bearings the private numberings of that house's catalogue, and numberless little unmistakable "ear marks" not so perceptible to the uninitiated.

HEATING ANOTHER CITY BY STEAM.—Engineer Holly's plan for distributing steam heat through a city by means of pipes just as gas and water is distributed, is gaining ground at the East. The gas company at Springfield, Mass., has advanced so far with the application of the method that a formal petition was presented and readily granted by the city council for leave to run the necessary pipes through Elm street from the gas works and across Main street to Sanford street. Alderman George Dwight, Superintendent of the gas company, said that if this experiment is a success, the company will hereafter ask the city for leave to go through other streets for the purpose of heating houses by steam. The pipes will be laid directly beside the gas pipes. The company propose to try the experiment this fall, to satisfy themselves of its feasibility, and if it succeeds, as they doubt not it will, it cannot fail of being a benefit to the community, and one that there will be a loud call to have carried out still further.

FRENCH MINTAGE SINCE 1795.—The authorities of the French mint have drawn up a statement of its operations from 1795 to the end of 1877. The year 1795 was chosen to start with, as it was in that year that the first coins on the decimal system were struck. From 1795 to 1876 the collective value of the gold coinage was as follows: 100-fr. pieces, 44,346,400 fr.; 50-fr. pieces, 46,568,700 fr.; 40-fr. pieces, 204,432,360 fr.; 20-fr. pieces, 6,708,899,520 fr.; 10-fr. pieces, 1,013,641,610 fr.; 5-fr. pieces, 233,440,130 fr. Of gold coins, only 20-fr. pieces were struck in 1877, their value being 255,181,140 fr.; their number 12,759,057. The total number of franc pieces issued was 193,000,000; of half-franc pieces 89,000,000. The collective value of the silver money coined from 1795 to 1876 was 5 milliards 510 millions of francs. The collective value of the bronze coins issued, comprising 10 centimes, 5 centimes, 2 centimes, and 1 centime is 62,702,785 fr. 40 c.

CARBON BRONZE.—The *Iron Age* speaks highly of the carbon bronze introduced by a Pittsburg manufacturer. Its basis is copper, but from this metal various substances should be eliminated in order to insure its purity. For the past five years it has been fairly tested, and has proved all that its inventor has ever claimed for it. As proof of permanence and stability attention is called to a set of bearings of this material which have been in constant use for the past four years and a half in Lucy furnace coke car No. 9. Carbon bronze costs but little more per pound than ordinary rod brass, and is from three to five times more durable. It is therefore at least 50% cheaper than an other metal now in use for journal bearings.

LUMINOUS WATCH DIALS.—We read in an exchange that a notable improvement in watches is reported from Chaux de Fonds, Switzerland. By a peculiar process the figures on the dial are rendered luminous, so that if exposed once during the day to the sunlight they remain phosphorescent and visible throughout the night. Preparations are being made for the production of these watches on a large scale.

AN ARCHITECT NOT A MECHANIC.—It has recently been decided in a Pennsylvania court that an architect cannot obtain a mechanic's lien on a building as security for professional services in preparing plans and specifications, although he may do so for such a portion of his services as properly falls under the head of building superintendent in examining materials and supervising the actual work of construction.

A SMALL THING IN ENGINES.—A Meriden watchmaker has made a steam engine weighing only fifteen grains. The works are of silver, and three drops of water are enough to keep them in motion twenty minutes.

SCIENTIFIC PROGRESS.

How the Siberian Mammoths were Entrapped.

At the meeting of the British association Mr. Howarth read a paper on the difficulties surrounding the extinction of these huge elephants in Siberia. One of the theories hitherto propounded to account for its sudden disappearance, he said, was that it lived in the central parts of Central Asia, and that the carcasses were floated down the large rivers in that territory to the sites where the remains were now found. The examination of the stomach, however, showed that the mammoth lived on larch or birch trees growing at the verge of woods, near which the remains of the animals were found, and their position showed that they had not wandered far when they were entombed. After looking at the problem from every side, he had come to the conclusion that there had been a sudden and violent change of climate in Siberia, which had frozen the previously soft ground, and had also preserved the mammoth as in a huge meat safe. Although the mammoth had even originally lived in the place where he was now found, it was impossible that he could live there now, owing to the absence in that part of the food which would be necessary to sustain him. Such trees as he used to live on were only now found about 500 miles from the spot where his remains were discovered. The natural corollary that followed from this theory was, that something similar must be postulated with regard to other regions. The conditions in which the elephant was found in Siberia were precisely similar to those in which it was found in the northwestern part of Russian America, and precisely the same as those in the Great lakes, where the mammoth itself was found, and it could not, therefore, be doubted that the mammoth lived in Europe and America with the same food and surroundings as it did in Siberia.

THE MOUNTING OF LORD ROSSE'S NEW REFLECTOR.—At the late meeting of the British Association, Lord Rosse gave a short explanation of the peculiarities of an equatorial mounting recently erected at Parsonstown, showing the points in which it differed from the ordinary type of mounting. The optical arrangements were exactly the same as in ordinary cases. The old mounting at Parsonstown, being made of wood, fell into decay, and be resolved to replace it by metal, and mount the instrument equatorially. The leading peculiarities of this mounting were, that the points of reversal were situated at the east and west, instead of at the north and south. The bearings on which the instrument turned in right ascension were smaller than in the ordinary mountings. The motions in declination and in right ascension were effected by means of screws, so that on a windy night the instrument could not run away with the observer. The tube was square. The clock was connected by means of a stretched strap of brass, and the gallery was quite unique. The counterpoise was less than usual. The only reflector of a similar size mounted equatorially was that constructed by Mr. Grubb, for the Melbourne government, but its drawback was that, just as the observer had moved it to the very best position for observation—namely, the south—it had to be reversed and every connection altered. The gallery was also worked by means of screws, so that there was no danger of the observer coming down quicker than be wished. The cage was independent of the mounting, moving on a circular rail, and with a second motion like that of a derrick crane. The mounting was only suitable for a reflecting telescope.

NEW MERCURY ASSAY.—Prof. F. W. Clarke, of the University of Cincinnati, has extended the electrolytic method of estimation, so successfully introduced of late years for assaying copper, to mercury also. According to the *Iron Age*, a solution of mercuric chloride, slightly acidulated with sulphuric acid, was placed in a platinum dish connected with the zinc pole of a six-bell Bunsen's bichromate battery. The wire from the carbon pole terminated in a thin slip of platinum foil, which dipped into the solution. At first mercurous chloride was precipitated, but this by degrees was reduced to the metallic state, so that after an hour or so there remained in the dish a clean mass of mercury, covered by a solution in which ammonia failed to produce the slightest turbidity. When this clear acid solution was poured off the mercury became covered with a thin tarnished film. This annoyance could be avoided very easily by removing the liquor with a pipette and replacing it repeatedly by clean water, care being taken not to disconnect the platinum dish from the mercury.

PULKOVA OBSERVATORY.—*Nature* says that Prof. Struve, director of the Pulkova observatory, is leaving Russia for a visit to Western Europe, for the purpose of giving directions for the construction of a new great refractor for the Pulkova observatory. The old refractor, which some time ago was one of the best in the world, is now behind those of Washington, Chicago and Gatcsbead (Mr. Newall's observatory), and the Pulkova observatory, according to the will of its founder, the Emperor Nicholas, should be maintained superior to all other observatories in that direction.

A NEW INTERPRETATION OF SCHLIEMANN'S DISCOVERIES.—An English antiquary in the last *Athenæum* suggests that the bodies found at Mycenæ, instead of being the actual form and feature of Homeric heroes, once belonged to some of the barbaric Gothic chiefs who overran Greece in the Christian era, and he brings a long array of reasons: 1. The style of ornamentation of many of the gold objects belongs to the north. 2. The layers of pebbles under and over the bodies are another northern feature. 3. The sword hilt lying across the loins, according to barbaric custom, and not on the right shoulder, as a Greek would have worn it. The absence of greaves and the enormous lengths of the swords, and the fact that one of them had a wooden sheath, are northern peculiarities. 4. The resemblance of the ornamented tombstones to the sculptured stones of Scotland. 5. The shape of the chariot wheels, identical with those sculptured in tombstones from Kivik in Sweden. 6. Obsidian arrow-heads of marked Scandinavian type. 7. Iron keys. 8. The similarity in shape of the gold crowns to the bronze diadems of north Germany. 9. The presence of crystal, not used for ornamentation until late Roman times. 10. Gold signet-rings of a degraded rather than a primitive art. The author's theory is that some Gothic chiefs, slain in the invasions, were buried here with their plundered treasures, as Alaric was buried in the Busento. Some objects would thus be Gothic, and others the plunder of conquered cities. This view accounts for the absence of coins and inscriptions. The undoubted early pottery would be the rubbish disturbed in digging the graves. The theory also accounts satisfactorily for some other anomalous facts.

THE PARIS OBSERVATORY.—The *Independent* gives the following interesting particulars: The Paris National observatory is being reorganized, something on the plan of our own Naval observatory. Leverrier has been succeed by Admiral Mouchez, of the French navy, who has distinguished himself by his coast surveys and his observations of the transit of Venus, on the Island of St. Paul. While he cannot be regarded as at all the peer of his predecessor in purely mathematical and astronomical ability, he will probably be much his superior as an organizer and manager of an establishment—qualities in which Leverrier was seriously deficient. Faye, who was nominated for the position by the Academy of Sciences, declined to be a candidate, leaving the field clear for Monchez, who was nominated by the Bureau of Longitudes. M. Loewy is associated with Monchez as sub-director. He held the same post under Delannay when he was director of the observatory, a few years ago.

OBSERVATIONS ON THE MOON.—Prof. Newcomb has just issued from the Government Press (as an appendix to the "Washington Observations") the first part of his researches upon the motion of the moon, consisting mainly of a discussion and reductions of observations of the moon made previous to 1750. He pays especial attention to a great number of star occultations observed by Heveltius, Cassini, La Hire, and others, which have been hitherto neglected, and rests his conclusions largely upon them, after showing that the observations of the very ancient eclipses, upon which so much has been made to depend, are either of doubtful authority or exactness. Probably the most striking of his results is the reduction of the so-called secular acceleration of the moon from Hansen's value, 12″.2 to 8″.8. A second part is to follow, containing his theoretical investigations of the same subject.

NEW FORMS OF FUNGI—The distinguished micologist, Dr. F. Von Thumen, reports that he has discovered two new forms of fungi which occasion considerable damage among garlic and onion crops. In certain parts of the Old Franconia district of Bavaria he has found the garlic completely destroyed by them, more especially when the weather is at all damp. The more destructive of these fungi is evidently a *Helminthosporium* and has been classed by Dr. Von Thumen as *Helminthosporium vest colosum*.

A POLAR EXPEDITION RETURNING.—Information has been received by Captain Howgate, at the Signal Office, that Captain Tyson, of the schooner *Florence*, of the Howgate Polar Expedition, had reached St. John's, N. F., a week ago. He has been absent fourteen months. All hands were reported well, but it is not announced whether they had done anything about the pole or not.

QUANTITATIVE.—G. Larsen gives the following method for separating copper and zinc by sulphuretcd hydrogen by precipitating one only. He moistens the precipitate of sulphureted hydrogen on the filter with hydrocloric acid of 1.05 specific gravity, through which sulphureted hydrogen has been previously passed. After moistening, the filter is washed with sulphureted hydrogen water.

STANLY FORESTALLED.—There is said to be a terrestrial globe in the Jesuitic library of the Lyons Lyceum, which is 170 years old, containing, in great detail, the curious system of African lakes and rivers, which the English and American travelers have lately rediscovered. The globe has created a great sensation among geographical savants and amateurs.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending Sep. 19.		Week Ending Sep. 26.		Week Ending Oct. 3.		Week Ending Oct. 10.	
Alpha	16	13⅞	20⅛	14½	24½	18	19	15
Alta	19	12½	20	16⅛	17½	15½	18	14½
Andes	90c	75c	2	90c	1.65	80c	1.40	1
Alpa					50c		1	65c
Argenta	2.90	2.05	3½	3	4½	3⅞	5⅞	5
Atlantic								
Aurora Tunnel	2¾	2	3	2½	3	2½	3	2½
Baltimore Con	2	1.95	2½	2	2.05	2	3.50	2
Belcher	12½	9	13⅛	8	13⅜	10⅛	12	8⅞
Belmont	4.85	3.90	4⅝	3⅛	4⅝	3⅝	4	3
Best & Belcher	34½	26	39	30	38	31	32½	24
Bullion	14⅝	11⅛	18½	12⅜	26	16⅜	16⅝	14½
Bechtel	1.30	90c	2	1.40	1.95	1.75	1⅞	1.20
Belle Isle	45c	40c	60c	40c	60c	45c	70c	40c
Bodie	27½	17	26	19	23½	20	23½	20
Benton	10	5⅜	9⅜	8	9⅝	7⅛	9	7⅛
Bulwer	13⅜	11⅛	13	12½	16	12⅜	20	14½
Boyle								
Black Hawk	1	75c	1		75c	60c	75c	50c
Belvidere	2½	1⅜	2	1.80	2	1.60	1⅞	1⅝
Booker	1	75c	1⅛	90c	1	75c	1	90c
Caledonia	4.20	3⅜	6	3.35	6⅜	5⅛	6	4⅛
California	15⅛	11	15⅜	13⅜	15	13⅜	14⅛	13
Challenge	3.80	1.40	2½	1.60	3	2.10	2.50	2
Chollar-Potosi	48	43	68	47½	70	58	61	48
Comanche								
Confidence	10	6	13⅜	9	14	11⅞	13	10
Con Imperial	1.15	1	1.75	1	1.95	1⅞	1.65	1.25
Con Virginia	18	12⅜	17	15⅜	16⅛	15	15	13⅜
Crown Point	10⅜	8⅜	11⅛	9	12⅜	10⅜	11	6⅛
Con Washoe					2½	2	2.15	2
Champion	1⅛	1	1⅛	50c	1½	1	2	1.25
Concordia	60c	40c			20c			
Dayton	40c				50c	30c	50c	40c
DeFrees	40c	25c	50c	20c	30c	25c	30c	25c
Dancy	50c							
Day	75c	50c	70c	45c	60c	45c	55c	40c
Eureka Con	42	40	42	37	46	44	46	44
Exchequer	6⅛	5⅛	8⅜	5⅛	11⅜	7⅜	8⅛	6⅜
Endowment	60c	40c	1.10	40c	1½	1	1⅛	1
Gen Thomas								
Grand Prize	6	5⅛	6	5⅜	6	5⅝	5⅝	5
Gila	30c	25c	30c	25c	50c	40c	55c	40c
Golden Chariot					50c	35c		
Golden Terra	4¼	4	3⅛		3⅛		4	
Goodshaw	90c	80c	1	90c	1	40c	1	80c
Gould & Curry	27	16	24	17⅞	29½	20	22⅝	17⅞
Hale & Norcross	17	13⅛	44	17⅛	38	27	30	21⅛
Hillside	4¾	4	4⅜	4	4⅜	4	5⅛	4⅜
Highbridge	2.15	1⅞	2.05	1.8	2.05	1.80	2.25	1.80
Homestake	10	9	9¼	9	9½	9	9	
Hussey	1	75c	70c	40c	50c	25c	60c	30c
Independent	3⅛	2⅛	4	2.65	3⅝	3	3⅛	3⅛
Julia	7	5⅛	7⅛	5⅞	6⅞	6⅛	6⅞	5⅞
Justice	11⅛	9⅛	12	9⅛	12	10	11⅝	9
Jackson	11⅞	7⅞	16⅛	9	15	12	14	11
Joe Sates								
K K Con								
Kentuck	9	7	10	7	11	8	9⅛	6⅛
Kossuth	75c	25c	80c	25c	45c	30c	35c	30c
Keystone	7⅛	6	7		7	6⅛		
Lady Bryan	5⅛	3⅛	5	4⅛	5	1.20	3¾	3
Lady Wash	1⅝	3	3⅜	2.90	4	3	3⅜	2⅛
Leopard	1.80	1.60	2	1	1½	1.20	1.30	1
Leviathan	1.55	60c	1⅞	70c	1.70	1.40	1.50	1
Lecta	1.20	1	2.10	1.20	2⅜	1½	1.75	1.50
Lee	75c	50c	1	75c	60c	40c	75c	
May Belle							1	
Modoc	60c	50c	45c	10c	40c	30c	50c	15c
Manhattan	7⅛	7	6⅛	6	6⅛	6	6	5⅛
Martin White	7⅛	6⅞	7	6⅞	8	7	8	8
McClinton	1	70c	1.05	75c	90c	75c	80c	30c
Meadow Valley	40c		40c	20c	50c	40c	35c	20c
Mexican	60⅛	55	96⅛	62½	99	76½	82½	67
Mides			2¼		1½	1	2	87½c
Morning Star	5	4	6	4⅛	8	6	6	4⅛
North Con Virginia	17	7⅜	13⅛	6⅛	11	7⅛	9⅛	8
New York	3	1.03⅛	2¼	1.70	2.40	2	2¼	1½
Northern Belle	11	9⅛	10⅛	9⅛	11	10⅛	10⅛	10
New Coso	40c	30c	30c					
Navajo	1.45	1.20	1⅝	1⅛	1.60	1.45	1.50	1.10
Occidental	1.20	1	60c				1½	1
Ophir	61	49	85	62	87	66	65	53
Oriental	2⅜	1⅛	2¼	1⅛	2.60	1.30	2	1⅛
Overman	19½	15	27	18	26½	22	27	21
Panther								
Phenix	3	2¼	6	3⅜	5¼	4⅛	6	5
Phil Sheridan	3⅛	2.60	2⅜	2¼	2¾	2¼	2¾	2
Prospect				30c	25c	85c	75c	60c
Raymond & Ely		5	6	4⅛	9	6	6⅜	5⅜
Richer	2½	2	1⅛	90c	2.10	1⅛	6	2
Rock Island	40c	25c						
Rye Patch			1	75c				
Rough & Ready	3	2	3⅛	2½	3½	2.35	3¼	3
Savage	23	16	27	19	29	23⅜	23⅛	18
Seg Belcher	48	35	43⅛	35	44	37	38	30
Sierra Nevada	182	160	211	195	281	215	241	190
Silver Hill	3⅞	2⅛	3⅜	3	4	3⅛	3.75	2.90
Silver King			17	15	20	12	18	16⅜
Silver Prize	15c		15c	10c	10c		10c	5c
Succor	2.60	1.70	2	1.90	2¼	2	2	1.80
Summit	3	2⅛	2	1⅞	2	1.65	2	1⅞
Scorpion	20	8	12⅛	5⅛	13	10	9⅛	6⅛
Solid Silver	5⅛	4.70	4	3	3	2	2.10	1.90
South Bodie	1	50c	1	75c	85c	70c	90c	75c
South Standard	85c	40c	90c	60c	75c	50c	55c	50c
Star	1	90c	1	75c	90c	75c	75c	
St. Louis	80c	70c	75c	60c	1	70c	1	80c
Syndicate	2		2⅛	2	2		2⅛	2
Tioga Con	3	1⅛	4⅛	3⅛	3.90	2.70	3⅛	2
Tiptop	1⅛	80c	2	1.30	3⅞	1⅛	1.75	1.50
Trojan	65c	40c	65c	50c	60c	40c	45c	35c
Union Con	115	102	157	102	193	148	187	160
Utah	52	40	58	44	56	41	43	35
Vermont Con	15⅛	14⅛	20	15⅛	12	10	9⅛	9
Ward	1.80	1	1⅞		1⅞	1.60	1.40	1.75	1.25
Wells-Fargo	75c	35c	60c	4 c	60c	50c	40c	20c
Woodville	65c	50c	65c	50c	90c	60c	70c	60c
White Cloud								
Yellow Jacket	2⅝	2⅛	30	24	33	28	34⅜	28

Sales at S. F. Stock Exchange.

Friday A. M., Oct. 4.

1040 Alta.....15¾@14⅜
1490 Alpha.....12¼@11⅝
1130 Best & Belcher...28@29½
2650 Bullion.....15@16
1660 Belcher.....8¾@9
2345 Con Virginia.....14@15
1310 California.....14@14⅜
565 Chollar.....52@18
1390 Crown Point.....9@8¾
8810 Con Imperial...1¼@1.40
1955 Caledonia.....5¼@4⅝
455 Confidence.....10¼@10
903 Exchequer.....8@8½
2430 Gould & Curry...18¾@17⅛
1680 Hale & Nor.....23@21⅝
1865 Justice.....9¼@9
2195 Juha.....5⅝@6⅛
590 Kentuck.....8¾@8
2115 Lady Bryan.....3¼@3⅜
3200 Mexican.....70¼@67
1625 Overman.....23@21
1325 Ophir.....53@56
810 Sierra Nevada...200@215
1835 Savage.....19@18
2145 Union Con.....160@183
235 Utah.....40@37
1890 Yellow Jacket.....23@28

AFTERNOON SESSION.

1415 Argenta.....5⅛@5
325 Aurora T.....2½@2⅜
830 Andes.....1.40@1.15
590 Benton.....7⅛@7⅛
600 Bechtel.....1¼@1⅜
475 Bodie.....20
190 Belmont.....3¼@3⅛
190 Belmont.....14⅞@14⅝
4030 Belle Isle.....70@65c
300 Black Hawk.....50c
50 Belvidere.....1⅛
50 Baltimore Con.....2
595 Challenge.....2½@2.40
250 Champion.....1½@1⅝
450 Chieftain.....25@20c
50 C Pacific.....2.60
250 Cou Dorado.....50@60c
610 Con Washoe.....2.15
200 Star.....75c
620 S Bodie.....75@80c
80 St Louis.....90c
1050 Silver Hill.....3.60@3
925 Solid Silver.....2.10
560 Sitting Bull.....1¼@1⅛
15 Syndicate.....2
120 Vermont Con.....9½@9
950 Woodville.....70c@60c
255 Ward.....1¼@1.40
1320 Wells-Fargo.....40@30c

Saturday A. M., Oct. 5.

355 Alpha.....19@18
1220 Alta.....17@17½
420 Argenta.....5½@5⅜
265 Alps.....65@60
2320 Bullion.....16¼@16⅜
1055 Best & Belcher...32@31¾
1755 Belcher.....10¾@12
220 Belmont.....3¾@3.20
850 Con Virginia.....15½@15⅝
730 California.....14@13⅞
775 Confidence.....12¾@13
365 Chollar.....57@59
875 Crown Point.....10@10
935 Caledonia.....5¼@5⅜
10940 Con Imperial...1.40@1.60
640 Challenge.....2½@2.10
400 Dayton.....40c
600 DeFrees.....30@25c
1315 Exchequer.....7¾@8
330 Endowment.....1.45@1
160 Eureka Con.....45½@44
1005 Gould & Curry.....22¼@22
130 Grand Prize.....5¼@5
1300 Hussey.....40@30c
2480 H & Norcross.....30@29
320 Independence.....3@3
955 Justice.....10¼@9⅝
1030 Julia.....6⅝@5
295 Jackson.....13@14
700 Kentuck.....9@9⅛
725 L Bryan.....3¼@3⅜
400 Leopard.....1.20@1.30
1405 Mexican.....80½@82½
305 Manhattan.....6@5¾
1340 Navajo.....1.40@1⅛
50 Northern Belle.....10¼
850 Ophir.....62½@64
1200 Overman.....27
20 Phenix.....5@6
120 Raymond & E.....6
1030 Savage.....21¼@22½
200 Succor.....2
855 Sierra Nevada...31½@22⅝
830 Silver Hill.....3½@3.70
300 Silver Prize.....10c
250 Tuscarora.....10c
890 Union Con.....175@172
330 Utah.....43@41
1520 Yellow Jacket...33@34½

Monday A. M., Oct. 7.

220 Alta.....17@16⅞
300 Alpha.....17¾@18½
1650 Bullion.....15¾@16
710 Best & Belcher...23¼@31
330 Belcher.....10½@10
875 California.....13¾@13
2225 Con Virginia.....15@14¾
155 Chollar.....59@58½
1295 Crown Point.....10¼@10⅝
2555 Con Imperial...1.60@1.40
575 Confidence.....12½@11⅞
1110 Caledonia.....5½@6
870 Exchequer.....8@8½
1015 Gould & Curry.....20@19½
1790 Hale & Nor.....28½@23½
325 Justice.....9¾@10
540 Julia.....6@6¾
300 Kentuck.....9@9½
610 Lady Bryan.....3¼@3
2750 Mexican.....78@79
945 Ophir.....55@58
420 Overman.....26@24
1080 Savage.....21½@22
350 Silver Hill.....3.60@3
430 Sierra Nevada....225@220
180 Succor.....1.80@2
165 Utah.....41@42
1890 Union Con.....180@187
1635 Yellow Jacket.....34@33

AFTERNOON SESSION.

940 Andes.....1.10@1.40
735 Argenta.....5@5¼
800 Alps.....80@75c
575 Aurora T.....2
395 Bodie.....22@22½
585 Bulwer.....15
630 Bechtel.....1¾@1⅞
150 Belvidere.....1½@1¼
200 Black Hawk.....75c
1050 Booker.....60c
485 Belmont.....3¼@3
3850 Belle Isle.....70@60c
850 Benton.....9@8½
500 Brilliant.....1.10
1200 Blue Jacket.....2@2.10
3345 Champion.....1.80@2.50
200 Chieftain.....20c
1100 Coso Con.....25c
1000 Con Washoe.....2
1270 Day.....50@55c
650 DeFrees.....30@25c
1000 Eureka Con.....7
1000 E Grand Prize.....20c
320 Eureka Con.....46@44½
1120 Endowment.....1¼@1.05
450 Grand Prize.....5¾@5
1040 Gila.....40@50c
620 Goodshaw.....90c
1850 Hussey.....40@45c
1540 Hillside.....4¼@5
1725 Highbridge.....2@1.80
33 Hamburg.....9
100 Homestead.....3
1595 Independence.....3¼@3¾
200 Ida.....50c
930 Jefferson.....2
330 Jackson.....12@13
120 Julia.....30@30c
990 Leeds.....11@11½
655 Leopard.....1¼@1.20
650 Leviathan.....1.40@1.30
50 Lee.....75c
200 Monumental.....15c
440 Morning Star.....1½
225 Modoc.....30@50c
220 Manhattan.....6
30 Mono.....6
395 Martin White.....8
200 McClinton.....75@70c
200 Mides.....2
245 Northern Belle...10¼@10½
140 North Con Vir.....9¾@8
2690 N Bonanza.....90c@1
2600 N Sierra Nevada.40@50c
200 Ophir.....11
2020 Navajo.....1¼@1¼
500 Orleans.....3
1955 Oriental.....2@1¾
1300 Paradise.....3½
500 Plutus.....2@1.10
1100 Phenix.....50c@55
300 Raymond & Ely.....6
350 Rustler.....1
1310 Richer.....5½@6
500 Raquiza.....3
100 Staudard.....37½
175 Sovereign.....9½@10
1000 Silver Prize.....10c
390 Solid Silver.....1.90
1225 Summit.....1½@2
880 S Bodie.....60@90c
1310 Sitting Bull.....1¼@1.15
950 S Standard.....50c
900 Star.....75c
25 Silver King.....16
1500 Sta Mina.....50c
1000 St Louis.....90@80c
1185 Tiptop.....1.40@1.60
300 Trojan.....45@40c
200 Tuscarora.....5@10c
1375 Tioga Con.....2¼@2
100 Vermont Con.....9
950 Wells-Fargo.....35@25c
500 Ward.....1¼@1⅛

Tuesday A. M., Oct. 8.

100 Andes.....1.10
1340 Alpha.....17¾@17
1140 Alta.....18@16½
520 Best & Belcher...29¼@30
1485 Belcher.....11@10⅜
1710 Bullion.....16¼@16⅝
510 Benton.....8¾@8⅜
1000 Blue Jacket.....2
815 Confidence.....12¾@13
220 Challenge.....2¼@2
1445 Exchequer.....8¼@8
610 Con Virginia.....15¾@14⅝
2115 Con Imperial...1.40@1.45
870 Caledonia.....5¾@5⅝
790 Crown Point.....11@10⅝
130 Chollar.....61
1325 Confidence.....12¾@13
220 Challenge.....2¼@2
1225 Gould & Curry.....21@21
1360 Hale & Nor.....27¾@28
915 Justice.....10¾@11
955 Julia.....6¾@7
310 Kentuck.....8¾@9
1220 Lady Bryan.....3¼@3⅜
60 Lady Wash.....3
100 Leviathan.....1½
1065 Mexican.....81¾@80
150 N Sierra Nevada.....50c
70 North Con Vir.....9
1000 New York.....2¼@2⅛
915 Justice.....10¾@11
310 Kentuck.....8¾@9
1220 Lady Bryan.....3¼@3⅜
60 Lady Wash.....3
100 Leviathan.....1½
1065 Mexican.....81¾@80
150 N Sierra Nevada.....50c
70 North Con Vir.....9
1000 New York.....2¼@2⅛
20 Phil Sheridan.....2¼
195 Sierra Nevada...215@210
100 Succor.....2
435 Silver Hill.....3½@3⅝
500 Senator.....1
340 Savage.....23@22
60 Scorpion.....3
300 Sitting Bull.....1¼
200 Trojan.....40c
1080 Utah.....40@42
50 Vermont Con.....9¼
340 Ward.....1.40@1.30
50 Woodville.....70c
1000 Wells-Fargo.....25@20c
1440 Yellow Jacket...34½@33

AFTERNOON SESSION.

1470 Argenta.....5¾@5
405 Aurora T.....2@2.05
370 Alta.....80@90c
760 Belmont.....3@3¼
215 Bechtel.....1¼
500 Black Hawk.....75@65c
210 Bulwer.....15¾@16
665 Bodie.....22¼@22½
145 Belvidere.....1½
875 Belle Isle.....50@65c
420 C Pacific.....60@70c
390 Champion.....2
600 Coso Con.....25@26
700 Chieftain.....25@20c
700 DeFrees.....30@25c
750 Day.....50@40c
100 Delmonte.....7
335 Eureka Con.....45½@45
2200 Endowment.....1.05@1
590 Gila.....45@50c
125 Grand Prize.....5
3625 Goodshaw.....90c@1
260 Hillside.....5
35 Highbridge.....2@1.95
1850 Hussey.....60c@40c
1075 Independence.....3@3⅛
300 Jefferson.....2
220 Jackson.....12
320 Leopard.....1¼@1.20
505 Leeds.....11
270 Mt White.....8¼@8
795 Monumental.....5½@5¾
50 Meadow Valley.....35c
250 Manhattan.....5½
150 Modoc.....25c
350 Northern Belle...10¼@10
1170 Navajo.....1¼@1.40
420 Oriental.....1.90@1.95
2850 Paradise.....3¼@4
205 Raymond & Ely.....6¼@6
550 Riquiza.....2
250 Richer.....2
1050 Rustler.....1½@1⅝
300 Jefferson.....2
220 Jackson.....12
320 Leopard.....1¼@1.20
505 Leeds.....11
270 Mt White.....8¼@8
795 Monumental.....5½@5¾
50 Meadow Valley.....35c
250 Manhattan.....5½
150 Modoc.....25c
350 Northern Belle...10¼@10
1170 Navajo.....1¼@1.40
420 Oriental.....1.90@1.95
2850 Paradise.....3¼@4
205 Raymond & Ely.....6¼@6
550 Riquiza.....2
250 Richer.....2
1050 Rustler.....1½@1⅝
3625 Goodshaw.....90c@1
260 Hillside.....5
35 Highbridge.....2@1.95
1850 Hussey.....60c@40c
1075 Independence.....3@3⅛
300 Jefferson.....2
220 Jackson.....12
320 Leopard.....1¼@1.20
505 Leeds.....11
270 Mt White.....8¼@8
795 Monumental.....5½@5¾
50 Meadow Valley.....35c
250 Manhattan.....5½
150 Modoc.....25c
350 Northern Belle...10¼@10
1170 Navajo.....1¼@1.40
420 Oriental.....1.90@1.95
2850 Paradise.....3¼@4
205 Raymond & Ely.....6¼@6
550 Riquiza.....2
250 Richer.....2
1050 Rustler.....1½@1⅝

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in Mining and Scientific Press and other S. F. Journals

ASSESSMENTS—STOCKS ON THE LISTS OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt. Sale.	Secretary.	Place of Business
Andes S M Co	Nevada	11	25 Oct I	Nov 8	Nov 30	M Landers 309 Montgomery st
Argenta M Co	Nevada	3	25 Sept 7	Oct 11	Nov 1	R H Brown 327 Pine st
Belcher S M Co	Nevada	16	1 00 Oct 8	Nov 12	Dec 3	J Crockett 203 Bush st
Crown Point G & S M Co	Nevada	35	1 00 Sept 13	Oct 23	Nov 13	James Newlands 203 Bush st
Chollar Potosi M Co	Nevada	15	5 00 Sept 5	Oct 8	Oct 29	W E Dean 203 Bush st
Con Imperial M Co	Nevada	7	20 Sept 12	Oct 17	Nov 7	W E Dean 203 Bush st
Caledonia S M Co	Nevada	24	50 Sept 16	Oct 21	Nov 11	R Wegener 414 California st
Day S M Co	Nevada	2	25 Sept 19	Oct 22	Nov 18	J W Few 310 Pine st
Endowment M Co	Nevada	1	50 Aug 23	Sept 30	Oct 21	R H Brown 327 Pine st
Europa M Co	Nevada	7	06 Sept 26	Oct 28	Nov 25	J L Fields 240 Montgomery st
Gila Con M Co	Arizona	2	03 Aug 8	Sept 28	Oct 15	P B Pettigrew 419 California st
Gila S M Co	Nevada	2	25 Aug 27	Oct 3	Oct 24	Wm W Parrish 323 Montgomery st
Hussey Con G & S M Co	Nevada	6	25 Oct 1	Nov 5	Nov 27	R H Brown 327 Pine st
Julia Con M Co	Nevada	6	1 00 Sept 6	Oct 11	Oct 30	A Noel 419 California st
K K Con M Co	Nevada		1 00 Sept 13	Oct 16	Nov,7	B B Minor 309 Montgomery st
Overman S M Co	Nevada	42	3 00 Sept 5	Oct 10	Oct 30	G D Edwards 414 California st
Ophir S M Co	Nevada	33	1 00 Sept 10	Oct 15	Nov 4	C L McCoy 203 Bush st
Panther M Co	Nevada	9	10 Sept 12	Oct 17	Nov 7	J W Few 310 Pine st
Savage M Co	Nevada	19	1 00 Sept 6	Oct 8	Oct 28	E B Holmes 309 Montgomery st
Wells Fargo M Co	Nevada	11	50 Sept 11	Oct 14	Oct 31	W M Hehman 309 California st
Yellow Jacket S M Co	Nevada	31	1 00 Sept 12	Oct 15	Nov 1a	James Newlands 203 Bush st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Arizona-Utah G & S M Co	Arizona	03	Sept 20	Nov 9	Dec 14	O H Spencer 408 California st
Armand G & S M Co	California	1	25 Sept 24	Nov 4	Dec 2	J L Fields 240 Montgomery st
Carmelo Bay C M Co	California	1	10 Sept 24	Nov 2	Nov 21	A M Crane 636 Washington st
California W Co	California	20	10 Aug 13	Sept 24	Oct 15	G P Thurston 315 California st
Cal & Arizona M Co	Arizona	3	05 Aug 26	Sept 30	Oct 18	T E Jewell 507 Montgomery st
Champion M Co	California	2	10 Aug 26	Sept 27	Oct 22	F X Simon 525 Commercial st
Eagle S M & M Co	Nevada	10	13 Sept 6	Oct 15	Nov 5	R H Brown 327 Pine st
Equitable T & M Co	Utah	18	05 Aug 29	Oct 3	Oct 22	C S Healy 45 Merchant's Ex
Echo G & S M Co	Nevada	I	02 Aug 21	Sept 26	Oct 18	T C Winchell 302 Montgomery st
Gover M & M Co	California	37	50 Aug 9	Sept 23	Oct 21	W O Wilson 402 Front st
Golden Gate Con H M Co	California	3	50 Sept 16	Oct 18	Nov 8	J T McGeoghehan 318 Pine st
Hackberry M & M Co	California	2	10 Sept 24	Nov 11	Nov 11	E B Partridge 306 Clay st
Modock Con M Co	Nevada	6	60 Sept 18	Oct 21	Nov 11	J W Few 310 Pine st
Mono G M Co	California	1	50 Aug 28	Oct 21	Oct 23	W H Lent 309 Montgomery st
McClellan Con G & S M Co	Nevada	2	25 Aug 5	Oct 3	Oct 19	Otto Metchke 328 Montgomery st
Moore's Flat B G M Co	California	8	25 Oct 7	Nov 11	Nov 30	J M Buffington 309 California st
New Basel G M Co	California		05 Sept 24	Nov 4	Nov 18	D F LeGaye 610 Merchant st
North Carson S M Co	Nevada	7	15 Sept 27	Oct 30	Nov 15	J W Morgan 318 Pine st
Nevada Gravel M Co	California	3	05 Sept 4	Oct 7	Oct 25	J Pentecost 511 California st
Orion M Co	California	3	75 Sept 5	Nov 5	Nov 20	P Conklin 28 Sansome st
Original Gold Hill G & S M Co	Nevada	7	20 Sept 21	Oct 23	Nov 9	W M Helman 309 California st
St Louis M Co	Nevada	1	15 Sept 26	Oct 31	Nov 20	W E Dean 203 Bush st
Silver Hill M Co	Nevada	4	50 Sept 30	Nov 1	Nov 25	W E Dean 203 Bush st
Summit G & S M Co	California	1	10 Sept 18	Oct 21	Nov 9	P A Eakins 223 Kearny st
Richer M Co	California	1	50 Aug 28	Sept 30	Oct 22	W H Lent 309 Montgomery st
Summit M Co	California	5	05 Sept 10	Oct 22	Nov 19	J W Clark 318 Pine st
Selby Hill M Co	California	1	10 Sept 10	Oct 30	Nov 16	H A Whiting 211 Sansome st
S F Sulphur M Co	Nevada		10 Sept 8	Oct 15	Nov 12	F P McLaren 310 Pine st
S F Petroleum Co	California	4	30 Oct 5	Nov 12	Dec 5	Wendell Easton 22 Montgomery st
Ward G & S M Co	Nevada	2	30 Sept 13	Oct 18	Nov 5	Jacob Stadtfeld, Jr 419 California st

MEETINGS TO BE HELD.

Name of Company.	Location.	Secretary.	Office in S. F.	Meeting.	Date
Belle Isle M Co	California	R H Brown	20 S. F. Stock Ex	Annual	Oct 15
Commonwealth Con M Co		C A Morse	217 Sansome st	Annual	Oct 23
De Frees M & M Co	Nevada	E Atkinson	310 Pine st	Annual	Oct 21
Echo G & S M Co		T C Winchell	302 Montgomery st	Annual	Oct 22
Eureka Con M Co	Nevada	W W Traylor	37 Nevada Block	Annual	Oct 21
Exchequer M Co		Joseph Gruss	418 California st	Annual	Oct 21
Gen Lee S M Co		E Atkinson	310 Pine st	Annual	Oct 19
Independent & Onega M Co		Jacob Stadtfeld	419 California st	Special	Oct 24
Juniata Cou S M Co		A Baird	312 California st	Special	Oct 14
Monte Christo S M Co		Leander Leavitt	309 Montgomery st	Special	Nov 5
Monte Christo S M Co		Leander Leavitt	309 Montgomery st	Annual	Nov 5
N Carson S M Co	Nevada	J W Morgan	318 Pine st	Annual	Oct 21
N Modoc Con S M Co	California	Edw Bennison	18 Merchants' Ex	——	Oct 18
Oroville Gravel M Co	California	P D Auh		Annual	Oct 16
Plutus G & S M Co		E A Peck	418 California st	Annual	Oct 21
Real Del Monte M Co	California	A Baird	312 California st	Annual	Oct 15
Sierra Nevada S M Co	Washoe	W W Stetson	309 Montgomery st	Special	Nov 4
Silver West Con M Co		F R Bunker	606 Montgomery st	Annual	Oct 15
Seventy-six S M Co		B S Kellogg	306 Pine st	Annual	Oct 16
Spring Valley M & S Co	California	Richard Abbey	402 Front st	——	Oct 31
Shawnuit G Q M Co		J S Bacon	316 California st	Annual	Oct 24

LATEST DIVIDENDS—WITHIN THREE MONTHS

Name of Company.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Bodie G M Co	California	W H Lent	327 Pine st	2 00	Oct 14
Bodie G M Co	California	W H Lent	309 Montgomery st	3 00	Sept 14
Bodie G M Co	California	W M Lent	309 Montgomery st	5 00	Aug 31
Bodie G M Co	California	Wm M Lent	309 Montgomery st	3 00	Aug 14
California M Co	Washoe	C P Gordon	Nevada Block	1 00	Aug 15
Eureka Con M Co	Nevada	W W Traylor	37 Nevada Block	3 00	Sept 20
Eureka Con M Co	Nevada	W W Traylor	37 Nevada Block	3 00	Aug 20
Excelsior W & M Co	California	Geo P Thurston	315 California st	50	July 15
Excelsior W & M Co	California	G P Thurston	315 California st		Sept 16
Excelsior W & M Co		Geo P Thurston	315 California st		Aug 15
Eureka Con M Co	Nev	W W Traylor	309 Montgomery st	3 00	July 20
Independence M Co	Nevada	R H Brown	327 Pine st	25	Sept 20
Independence M Co	Nevada	R H Brown		25	July 20
Independence M Co	Nevada	R H Brown	327 Pine st	25	Aug 20
New York Hill G & S M Co		F J Herrmann	418 Kearny st	25	Sept 30
Napa Con M Co	California	W W Parrish	Safe Deposit Building	10	Aug 15
Silver King M Co	Arizona	W H Boothe	320 California st	50	Sept 10
Standard G M Co	Cal	W Willis	309 Montgomery st	1 00	Aug 12
Standard G M Co	California	W Willis	309 Montgomery st	1 00	Sept 12
Standard G M Co	California	W Willis	309 Montgomery st	1 00	Oct 12

470 Meadow Valley...20@25c	240 Rustler.....1¼@1	440 Ward.....1.60@1.65	250 Woodville.....65@60c
685 Mono.....5¼@4⅞	735 Solid Silver.....2	840 Yellow Jacket ..33¾@34½	990 Yellow Jacket...32½@32½
100 Morning Star.....4½	800 S Bodie.....90@85c	**AFTERNOON SESSION.**	
30 McClinton.....30c	350 Summit.....1¾	950 Aurora T.....2¾@3	420 Alps.....90c@1
350 Monumental.....50c@50c	570 St Louis.....80c@90c	1840 Argenta.....4¾@5	1540 Argenta.....5@5¼
220 N Con Virginia...8¼@8	210 Scorpion.....7	450 Belmont.....3½@4	950 Aurora T.....3
100 Northern Belle...10¼@10	50 Star.....75c	245 Belvidere.....1.40	200 Atlantic.....75c
900 Navajo.....1.10@1.15	1100 Silver Prize.....5c	170 Black Hawk.....75c@50c	1015 Bulwer.....18@17
385 North Sierra Nev.50@40c	400 Sitting

800	Silver Prize	10c	$15
300	Syndicate	2	360
80	Sitting Bull	1½	600
1500	Santa Mina	60c	450
1060	St Louis	90c	110
1150	Star	75@70c	100
100	Trojan	35c	490
1000	Tuscarora	10c	50
245	Tioga Cou	2.60	950
310	Tiptop	1½@1¾	370
100	Vermont Con	8	100

$15	Solid Silver	2@2½	
360	Summit	2	
600	Syndicate	2	
450	San Xavier	2@2½	
110	Scorpion	10@10	
100	Silver Prize	10c	
490	Tiptop	1.70@1¾	
50	Tuscarora	10c	
950	Trojan	50@45c	
370	Tioga Con	2½@3	
100	University	1	
100	Vermont	10	

Pacific Board—Latest Sales.

Wed'sday A. M., Oct. 9.			
60	Alpha	16	
95	Alta	16@15½	
110	Best & Belcher	25½	
70	Bullion	14½	
130	Belcher	9¼@10	
30	California	13	
70	Crown Polot	9¼	
1960	Con Imperial	1.15@1	
170	Con Virginia	13	
35	Chollar	56	
10	Caledonia	5	
105	Exchequer	7@6	
305	Gould & Curry	18¼@18	
250	Hale & Nor	26@26	
90	Julia	1	
340	Justice	9½@9	
100	Kentuck	7¼@7	
200	Mexican	75@74	
110	Ophir	56¼@57	
50	Overman	24@24½	
195	Belcher	20@20½	
10	Sierra Nevada	195	
260	Silver Hill	3½@3	
30	Union Con	175@172	
50	Woodville	65c	
125	Yellow Jacket	30¼@29½	
	AFTERNOON SESSION.		
55	Alta	16@16½	
120	Andes	95@90c	
500	Atlantic	75@80c	
30	Belcher	10	

145	Best & Belcher	26@26½	
5	Bodie	21	
1350	Brilliant	1@1	
180	Bullion	15½@15¾	
105	California	13¾	
155	Con Virginia	13¾@14	
150	Con Imperial	1@1.20	
10	Crown Polut	9¼	
250	Con Dorado	1½	
50	Exchequer	7	
150	Gould & Curry	18¼	
150	Globe	10c	
60	Independence	3½	
80	Julia	1@1	
310	L Bryan	3½@3	
50	Leviathan	1	
70	Mackey	2½	
110	Mexicao	76½@77	
15	Mono	5½	
10	New York	2	
120	N Sierra Nevada	45@50c	
20	Ophir	59½@59	
95	Savage	21@21	
200	Solid Silver	2	
50	Silver Hill	3½	
200	Trojan	40c	
100	Tuscarora	9c	
10	Union Con	179	
10	Ward	1½	
300	Wells-Fargo	23@20c	
90	Yellow Jacket	31@32	

California Board—Latest Sales.

Wed'sday A. M., Oct. 9.			
40	Alpha	18	
50	Alta	16½@16¾	
70	Alexander	8½	
1130	Atlanta	25@20c	
70	Belcher	10@10½	
90	Bullion	15½@14¾	
90	Best & Belcher	27@26½	
300	Brilliant	1.10	
90	California	13½@13¾	
100	Con Imperial	1.20	
60	Con Virginia	14¼@14¼	
80	Crown Polot	10@10½	
60	Caledonia	5½@5½	
530	Crevice	20@17¾	
1100	Croesus	60c	
90	Exchequer	7@7½	
70	Gould & Curry	18½@18¾	
100	Goodshaw	95c	
150	Globe	10c	
70	Hale & Norcross	25@25½	
40	Julia	1@1½	
100	Justice	10@10½	
200	Kossnth	30@35c	
165	Leviathan	1½@1.30	
40	Mexican	77½@76½	
150	Mt Hood	60c	
50	Mackey	3½	
10	New York	2½	
50	Ophir	59½@60½	
200	Pictou	25c	
150	Phil Sheridan	2½	
200	Silver Prize	10c	
60	Savage	19@19½	
20	Sierra Nevada	198@198½	
500	Silver Jack	1½@1.70	
50	Silver Hill	2½	
40	Unioo	177@178	
400	U Flag	17½c	

100	Wash Boo	25c	
200	Wells-Fargo	22c	
40	Yellow Jacket	30½	
	AFTERNOON SESSION.		
175	Almaden Q	3½	
200	Atlantic	80c	
1050	Atlanta	25@20c	
150	Alexander	8	
50	Andes	1.10	
30	Best & Belcher	26@25½	
60	Belcher	9½@9¾	
90	Bullion	15@15½	
55	Crown Point	9½@9¾	
100	Croesus	20c	
40	Caledonia	5½	
60	Coo Virginia	13½@13¾	
800	Crevice	16@15c	
100	Dayton	45o	
150	Greyhound	52½c	
100	Globe	11c	
20	Gould & Curry	19¼@19	
150	Goodshaw	85c	
150	Hale & Nor	25@25½	
40	Julia	1@1	
50	Justice	9½@9¾	
20	Mexican	75@74¾	
200	North Carson	10c	
150	N Sierra Nevada	40c	
20	New York	2.20	
80	Ophir	57@56¾	
40	Overman	24¾	
50	Phil Sheridan	2.20	
20	Sierra Nevada	195@196	
100	Twin Peaks	10c	
250	Trojan	35c	
30	Union Con	175@176	
50	Utah	36@35½	
150	Wells-Fargo	17½c	
10	Yellow Jacket	30½	

Mining Share Market.

Those whose business it is to watch the market continually, seem inclined to think that buyers at the inflated prices that have ruled lately, are now in a rather delicate situation, likely at any time to regret their bargains. The Comstock market has had two good tumbles this week. On Thursday last some of the quotations were. Utah, $48; Sierra Nevada, $245; Union Con., $193; Mexican, $85; Ophir, $72. Friday the same stocks were: Utah, $40; Sierra Nevada, $220; Union Con., $185; Mexican, $70; Ophir, $56. Farther south out of the range of "sympathy" the fall was not so great. By Tuesday the market had recovered a little. But on Wednesday there was a decline, Utah reaching $38; Sierra Nevada, $200; Union Con., $180; Mexican, $77; Ophir, $61. This is, we believe, in the face of good reports. Sierra Nevada is acknowledged to have excellent ore, but the people are perhaps impatient at the long delay before crosscutting. This operation may not begin for three or four weeks. The expenses of the honanza mines nearly came up to the income in September, so no dividend has been declared. The stock has held quite firm.

The outside stocks have shared in no measnre the Comstock finctuations. Bodie, notwithstanding heavy expenses, has declared another dividend, No. 3 of $2 amounting to $100,000, payahle on the 14th inst. The stock has risen to $23.50. The bullion is bearing more silver now, an indication that the fissure is very extensive, as Comstock experts well know. The Dudley Silver mining company of the same district, have listed their stock on the hoard. Despite promises of developments in many Mono mines, Bodie still holds the highest position.

The Alaska G. and S. M. Co. have erected a 10-atamp mill at their works on Barnon island, ahout 14 miles from Sitka. They have some 250 or 300 tons of ore ready to pass through the mill. The quartz, which is taken from a mountain ahout five miles from the tunnel, called Bald Knoh, will average $35 per ton; but selected quartz from the same locality will average from $1,000 to $2,000 per ton on an assay. From assays made in this city and elsewhere, it is known that the precious metal taken from Stewart's tunnel can he ohtained in quantities to justify the working of the mine.—*Astorian, Sept. 18th.*

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

CALIFORNIA.

ALPINE.

Various Mines.—Calaveras *Citizen*, Oct. 5: The Advance mine suspended operations some timo since, with the exception of two miners who are taking out oro. The cause of tho susponsion was the lack of funds to pay tho workingmen. It is believed that work will soon be resumed with an increase of force. A contract has been let to Harkin & Gibben to sink the shaft 100 feet deeper on the Johnson lode. Cheering prospects are looked for. The Live Yaukee mine is making itself notable among the other mines in the district for its richness. The Morning Star and Laviata mines have both been reopened hy capitalists from Empiro, Nevada. Everything is heing put in first-class order at these mines; like all othor mincs in this vicinity they have only heon scratched. In fact prospecting to a greater extent than usual is going ou in the vicinity with a vim and a determination of success.

CALAVERAS.

Upper Country.—*Chronicle*, Oct. 5: Porteons' mill at Bummerville, West Point district, is running ou custom rock. At the Champion work is goiug on as usual; stoping and sinking. It is expected to have the mill running in two weeks. Hillery & Johnsou, proprietors of the extonsion of the Lone Star, have uncovered a ledgo twn and a half feet wide that prospects $60 per ton. A rich chimney has heen struck in the Water Lilly, West Point. Experts estimate that the rock will go fully $40 per ton. Lewis & Fairchild, proprietors of the Never Fail mine, near Mosquito, lately crushed ahout 30 tons of ore in Garland's mill that paid in the neighborhood of $40 a ton. Holmes, proprietor of the San Joaquin, at Mosquito, ia transferring the hoisting worka on that mine to the Alhers claim. New and powerful machinery for the San Joaquin is on the way from San Francisco. The Buffalo mine, at Bummerville, West Point district, continues to produce rich ore.

Banner.—Levels have now heen run on the pay chute a total distance of 110 feet, witbout reaching the end of it either way, the ore rich. The shaft is 190 feet deep, and has heen sunk in rich ore the entire distance holow the deepest levels. Operations are being vigorously pushed, both in the levels and shaft.

COLUSA.

Mineral Notes.—S. F. *Bulletin:* In tho Coast range there are many indications of mineral wealth. In Indian Valley township is the Buckeye Quicksilver Co's mine in successful operation, although it is temporarily at rest on account of the low price of the metal. There are a number of mineral springa in the county, the most noted of which are Cook's spring in Indian valley, and Fouta' spring in the same section. These waters are cold, hut are claimed to possess a great deal of healing power. Wilhin's springs, in Spring valley, are a network of warm and cold sulphur springs, and no douht possess great curative power.

LOS ANGELES.

Plumbago.—*Star*, Oct 1: Within the past week, Messrs. Henry Camphell, Roht. Thompson, Richard Kichline and John Davis, of this city, discovered and located an immense deposit of plumbago in the San Fernando mountains, ahout 23 miles from Los Angeles and six miles from the railroad at Andrew Station. The deposit is some 50 feet in width and of incalculahle depth, running through a mountain. It is encased in massive, solid, glass-quartz walls. Samples have heen analyzed, showing 82% of the mineral. The location of the discovery is such that a wagon road can be constructed to the railroad with hut little expense, and wood and water necessary for its purification and manufacture into the various articles for which it is adapted are found in profusion in close proximity.

Black Star.—Anaheim *Gazette:* Work temporarily suspended on account of heat. Men making air-chambers. The vein in the new shaft, which had only a width of eight inches at the start, has developed into a width of three feet. All the clay has run into coal.

Items.—The miners in Silverado are elated over the prospect of having a mill. The Blue Light company have announced that one will he in running order in three or four weeks. Hundreds of tons of known-to-be-rich ore await the mill's erection.

The Black Star Coal M. Co. have just discovered another ledge of fine coal 4½ feet wide. The force of miners will be increased on the 15th instant, or as aoon as the mine is sufficiently ventilated to permit the miners to work. The coal of this company is now in use in all the mills and distilleries in this end of the country.

MONO.

Bodie.—*Standard*, Oct. 2: The work of development seems to receive a new impetus as day succeeds day, and the confidencc of our mining fraternity both local and foreign, acquires additioual strength as depth is attained.

Mono & Cross Con.—Now down in the new shaft 59 feet. From the 37-foot level to the 56-foot level material passed through is decomposed quartz, porphyry and clay. At 58 feet encountercd a body of very hard quartz, and the indications are favorable for striking the ledge soon.

South Bodie.—At a depth of 137 feet havo oncountered a small flow of water whicb does not interfero with the workings. In sinking have passed through ledge-matter into birdseye porphyry, where the water referred to was found in the contact. The shaft will be continued to a depth of 300 or 400 feet, beforo crosscutting.

California.—Ledge at bottom nf shaft uow six feet in width and ledge matter "horned out" shows gold in considerable quantities.

Republic Con.—Now engaged sinking a shaft between the Republic and Mammoth lodes. At a distance of 100 feet drifting for the ledge will he commeuced. Assays from the Republic yield as high as $64 per ton in gold. This is a good showing—so near the grass-roots.

Nevada.—Work progressing on shaft. After passing through the ledge, hard felspatic porphyry, similar to that fouud on Bodie Bluff, is encountered, which is the first of that class of rock found after leaving the formation ou Bodie Bluff, some 3,000 feet north.

Richer.—Have commeuced to sink a winze in the tunuel. The ledgo is 4 feet wide and looks well. Have started a south drift on the ledge from the crosscut. Tbe ledge bere is 2 feet wide, of fair oro.

Rustler.—Shaft down 105 feet. Material passed through porphyry and ledge matter mixed with quartz.

Black Fox.—Work commeneed ou the new shaft heing sunk in the center of the location. This mine is situated on Queen Bee hill and adjoins the Governor Hayes on the south.

Enright.—This nine, named after John Enright who was tho locator, is being developed rapidly, witb good prospective results.

Gold Fish.—This is newly incorporated. Work has been commenced and will be prosecuted with vigoi. Every indication points to a first-class miue.

Booker.—The engine is in place, and hoisting will probahly he commenced in ten days.

True Blue.—Among the new incorporations this mine shows indications of becoming oue of the leadiug properties of tbe district.

Various Mines.—The Gildea ledge in the Bodie has been intersected. Where cut it is 2 feet wide, and will mill from $40 to $50 per ton. The ledge in the nortb drift of the Standard is 3 feet wide. The ledge at the bottom of the incline of the McClinton is 2½ feet wide, and prospects well. The Bulwer has three ledge exposures—two of them 2 feet wide. Indications are favorable that the Bodie and Bulwer vein will he struck in the Riqueza.

NEVADA.

General Outlook.—Grass Valley *Union*, Oct 4: In prcsenting the usual monthly review of the mines of Grass Valley district, we feel justified in saying that the general appearance of regular and prospecting operations continue very favorahle, and at no time in the last five or six years have our mines given more encouragement than now. It will take well into another season before some of them are sufficiently developed to class them among estahliahed mines, hut at the present they give assurance that they will gain a reputation for permanency. Those of our citizens who have not had the opportunity to visit the mining operations iu the district during the past season would he surprised if they could see the activity that is really prevailing in the numher of enterprises that are heing carried on. During the present season a number of companies have started in, and in ahout every instance upon old locations, which have hecn standing idle for years, hut which are giving results that show that they should not have heen so long held in aheyance. There can he no question as to the richness of the Grass Valley quartz mining district. It has produced millions of treasure, and yet hut few mines have heen worked to a perpendicular depth of 500 feet. Whatever development has heen made has been almost entirely hy home companies, but comparatively little outside capital having aided. It has heen claimed for this district in the past, and it can he claimed for it truthfully now that it is yet the hest gold quartz district on the Pacific coast. It is true, that with the silver mining excitements that have prevailed of late years it has heen greatly neglected, not only hy mining capitalists, hut even hy our own people. To-day Grass Valley should he only second to Virginia City, as a busy, prosperous mining district, and should it receive that attention to its mining interests that it deserves, it will yet become ao.

Monthly Review.—*Union*, Oct. 4: The Idaho has paid 110 regular dividends amounting in all to $2,487,250. Already ahout 15,000 shares out of 20,000 heing aold for a working fuud to revive the Scadden Flat mine, have heeu taken in Grass Valley, Nevada and vicinity. Ore coming from the second level west, in the Rocky Bar mine, is estimated worth over $100 per load. The Centennial dividend paid in Septemher of 50 cents per share, amounting to $1,500, will be followed hy an equal one during the current month. New York Hill rock continues of good quality, hut perhaps not quite as rich as that produced a month ago. It is the intention to thoroughly develop the Gold Hill mine in the expectation that it will regain its old time reputation. The Alaska-Bullion mine is now well opened, and it only requires the completion of the new improvements to cnahle the companies to commence the extraction of profitable ore. The prospect shafts on the Swiss-American location show a strong ledge that has heretofore given favorable returns. Bean & Ryan, the lessees of the King's Hill ledge are accumulating ore estimated at ahout $60 per load. The appearance of the Hueston Hill mine is considered favorable for the future. Messrs. Sampson & Bro. have leased tho Peabody. The old dnmps at the Allison Rauch mine, are heing turned over hy Ned Sullivan & Sons, and so far have paid them well. The last crushing of Pacific or McDouald rock ranged from $100 to $200 por load. Thirty loads on the Judd & Casey dump will avorage ahout $60 per load. Au improvement is reported in the Empiro. Night shifts will soon be put on the American. The ledge continues good. Tho Knight of Malta is to he resurrected.

Items.—Croshy Bros. and Joseph Olive, who have lately bonded the Williams ledge (Peck ravine, near Nevada City), have struck a 30-inch ledge, increasing with the depth and prospecting well. The Brunswick mine is said to have very bright prospects. The new owners of the Blue Bank's mine hope to hydraulic out $25,000 or $30,000 tho coming season. Quartz mining in the neighborhood of Washington is "looking up."

PLACER.

Pike Bell.—*Argus*, Oct. 5: The St. Patrick quartz mill, on Oct. 2d, completed a crushing of 80 tons of refuse rock from tho mine known as "Pike" Bell's claim, whicb yielded about $14 per ton. Tbis is nearly double what that kind of stuff was expected to pay. The last crushing of rock from that mine, less than two months ago, gave a return of nearly $12,000 for 45 tons.

Lincoln Coal.—Sacramento *Bee*: The Lincolu coal mine has recently chauged hands, and the new management are uow engaged in re-opening an old shaft which has heen allowed to become nearly filled up with sand and debris. It is claimed that a gravel vein of hituminous coal exists here, and that by proper management it can he worked to advantage.

PLUMAS.

National Mine.—*National*, Sept. 28: The new mill addition of teu stamps is now completed, which makes the crushing capacity 30 stamps. The mill is most complete, having all the modern and improved machinery, together with Hendy's celebrated concentrators and self-feeders. This company have lately purchased for $30,000 and consolidated with their own property, the Monitor mine adjoining, an extensive property, showing a very fine ore body. The ledge in this mine averages from four to six feet of fine pay quartz. The Plumas Co. have made extensive improvements here, including all necessary shops and outhuildings. Three tunnels open up this large country, giving every facility for easy and expeditious working of the ore. A fine large ore-house has heen huilt at the mouth of the main tunnel, with which it is counected hy track. At presont the ore is being hauled to the mill, hut we uuderstand a tramway is contemplated to connect the two mines. The Plumas mine proper, is a thriving institution. A large numher nf men are employed in the various works. The ledge as it appears on tbe various stopes showa finely, the walls heing perfectly defined. The quantity of sulphurets is remarkahle. The company are now pushing ahead rapidly a lower tunnel on a level with their mill, which is now in nearly 500 feet, giving every indication of a certainty of striking the ledge at this depth. The past two weeks a fine hody of quartz has come in, which has increased in size from 18 inches to over 4½ feet. This quartz is a fac-simile of that in the main ore hody ahove, and also carries heavy sulphurets. From the surveys of the company this tunnel is not expected to reach the main ore hody for about 150 feet yet, and it may be that the quartz now coming iu will lead to some new aud extensive development. It is hut a short distance from the mouth of this tunnel to the mill, with which it is soon intended to make connection hy tramway. The hullion shipments of this company are now quite large, and tbey will he increased hy the additional mine and mill facilities.

SHASTA.

Furnaceville.—Reading *Independent:* T. J. Sullivan, with others, has resumed work on the "Bumble Bee," or Shasta Con. claim. The "Donkey" is still working away. Lumber has heen ordered for rebuilding at the Afterthought, and affairs generally are getting shaped for husiness. Recently L. Eilera, of this district, discovered an extensive hody of graphite, which is somethiug uot common in California, and on account of its value and the large quantity of mineral in sight, the discovery is one of considerable value. As yet Mr. Eilers has done hut little work in the mine.

Copper City.—The Extra Co. shipped in September hullion valued at ahout $19,000. They have their new pans running, and are now shipping $2,000 every alternate day, and have plenty of rich ore in sight to produce five times that amount if they only had the capacity for reducing. The Potter mine is producing 40 tons of ore per day, and the chimney of rich ore is now open 140 feet in length on the ledge, and to a depth of 60 feet with an average width of 8 feet. The face of the drift each way, hoth north and south on the ledge is in excellent ore, with every indication of a continatiou of this rich chimney for many hundred feet. The Jennie June miue is situated on the north extensiou of the Potter mine, and is controlled hy James Sallee; he has run a tunnel and cut the ledge, which is 14 feet wide and is well defined. The ore shows free gold plainly, and averages $40 per ton in gold and silver. Mr. Sallee con-

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minous trees represented by locusts, honey locusts, gymnocladus, and cladrastis (even its cercis, which is hardly European, is like the Californian one mainly a shrub); no Nyssa, nor Liquidambar; no ericaceæ rising to a tree; no humelia, catalpa, sassafras, osage orange, hickory, or walnut; and as to conifers, no hemlock spruce, arbor-vitæ, taxodium, nor torreya. As compared with Northeastern Asia, Europe wants most of these same types, also the ailantus, gingko, and a goodly number of coniferous genera. I cannot point to any types tending to make up the deficiency, that is, to any not either in East North America or in Northeast Asia, or in both. Cedrus, the true cedar, which comes near to it, is only North African and Asian. I need not say that Europe has no Sequoia, and shares no special type with California.

Now the capital fact is, that many and perhaps almost all of these genera of trees were well represented in Europe throughout the later tertiary times. It had not only the same generic types, but in some cases even the same species, or what must pass as such, in the lack of recognizable distinctions between fossil remains and living analogues. Probably the European miocene forest was about as rich and various as is ours of the present day, and very like it. The glacial period came and passed, and these types have not survived there, nor returned. Hence the comparative poverty of the existing European sylva, or at least, the probable explanation of the absence of those kinds of trees which make the characteristic difference.

Why did these trees perish out of Europe but survive in America and Asia? Before we enquire how Europe lost them, it may be well to ask, how it got them. How came these American trees to be in Europe? And among the rest, how came Europe to have Sequoias, now represented only by our two big trees of California? It actually possessed two species and more; one so closely answering to the redwood of the Coast ranges, and another so very like the *Sequoia gigantea* of the Sierra Nevada, that, if such fossil twigs with leaves and cones had been exhumed in California instead of Europe, it would confidently be affirmed that we had resurrected the veritable ancestors of our two giant trees. Indeed, so it may probably be. "*Cælum non animam mutant*," etc., may be applicable even to such wide wanderings and such vast intervals of time. If the specific essence has not changed, and even if it has suffered some change, genealogical connection is to be inferred in all such cases.

That is, in these days it is taken for granted that individuals of the same species, or with a certain likeness throughout, had a single birthplace, and are descended from the same stock, no matter how widely separated they may have been either in space or time, or both. The contrary supposition may be made, and was seriously entertained by some not very long ago. It is even supposable that plants and animals originated where they now are, or where their remains are found. But this is not science; in other words it is not conformable to what we now know, and is an assertion that scientific explanation is not to be sought.

Furthermore, when species of the same genus are not found almost everywhere, they are usually grouped in one region, as are the hickories in the Atlantic States, the asters and goldenrods in North America and prevailingly on the Atlantic side, the Heaths in Western Europe and Africa. From this we are led to the inference that all species closely related to each other have had a common birthplace and origin. So that, when we find individuals of a species or of a group widely out of the range of their fellows we wonder how they got there. When we find the same species all round the hemisphere, we ask how this dispersion came to pass.

[To be Continued.]

TRAIN RECEIPTS IN CHICAGO.—The *Railway Age* says: As many as 2,475 cars of grain arrived in Chicago in one day recently. Allowing each car, with buffers and slack, the space of 32 feet in a train, this would give a continuous train of cars, not counting engines, just fifteen miles long. As nearly as heavy a movement is going on day after day some idea can be formed of the prodigious receipts at this port—mostly for lake shipments east.

THE following plank is in the platform of the Storey county Democrats: "We demand that our next Legislature so amend the 'Act to protect the rights of owners of stock shares, etc., in the mines of this State,' approved February 21, 1877, as to compel all persons in charge of any mine to permit any person who is a *bona fide* owner of stock therein, without regard to value, to visit freely all parts of the mine, whenever he shall desire."

A VALUABLE deposit of onyx has been found in Sonoma county, and it is the more valuable because it is small. Some specimens exhibited in San Francisco are pronounced superior to anything of the same kind yet discovered on this coast. The striations and shadings are remarkable for their variety and beauty, and make the onyx very suitable for ornamental purposes.

A NEW mining district, to be called the Potosi, 35 miles southeast from Kemper's, and about the same distance northeast from Winnemucca, is the latest sensation. Some of the ore is said to assay $1,000 per ton.

The Megaphone.

Mr. Edison is still at work turning out novelties of invention and discovery. We take from the *Scientific American* an engraving and description of his megaphone. In the foreground may be seen the instrument as it is used, and in the dim distance may be discerned, in the haze, the upright figure of a man, who is holding converse with the man in the foreground.

From the time of the first man until now, men have endeavored to circumvent nature so as to grasp that which the unaided faculties could never attain. We have telescopes for viewing remote objects, microscopes for making visible the minute, telephones for talking over immense distances, and now, at last, we have a megaphone, which is to the ear almost what the telescope is to the eye, or the telephone to the vocal organs.

The speaking trumpet, which, for two centuries at least, has been employed to direct

METHOD OF CONVERSING WITH EDISON'S MEGAPHONE.

sound so that it may be heard over a long distance, is much used at sea, and is often employed on land to direct vocal sounds so that they may be heard above other sounds. It is tolerably certain that the speaking trumpet is of modern origin, and that it is the invention of Samuel Moreland, 1670.

Kircher, in his *Ars Magna et Umbra*, and in his *Phonurgia*, mentions a kind of gigantic speaking trumpet, described as the horn of Alexander. According to Kircher, this horn enabled Alexander the Great to call his soldiers from a distance of 10 miles.

Prof. Edison, in his researches on sound, has made many curious experiments, one of the most interesting of which is that of conversing through a distance of one and one-half to two miles with no other apparatus than a few paper funnels. These funnels constitute the megaphone, an instrument wonderful both for its simplicity and effectiveness. The engraving represents the instrument as it stands on the balcony of Prof. Edison's laboratory. A mile and a half distant there is another instrument exactly like the one in the foreground.

The two larger funnels are six feet eight inches long, and 27½ inches in diameter at the larger end. These funnels are each provided with a flexible ear tube, the end of which is placed in the ear. The speaking trumpet in the middle does not differ materially from the ordinary ones. It is a little longer and has a larger bell mouth. With this instrument, conversation can be readily carried on through a distance of one and one-half to two miles. We have conversed and heard singing through the distance named, although both the singing and talking were in the ordinary tone of voice. A low whisper, uttered without using the speaking trumpet, is distinctly audible at 1,000 feet.

Coal Mine Explosion.

The cause of the terrible explosion in the Abercorne colliery North Wales contains at present something of a mystery. The mine seems to have been very well managed. The machinery for winding, pumping and ventilation was of the best kind and the use of safety lamps was rigidly enforced.

The colliery employed upward of 1,000 hands, of whom 373, taking their shift, went down at 11 o'clock on the morning of the day on which the explosion occurred. Twenty-one of this number came up at noon, up to which time nothing had happened to create a suspicion of danger.

At 12 P. M. a loud rumbling noise was heard, quickly followed by flames from the mouth of the pit, and a column of smoke, dust and debris ascending high in the air. Three detonations were successively heard on the surface. The frameworks and castings of the pit were thrown to a hight of 300 feet above the mouth of the shaft. The winding gear was damaged, thus destroying the only means of communication with the men in the pit.

As soon as the gearing could be repaired, working parties were sent down the shaft, and 82 men and boys, working within a few hundred yards of the shaft, were rescued; but it became evident, as attempts were made to advance into the workings, that little hope could be entertained of any life surviving.

About 400 yards from the bottom of the shaft was a stable, and here fourteen horses were found, all dead. Beyond this point the explorers could not go on account of the impurity of the air and the prevalence of choke-damp.

The volunteer explorers succeeded in bringing out eight or ten men, very much burnt; also seven dead bodies. After all hope of rescuing more of the men in the pit and while 251 were still missing, the flooding of the pit commenced.

The Engineer.

Logging Railroads.

An Eastern writer who has lately made a tour of the Wisconsin lumber regions, gives an account of the various ways the lumbermen have employed to get their logs to the mills. Some of these may be of interest to our own lumbermen. All sorts of artificial roads, constructed in all sorts of ways, have been tested on the various streams tributary to the Mississippi river. The favorite method has been to construct a road, the rails of which are round poles, which necessitate the use on the cars or trucks of concave wheels. The motive power is horse flesh; and the method is regarded both as a success and a failure, according to the man you talk with. In building such roads, such a variety of circumstances have to be taken into account that the success of one in one locality is no guarantee that it will be a like success in another. In the whole State of Wisconsin, the building of a logging railroad has not been undertaken on such a scale as the one now operated by Hazelton & Gerrish on the Muskegon river, in Michigan; consequently, hauling logs by rail in this region has not been as much of a success as those gentlemen have found it. The result of my investigations among Wisconsin operators shows, in their opinion, that where the length of the haul is one mile, or less, the cheapest way to secure the logs in summer is by the use of low-wheeled trucks, with four-inch tires. Of course, in any section where the nature of the ground is low and swampy, the road must be corduroyed; and if the track for the teams can be filled with sawdust, so much the better. Where the haul is more than a mile in length, the tramroad is the cheapest; and if it is more than four miles, and there is a sufficient quantity of lumber to justify it, the steam locomotive is to be preferred. I find many who are of the opinion that for more than a two-mile haul the locomotive is the cheapest in the end.

The experiment of using a locomotive on a wooden tramroad has been tried on the Wisconsin Central road by W. H. Blades, of Dorchester. After spending considerable money and wasting no little valuable time, he abandoned the locomotive as a failure. My opinion, is that the experiment failed because the road was not made well enough to successfully use the locomotive. In order to do so, the road-bed must be made moderately solid. In fact, the error among loggers seems to be that, for such purposes as theirs, any kind of a road will do. This is not so any more in their case than in that of our ordinary traffic railroads. Owing to the spring of the poles under the drawing weight of the locomotive, everything about the engine must be made loose jointed, and as loose joints are not conducive to the successful operation of a steam engine, experiments in that direction are likely to prove failures. Messrs. Lamb & Richardson, at Spencer, on the same line, have also been testing a locomotive somewhat differently constructed, but with, so far, indifferent success. They are now placing upon their road trucks with wheels flanged in a different manner, and hope to be more successful. The Eau Plaine Lumber Company, at Rundle's mill, is now building a four-mile railroad, using sawed ties, which are laid on the ground eight or ten feet apart. On them are laid stringers of pine timber of different sizes, flattened at both ends to eight inches. On these strings a 3 × 4 in. hardwood rail is laid, care being taken to break joints. The stringers are pinned to the ties with 1½ in. wooden pins, while the rails are spiked down with 6 in. boat spikes. An ordinary locomotive will be used, the wheels of which, as well as those of the trucks, will be flanged. This experiment is looked upon with considerable interest in this section. Had the company used a light iron T rail, I think it would have been more successful and cheaper in the end.

These tramroads, of from one to four miles haul, have been successful only where there has been great care taken in the construction of them. The route must be made as straight as possible, and great care must be exercised in laying the poles. The cost should range all the way from $225 to $300 per mile, owing to the character of the route. Experience shows that any cheaper roads have to be practically rebuilt about once in 60 days. The usual load for two horses is 1,500 feet of logs for hauls of a mile or less.

ENGINEERING PROJECTS IN AUSTRO-HUNGARY. It is said that the empire of Austria has followed the example of France and of Italy in the matter of internal improvements, the imperial Austro-Hungarian government having decided to construct a system of railroads commensurate with the needs of the country in these times. Facilities for rapid and easy transit will undoubtedly do much to break down the barriers maintained by old tribal jealousies, and bring about harmonious relations, making the empire a more and more homogeneous body politic. The Danube is to be spanned by iron bridges; Croatia and Sclavonia are to have main trunk lines traversing their entire extent; Hungary is to be connected with the older empire by a network of roads; and even the new territory of Bosnia is to be penetrated by an extension of the same system. The lines have not been decided on in all cases, there being, for instance, three distinct projects for communication between Buda, Pesth and Belgrade, but the policy

of exteoding the railroad system has been definitely adopted, and will be carried out with energy and dispatch.

Russian Railway. — Engineer John McFethries, for eleven years master mechanic of the Kursk, Charkoff and Azof railroad in Russia, has returned to Springfield, Mass., and gives interesting facts about Russian railroading. This road is o single-track concern, 500 miles long, runoing from Kursk to the port of Tagonrog on the Azof sea. The gaugo is five feet, with an equipment of 225 passenger and 4,500 freight cars, 200 engines and 4 locomotive ond repair shops, with 1,500 to 2,000 employes, according to the season. Tho coaches, of continental manufactore, are peculiar in pottern, opening at the ends with a middle aisle as here, but only 34 feet long, and instead of having four or six-wheeled trucks, three single wheels on each side of tho car, are attached directly to the car string-pieces, equi-distant, and not connected with each other. Four wheels sutlico for a freight car. American coaches are almost unknown, only one car, a Pullman, from England, having been run over the road on an exhibition trip. But palace cars are liked by the authorities, and Mr. McFethries thinks they will soon be in use, though tho royal family may for a time monopolize them.

Mr. Eads and His Jetties.—In a late letter to a member of Congress, Captain Eads makes the following statements concerning the present condition of these great works of improvement: "The jetty channel is now almost as good as the entrance to New York harbor. Larger ships and steamers visit the port of New Orleans than ever before. Ocean freights have been so greatly lowered in consequence that the saving on cotton alone from the port of New Orleans, the past season, was over $1,600,000. Every intelligent man in Missouri knows that a revolution has been wrought in the grain trade as a result of this deep water. As the channel deepens, and commerce adapts itself to these new conditions, the hencfits to the producers of Missouri will be still more extensively enjoyed. The permanent improvement of the mouth of the Mississippi operates as a regulator of transportation charges, and thus adds to the value of every hushel of grain grown for export to Europe, or for consumption in the Atlantic States, and it also cheapens to the farmer all of his merchandise and other supplies brought from the East."

The Railroad in Literature.—The *Railway World* says: Auerbach, who writes in romance the philosophy of the modern life of Germany, has recently been completing a series of his earlier sketches by adding sequels or continuatioos. These new stories take up the same people and scenes after a lapse of 30 years, and present them as they are at present. In seeking for a fitting title, Auerbach says he would find the fullest expression of his theme in the name "The Village on the Railroad." All the modifications and developments which so strikingly distinguish the two periods might well be traced to its influence. The railroad has cut through hill and valley; it has removed ancient harriers; dissolved at a touch the effect of old isolations, and harmonized all conflicting customs. During the period, the domestic and social economy of village life has been thoroughly metamorphosed, and the work must he ascribed to the effects of the railway and its attending free emigration.

More Tunneling at Hell Gate.—The work of sinking a shaft and sideward tunneling under the river bottom at Hell Gate, has been recommenced this time on Flood Rock, a small island, and the worst obstruction in that channel. It had been commenced once before, but abandoned, and work was resumed in the beginning of July, when the pumps were started for the purpose of removing the water that had leaked from ahove into the shaft and the submarine galleries. The shaft is 50 feet deep, and the galleries, which run from it in many directions, are now about 600 feet long. After pumping out the water, the work hegan of cleaning out the debris, getting the steam-pipes and drilling-machines in order, and propping the sides of the galleries where they were cracked or otherwise in danger of falling. Drilling and hlasting has now been resumed.

Northern Pacific Extension.—A reporter connected with the St. Paul *Pioneer-Press* recently interviewed President Wright, when he gave the following hrief statement of what was expected to be done: A proposition is in preparation which he expects to lay hefore the stockholders at the annual meeting of the company, on the 25th of September, in New York, with reference to the immediate commencement of work west of the Missouri river, at Bismarck, with the intent that the road for the entire distance to the Yellowstone, 205 miles, shall be completed and ready for operation in one year from next spring. The company will soon advertise for hids for supplying the ties and timbers, which will be got out the coming winter.

The Delaware Ship Canal.—United States engineers are now at work, under the authority given hy an appropriation of $15,000 granted at the last session of Congress, in surveying routes for a proposed ship canal across the eastern shore peninsula. They will make a survey of all the routes availahle for the purposes of a ship canal, beginning with the lowest and working up to the Sassafras river, which is the highest point that will he reached.

Useful Information.

How Russia Sheet Iron is Made.

There is a controversy going on in Eastern papers as to tho comparative merits of Russia sheet iron and the American imitation of it. Into the merits of the controversy we do not propose to enter, but it has brought out in the *Engineering and Mining Journal* an interesting description of how the Russia iron sheets are made. Theso polished sheets are manufactured from charcoal iron, produced in finery fires and hrought into tho form of blooms about one inch thick. Theso blooms are heated to cherry heat and rolled into leaves. Each of theso leaves is cut into pieces corresponding to the weight of tho sheets which are to be manufactured, and these pieces are piled upon one another and rolled together until the desired degree of thiuness is attained. Thus the black sheets are manufactured. To transform theso into polished sheets, a certain number at a time are heated to red heat and piled one upon another, a black impalpable powder, which is simply pulverized charcoal, being sprinkled hetween each two sheets. The bottom and the cover of each packet of sheets thus piled for polishing are formed by two sheets of greater thickness. This packet is then hammered, for tho purpose of reducing tho sheets still further in thickuess, under a hammer, the head of which weighs from 1,000 to 1,100 kilograms (say 2,200 to 2,400 pounds). For giving polish and luster, the sheets, now almost cold, are brought under a second hammer with a large face, rounded at the edges and of the same weight.

Finally, they are allowed to cool completely, and are theu clipped and classified into three classes, according to the perfection of their polish. The sheets of the first class ought to be like a mirror, without a spot upon their surface. The action of charcoal projected upou the red-hot surfaces, and inclosed hetween them without access of air, may he easily understood. It cements, and thus enables them to take a high polish, while rendering them at the same time less liable to rust. This cementation once having taken place, the sheet should not afterward be returned to the heating furnace.

Estimation of Mineral Oil or Paraffine Wax in Mixture with other Oils or Fats.—Dr. William Thomson says that mixed oils are now often used for lubricating purposes, and a common mixture, composed of mineral oil with some animal, vegetable, or fish oils, was now extensively used, and it was an important point to be ahle hy analysis to determine the amount of mineral oil which such mixture contained, and as he could find no published process to effect this, he devised, after much work, the following, which he found by repeated tests to give very accurate results: He boiled some of the sample with an alcoholic solution of caustic soda, which converted all the animal, vegetable, or fish oils into soap. This was then mixed with sand, and heated and washed with petroleum spirit, distilled at a temperature under 190° Fah. This dissolves out the mineral oil, leaving the soap insoluhle. The spirit is now distilled off from the spirit solution of mineral oil, at a temperature not exceeding 220° Fah., and the residue of mineral oil weighed and calculated on the weight of the original mixed oil taken.

The Office of the Liver.—As everyone knows, the liver is a large organ; it performs duties the importance of which to the health and happiness of mankind can hardly be over-rated. Yet up to the year 1857 medical men were in absolute ignorance of one-half of what the liver does. They knew that it secreted hile; it was reserved for Bernard to discover another and no less important function hitherto unknown. It is certain, however, that it does other work little, if at all, inferior in importance to the formation of biliary matters, and quite as necessary to the maintenance of health. Its power of making and storing up for a time within its cells a material resembling starch, constitutes, without doubt, one of its most important functions. This no person will for a moment douht who takes the trouhle of ascertaining, hy experiment, the immense increase or diminution in bulk which the liver may he made to undergo in the space of a few days hy such changes of diet as increase or diminish the amount of this starch-like material in its tissues.

Test for Good Petroleum.—*Stowel's Petroleum Reporter* gives the following requisites of good petroleum, from the report of Prof. T. Lawrence Smith, as Centennial Judge: 1. The color should he white or light yellow, with hlue reflection; clear yellow indicates imperfect purification or adulteration with inferior oil. 2. The odor should be faint and not disagreeahle; The specific gravity at 60° Fah. ought not to he below 0.795, nor above 0.84. 3 When mixed with an equal volume sulphuric acid, of the density of 1.53, the color ought not to hecome darker, hut, on the contrary, lighter. A petroleum that satisfies all these conditions, and possesses the proper flashing point may be set down as a pure and safe article. Too much care cannot be exercised in examining this oil for household use. In Paine, Ablett & Co's exhibit at the present Pittshurg exposition are samples of crude petroleum from California.

Libel on American Hams.—On the strength of statements by Prof. Heschl, of the Vienna University, that ouo out of every fivo or ten American hams is infected with trichina, an attempt has been made by the Austrian government to prohibit tho importation of American hams and sausages. Tho United States Consul-General at Vienna called upon the professor to authenticate his statements. He was compelled to admit that he had no personal knowledge on the subject; that his statements were based on German reports of 1874, and that he had never seen an American ham. He was then given some by the Consul and he pronounced them good and free from any sign of trichina.

Mustard Seed Oil.—Foreign journals state that since the manufacture of allyl-sulphocyanide, or artificial oil of mustard, has been brought to its present state of perfectiou, the distillation of the genuine oil from the mustard seeds can hardly be remuneratively undertaken. It is true that when an attempt was made to introduce the artificial oil into commerce under its real name it did not find a large sale, but when vended under the name of oil of mustard it obtained ready acceptance. This imposition is certaioly harmless as any form of imposition can be, for it seems that the natural and artificial oils are identical, not only in chemical properties, but, what is of more importance, in physiological action.

Elephantine.—Nine feet ten inches at the shoulder was the highest elephant Mr. Sanderson, an expert in such affairs, ever measured. A thoroughbred elephant is worth $10,000 or more. In 1835 the price of elephauts was $225 a head; now none can be had for less than $750, and tuskers of any pretension are held at from $4,000 to $7,500. At 25 years the elephant is full-grown, and it will live from 80 to 120, or even 150 years. The Government load is 1,640 pounds, exclusive of chains and attendants, and the daily ration is 800 pounds of fodder.

Blue Manganese Color.—The *Iron Age* translates from a Freuch authority a method for making a fine blue manganese color by heating in an oxidizing atmosphere two to three parts of silica or kaoline, eight parts of nitrate of baryta and three parts of oxide of manganese. He gives also a blue chrome color for pottery, which is obtained by heating violently with an access of air, a mixture of 15 parts of boracic acid, 15 parts of alumina, 20 of carhonate of magnesia and two of chromate of baryta.

A Rustic Hygrometer.—A correspondent of *La Nature* describes an hygrometer which he found in the house of a peasant up in the mountains. It consists of a thin branch of pine in the form of a cross, attached hy two nails, one at the point of crossing, another on one arm above. At the extremity of one horizontal arm is a kind of scale, on which are inscribed (coming upward) *pluie, beau, tres-chaud* (that is, rain, fine, very hot). The pine hranch was not depived of its bark. It was about three or four millimeters diameter.

Good Health.

The Hygiene of Schoolhouses.

In the course of an article on this important subject, a writer in the New York *Independent* makes the following remarks: Great risks and great exposures to the hody are involved in sending a child to school. It may mean merely such mind work as is too much of a tax upon the hrain and nervous system. It often involves sitting in constrained positions too long, too close confinement in ill-ventilated or ill-heated rooms, and other experiences inimical to vigorous growth. A recent book says the first right of a child at school is to feel happy. One element in this is left out if the conditions are not such as favor his good health. Indisposition is a word of douhle meaning. That of the mind and temper are affected by that of the body.

There are most cogent reasons why children at school should he so provided for as that all their surroundings tend to a comfortable physical condition. Simon, speaking of artisans, says "that it is their right that whatever work their employer assembles them to do should, as far as is in his power, be divested of all unhealthy circumstances." It is a poor charity, and a poor economy, too, for the State to prescnt to all its children a free-school system, if the perils of the school-room are excessive.

No school should commence without a thorough knowledge on the part of its trustees as to the adequacy of the huilding, its desks, its heating and other apparatus, its general fitness for the conduct of the work purposed to he done in it. We wish the parents of the children would just now form themselves iuto a committee of the whole, and wait upon each hoard and find out just what they know as to sanitary inspection.

The room and huilding must have excellent janitorship, so that it can he well dusted, cleansed and aired in the hours of its emptiness. How imperfectly is this work done in most schools. There is poor housekeepiug, and that always makes trouhle.

Have the boys and girls fitted to their respective desks; not only with a view to convenience, but size. Often the blackboards are so located thot the child must face a glare of light. Ofteo the desks are so close to them that they caonot adjust distance to capacity of vision. Virchow, Loriug, Aguew, and others have well pointed out some of these defects.

Laws of postnre, hoth in sittiog and standiog, are greatly overlooked in schools, aud slight spioal deflections from the natural line give future aid to ouo-sidedness. Browo-Sequard has noted and explained how the use of one side too much and the other too little often disturbs bilateral sensibility and leads to nervous trouble,

Dr. Sequin read an interesting essay on "Nervous Diseases as Fostered by School Life" before the last National Medical Association, and claims that physieal considerations must enter far more largely into our system of instruction. Anemometers and thermometers can now tell us much as to air currents and the heat and degree of moisture of the air, while chemistry has ready aids to show us whether it is contaminated. Pale faces and puny forms and the tired look of tho homeward group sometimes make us stand aghast when they tell us: "This is education." Ten minutes of calisthenics in a close room or an occasional antic of the gymnast will not recover the unnecessary wear and tear to which our children are too often subjected, because of unavoidable conditions in many of our puhlic and some of our private schools. We ask all parents, all school-boards, and all teachers to put on their thinking-caps at once, and keep them on all this term, in the school-health interests of the boys and girls.

Life Studies.—A writer in an English magazine studies from birth to death the march of an English generation through life, basing his remarks on the annual report of the Registrar General. The author singles out, in imagination, a generation of one million souls, and finds that of these more than one-fourth die before they reach five years of age. During the next five years the deaths number less than one-seventh of those in the first quinquennium. From ten to fifteen, the average mortality is lower than at any other period. From fifteen to twenty the uumber of deaths incease again, especially among women. At this period, the influence of dangerous occupatious hegins to be seen in the death rate. Fully eight times as many men as women die violent deaths. The number of such deaths contiuues to rise from twenty to twenty-five, and keeps high for at least twenty years. Cousumption is prevalent and fatal from twenty to forty-five, and is responsible for nearly half the deaths. From thirty-five to forty-five the effects of wear and tear hegin to appear, and many persons succumh to diseases of the important internal organs. By fifty-five the imagined million has dwindled down to less than one-half, or 421,115. After this the death-rate increases more rapidly. At seventy-five there remain 161,124, and at eighty-five 38,565. Only 202 reach the age of one hundred. At fifty-three the numher of men and women surviving is about equal, but from fifty-five onward the women exceed the men.

Frauds in Graham Flour.—The St. Louis *Trade-Journal* calls attention to the fact that graham flour is rapidly coming to be as much an article of suspicion as ground coffee or spices, or any of the thousand and one adulterations that are daily practiced. The commonest form in which graham flour is seen is that made from a medium or poor class wheat, and while not properly adulteration, it may he characterized as swindling of the meanest kind, for the reason that the product is largely used by dyspeptics, and others in imperfect health. Graham flour, properly made, is nearly as costly an article as holted flour ground from the same wheat, and, therefore, when you are offered graham at much than the hest bolted flour, you are being victimized—it is either adulterated or it is made from inferior wheat. A common form of adulteration that is practiced by at least one retail flour dealer in this city, is to take a harrel of flour costing ahout $5, add to it about 60 lbs of bran, 28 pounds middlings, and the same quantity of corn meal. The result of the mixture is 306 pounds of stuff costing about $6.45, or a fraction over 2 cents a pound; while graham flour, made from the best wheat, cannot be sold now at less than 3½ to 4 cents a pound. And yet this vile stuff is heing swallowed by people in search of better health, when they would do ahout as well on a diet of hot white hiscuit.

Cure for Hydrophobia. — This disease is of exceeding rare occurrence on this coast, but it is well to know remedies. Mr. J. Y. Wilkinson, of Chester Springs, Chester county, sends the Philadelphia *Record* a cure for hydrophohia, which he says has been successfully tried for thirty years. It is the discovery of a farmer named Fry, living near Allentown. This is the treatment: The patient is to be kept free from excitement of every sort, especially from that caused hy the visits of sympathizing friends. Take one ounce of elecampane root, powdered; one tahlespoonful of madder and one quart of new milk, and boil them all together slowly (in a water bath, if possihle) until reduced to a pint. The dose is one wine glassful once a day for three days, then intermit three days, then repeat and intermit again, and again repeat. That is, nine wine glassfuls are taken in all and there are three intermissions.

MINING AND SCIENTIFIC PRESS.

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The Week.

While the stock market is exhibiting a very uncomfortably nervousness, those who are directly engaged in mining operations feel cheerful in their healthful exercise. It is said that the prospects of Nevada City, that mining center, are better than they have been for 15 years. A reaction from the silver fever is hinted at, suggested by the increasing tendency to try gold quartz claims again. The working of quartz claims requires very strict economy, and it is one of the most hopeful signs that men are willing now to plan carefully and bring expenses to the very lowest pin. The Murchie mine, Nevada county, has just been planuing some economical measures which are to save it $54 per day. This matter of strict economy is one that "practical," burrying men are inclined to laugh at. Scientific men have deplored the terrible waste shown on the ore dumps of Pacific coast mines, just as in the wornout acres of agricultural land. They have said that our wastefulness is a sin against our children's children. This it will prove in its effects to he. Economy will he enforced sooner or later by natural laws, and he is happiest who is not dragged down to it hy the ear, hut who makes it the choice of a calm aud temperate judgment.

Three car loads of Black Star coal per week are being shipped from Anaheim to Los Angeles.

The Gauntlet for California Petroleum.

The Philadelphia *Business Advocate* of Sept. 26th, throws down the gauntlet for our California oil men. It says:

"Announcements of petroleum discoveries in other regions than our own have been constantly occurring, and in each case the new region was advertised as a rival to Pennsylvauis. Yet our petroleum still commands all the markets of the commercial world, and is likely to continue so to do. The reason is to be found in the enormous amount of capital invested in the production, refining and handling of the Penusylvania article. Other oils may be as good, hut the owners lack the *capital, the talent, the enterprise and the machinery.* Moreover, although petroleum is found in many places, it is nowhere so abundant as in Peunsylvania. In the extent of the oil region and its productiveness, our district is phenomenal."

In the Press of Sept. 14th, there were given some of the opiuions of Mr. Edward Maden, a petroleum expert, on the outlook of this industry on our own coast. He admitted that some of our oils were inferior to Pennsylvania oils in lighting qualities, but admitted that the same were far superior for purposes of lubrication. A fair comparison of our wells with those of Pennsylvania cannot he made, until the former have been driven deeper. Nevertheless, Mr. Maden announced that a petroleum refinery would soon be erected in San Francisco, and that, notwithstanding the reasonable rates charged for Pennsylvania oils, California would compete with that State in our own and in some export markets.

Pennsylvania may have more oil than California, and oil that may be for some purposes better than ours. Neither of these assertions have yet beeu established as a fact. But it is safe to say that we do not lack "*capital,*" "*talent*" and "*enterprise.*" And the quiet workings of these among us may soon deal some sore wounds to the pockets of those talented and enterprising capitalists of Pennsylvania, who, it may be commented, have before now cast furtive glaucos towards California.

Just what the Los Augeles and San Francisco companies are doing now, we think is not generally known. The latest reports at hand from Ventura county, give merely the general condition and prospects of some of the wells. One of these wells is down 810 feet, another 820, others, 1,400, 1,000 and 500. And the words "fine showing," "good prospects" and "splendid outlook," are of as frequent occurreuce as in correspondence from quartz veins and rich gold placers. May the oil men prosper and may our Eastern sister fiud a rival.

Sanderson Bro's & Co's Steel.—Mr. H. D. Morris, 417 Market street, is now established as permanent agent of the famous Sanderson hard and cast steel. It is designed to carry here a full and complete stock of all the various grades of steel required in this market, embracing a full line of squares, flats, octagons and rounds. This widely known hrand of cast steel, although now manufactured in this country, at Syracuse, N. Y., is identical in every particular with that made for ovcr half a century by Sanderson Bro's & Co., of Sheffield, England. The steel is made from converted Swedish iron. The pit making, steel-mixing, ingot-examining and assorting being done by skilled men from the Sheffield house—insures a reproduction in America of the standard quality and temper for which this hrand is celebrated. The founders of the Sheffield house of Sanderson Bro's & Co. were the pioneers of the American trade, and were conspicuous among the earliest manufacturers of cast steel, after the date of the invention in 1776. They are also the first to transfer the mauufacture of English steel to America. The new American company has acquired the right to use the name, trade marks, and good will, and manufacture the same qualities of steel as the Sheffield house. The steel manufacture is under the charge of a responsible steel maker, whose scientific education, and careful practical training at the Sheffield works, thoroughly qualifies him to produce the best quality Sanderson steel. As Mr. Morris keeps the different brands in stock, at the address given above, those in want of this well known article can procure it directly from him.

Death of David D. Colton.—General D. D. Colton, Vice-President of the Southern Pacific R. R., Financial Director of the Central Pacific R. R., and President of the Occidental and Oriental Steamship company, died at his residence in this city, on Weduesday night. General Colton was an old Californian, well known in early days from his connection with mining enterprises, and latterly, as one of the directors of great railroad corporations. He was for some years sheriff of Siskiyou, and for several years was a miner of that county. He estahlished the hasis of his large fortune by his interests in the Rocky mountain coal, Amador gold mining company and other mining ventures, being known, however, as a legitimate miner, and not a stock operator. He became interested in the Pacific system of railways in 1871, and has since occupied a promiuent position in the directorate. He has always manifested great interest in scientific progress, and has been President of the Board of Trustees of the California Academy of Sciences for the past four years. General Colton was a genial, pleasant man, universally liked and respected, and his early taking off is a great loss to the community.

Mines and Works of Almaden.—No. 4.

[Translated for the Press from "Annales des Mines."]

III.—Eruptive Rocks.

One sees amongst the silurian rocks, and above all the devonian, in the neighborhood of Almaden eruptive rocks of very different ages. The granite which covers great spaces in the southern part of the Sierra Morena, and constitutes the important mass of Los Pedroches about 15 to 20 kilometers to the south of Almaden appears as little islets to the northwest of Chillon, but it is not to he found in the region of the mines and does not appear to have any relation to the deposits of mercury.

It is otherwise with a series of rocks, having a very variable external character, belonging to the family of melaphyres, which is frequently seen in the neighborhood of Almaden, principally upon flanks of Chillon and Puerto del Ciervo, at Almadenejos and at Guadalperal. We believe we should describe with some details the rocks of this nature which one meets at Chillon.*

(a) Melaphyre [Augite Porphyry] Reddish Violet.

This is seen in the blocks which teem upon the banks of the river Chillon. The rock is of a brownish color, with deeper colored streaks running into violet. One distinguishes there some white amygdaloids. Under the microscope one can see that they possess a flowing texture, very pronounced in some places. It is an amygdaloide, containing many ferruginous grains. The paste is amorphous, a considerable number of very small microlites are visible, some of them belongiug to the superior felspars, and the rest being black grains, probably titaniferous iron, more or less changed into limonite. The bubbles with which the paste is snotted are filled very abundantly with quartz or calcite. These two substances are not uniformly distributed; some sections do not show anything but quartz, in others calcite predominates. With a high magnifying power, the grains of quartz present a more or less rounded hexagonal form; they consist in the center of quartz, properly speaking, and then of a zone of green amorphous substance, and upon the borders of chalcedony. These grains of quartz contain a great number of bubhles with mobile contents.† We have not been able to separate the elements of this rock, which is, by the way, sensibly altered; we have, therefore, contented ourselves with analyzing it as a whole, and we have fouud:

Carbonic acid	4.06
Water	0.74
Silica	55.00
Alumina	13.20
Oxide of iron	11 46
Lime	8.00
Magnesia	1.00
Soda	4.86
Potash	0.80
Total	00.12

(b) Melaphyre, Greenish Black.

Found in the same locality as the prceding. This rock is traversed by veius of serpentine; it is less hard than the red varicty. Under the microscope one sees that it is composed of an amorphous material, with a not very pronounced fluidity, marked with ferruginous granules; this paste contains some felspathic microlites. Numerous amygdaloids are seen, frequently filled with calcite, at other times with quartz, or with little bluish-white crystals, diminishing towards the end, analagous to certain serpentiues or talcose suhstances. The rock contains, likewise, calcite as yellow flakes, very probahly colored by a little titauic acid. We have found for this rock the following composition:

Carbonic acid	3.42
Watar	5.58
Silica	45.00
Alumina	16.67
Oxide of iron	10.33
Lime	8.46
Magnesia	6.45
Soda	3.28
Potassa	0.53
Total	99.72

This rock appears from its position, and the ensemble of its characteristics, to be the same as the preceding, but at a more advanced degree of alteration.

(c) Melaphyre Gray.

This is at the ancient excavations made near Chillon, excavations in which a little native mercury was found in contact with this rock. One cannot distinguish with the lens anything but a uniform gray paste with some reddish granulations. The microscope reveals, but in a less degree, the characteristics of varieties *a* and *b*; the rock proves to he composed for the most part of an amorphous paste, with some indications of a flowing structure, it contains amygdaloids composed mostly of calcite, sometimes of quartz. Numerous ferruginous grains are visihle changed into limouite. Analysis has given us:

Carbonic acid	2.05
Water	13.28
Silica	43.33
Alumina	18.10
Oxide of iron	8.53
Lime	10.33
Magnesia	3.33
Soda	.70
Potash	traces
Total	90.65

d. Finally a last rock, which seems to us to belong to the same category, although at a degree of decomposition very advanced. It is found at Almaden in contact with the cinnabar. The rock is white and friable; it has given us the following composition:

Carbonic acid	4.05
Water	7.35
Silica	57.50
Alumina	22.83
Oxide of iron	4.67
Lime	2.00
Magnesia	1.00
Soda	.70
Potassa	traces
Total	100.10

We should add that this rock is less and less altered as one leaves the deposits of Almaden, changes in going towards Chillon, beyond this latter locality, towards tbe west, into veritable red or brown jasper.

Taking all of these characteristics into account, one is necessarily led to place these melaphyric rocks of Chillon in the same class as those rocks of the same nature which, in the Palatina for example, and in the Vosges have erupted at the permian epoch, and traverse the beds of the carboniferous strata.*

The presence in the region of Almaden of diorite, which we know oftcn accompanies melaphyre, makes this view the stronger. The diorite shows itself in hlocks near the road from Almaden to Chillon, and in considerable masses at some kilometers to the north of Almaden and Guadalperal. Through the lens we distinguish only scales of felspar; the rock is green and very hard. Under the microscope one recognizes at once, long crystals of a triclinic felspar, with many striations, and of a dull color. The whole of its optical character proves that this felspar is labradorite. It is traversed by a great number of fissures, filled with a granulous amorphous material which penctrates all the rock. Near these crystals one sees two products of alteration: a white chloritic mass, and a yellow material formed of a mixture of chlorite and carbonate of lime; lastly, black points quite numerous, probably of titaniferous iron more or less decomposed. Some of these sections filled with chlorite permit the recognition of the crystalline form of pyroxine; the yellow matter seems originally to have been olivine, although it is difficult to pronouuce upon this. Analysis has given us:

Carbonic acid	3.92
Water	3.08
Silica	43.63
Alumina	18.66
Oxide of iron	10.20
Lime	13.70
Magnesia	3.68
Soda	2.13
Potash	.30
Total	90.44

In spite of the attraction of the rock, and the impossibility of separating the felspar, these figures, owing to the prodominance of this last species, approaching the composition of labradorite, confirm the results of the microscopic analysis.

A melaphyre very analagons to the varietv, *c*, just described, containing, besides, frequently amygdules or little crystals of ferruginous dark green chlorite, and which has somctimes been wrongly confounded with the breccia previously described under the name of *frailesca*, encloses between Almaden and Almadenejos little veins and little spots of cinnabar. These traces were the object of researches at the time of the Romans, as is proved by the coins of Vespasian, which have beeu found in some of the galleries.

The disposition of these traces show that the ore is very irregularly dissiminated in this rock. The same species is found at Guadalperal, where it passes entirely iuto a melaphyre resembling the variety, *c*, of Chillon. We shall return hereafter to these analogies in speaking of the time of the advent of the mercury of Almaden.

One would expect to find the schistes more or less metamorphosed in contact with these eruptive rocks; this does not seem ever to be the case; one does not see any derangement of the stratification in their neighhorhood, they hardly appear above the soil, which they do not derange in appearance, and give reason for the belief that they were forced to the surface without any violent concussion.

We will mention a series of rocks belonging, according to M. de Prado, to the family of trachitic, porphyry, which one meets at Montejicar, to the south of the village of Gargantiel, hut not seeming to be related to the mercurial lodes. The mass of these rocks is a felspathic paste, containing bronze colored mica and little crystals of red felspar, and perforated by a great number of cavities which are lined with little crystals of quartz.

*See. *Sur le parphyre amygdaloide d' Oberstein*, par M. Delesse *Annales des Mines*) 4th series *t. XVI.*, p. 561, etc.

[To be continued.]

*M. M. Fouque and Michel Levy have examined these rocks with the microscope.

†According to M. M. Levy, this melaphyre is identical with certain varieties of Petite-Fosse, near Remiremont (Vosges), belonging to the upper permian.

Asbestos Not on Fire.—At 2:45 a. m., Oct. 6th, flames were discovered issuing from the Asbestos roofing warehouse of H. W. Johns, No. 5 First street, San Francisco. The Department were promptly on hand, and after a sharp fight subdued the fire, but not until it had spread through several adjoining business places. The Ashestos warehouse was gutted. This fire was probably started in a lot of paints, oils, etc., stored in the huilding, and cannot he used as an argument against the effectiveness of asbestos ware in resisting fire. The company have a complete duplicate stock on hand, and the fire will not check the business, which will be carried on as usual at No. 5 First street, S. F.

Artesian Wells.—No. 1.

No one need be told that the subject of artesian wells is at present an interesting one. An artesian fever is spreading over the entire coast. We believe it started with San Francisco trying to reduce her expenses. It has spread throughout California. Some citizens of Winnemucca, Nevada, have clubbed together to pay the expenses of a trial well, which, if successful, will, to use the expression which is epidemic with the artesian fever and spreads wherever it does, "make the desert blossom as the rose," whereupon the citizens of Winnemucca will avail themselves of the Desert Land act. Arizona has caught the fever. Montana is just getting it and her Press is beginning exhortation to artesian efforts. And so it goes. Thus it happens that everyone is alert to any item or article connected with the subject of artesian wells. People are asking how to bore wells, how much it will cost, how much water they can get, and what kind of water if they get it. And on the track of these practical water-seekers there hovers a troop of scientific scavengers, who with intense curiosity bore the borers with: How deep did you go? What strata did you pass through? Did you strike any tree? Give me a piece of the mud? It is with a view to satisfying in some imperfect measure all of these inquiries, that this series of articles is undertaken. And imperfect though it must be, it cannot fail to prove of some little entertainment.

For reason we will follow a very unscientific course. We will take up first the wells of San Francisco, which will occupy the first and second articles and perhaps more. Then we shall consider wells in other parts of this State and in other States. Then we shall consider the subject of artesian wells more generally, giving, if possible, cuts of the tools used, outlines of methods, and information in regard to estimating costs, etc.

Underground San Francisco.

There have, perhaps, been bored in San Francisco upwards of 500 artesian wells. We know of only about 90. Of some of these we have none of the data and of very few are there clear and full accounts either of depths or of strata passed through. As an illustration of the difficulty met with in finding out the real depths of the wells, it may be stated that the well on the Plaza, No. 51, on Figs. 1 and 2, was reported first at 400 feet. A well-borer finally changed this to the neighborhood of 230; still another well-borer altered the figure again to 93, which, on examining the profiles, turns out to be the most probable depth. Where depth is so freely dealt with, it might be expected that strata passed through would be carelessly recorded. That this is the case will appear when we present our data, which we will give in full just as we got them rather than attempt at present to reduce them to system.

Our data have been furnished us principally by Mr. Patrick Delaney, of 764½ Howard street, San Francisco. Mr. Delaney is a pioneer well-borer and has had great experience with San Francisco artesian wells. Very complete and intelligible information has been gained from Messrs. Stevens and Wilder, of Folsom and Eleventh streets, San Francisco. We shall have occasion to speak further of our informants.

In several of the wells wood and leaves have been struck. In others gold has been met with, both in quartz, gravel, and in black sand, though hardly in sufficient quantities to warrant the fear that deep placer mining at San Francisco will detract in any great measure from the ocean beach excitement. Some of the wells have been affected by the tides. Some wells close to each other have affected each other's supply. Others, grouped even more nearly together, have seemed to be entirely independent as to water resource. Brackish water has been found in some wells; in some very hard water; in others good soft water. These and other exceedingly interesting and instructive facts will appear as we study the wells. Figure 1 is a map of the principal part of San Francisco, showing the old land line, and in a general way the locations of about 70 wells. Choosing lines passing through or near the greatest number of widely separated wells, and forming as nearly as possible a rectangle, as shown on the map, we have drawn profiles of the city on these lines showing the depths of the wells. These profiles show a degree of conformity in the water strata to the surface, which would go to show a less broken condition of strata than is indicated by the outcroppings on the hills and by the well-borers' expression, that the "veins of water are like the veins in a man's arm;" however, when the imperfections of the data are seen, and other things are considered, it will appear that there is little to justify joining the bottoms of the wells, as has been done in the profile maps, Figs. 1 and 3. On the profiles the horizontal scale is to the vertical as 1-50 : ½. Hence the great distortion.

Now for the wells:

No. 1; 140 feet deep. No further data.

No. 2; 13-inch well; 194 feet; struck rock at 160 feet; got through it; quit without rock.

No. 3; 184 feet; sand down to 50 feet. Got no water until went 175 feet; got into sand and gravel, and then water came up to within 20 feet of the top.

No. 4; 89 feet. Filling, 40 feet; black mud, 10; sand and clay, 9; stiff yellow clay, 12; water, sand and gravel, 13; hard clay, 3; bed rock, 2.

No. 5; 201 feet. Blue clay, 40; then hard, black sand without water; at 108 feet struck black rock.

Less than a block from No. 5 is another well, the data of which are: 133 feet deep to the rock; yellow clay, 30 feet.

No. 6; 181½ feet; 40 feet of bay mud, 15 of black sand, then got into yellow clay and gravel, then hard dry sand without water, then into yellow clay and small rock, then on the rock at 181½ feet. We believe that this well did not get good artesian water, but after reaching the above depth was cemented up so as to supply surface water.

No. 7; 84 feet. Struck blue clay at that depth and quit. No water. A well 160 feet deep had been bored here before. The unnumbered well immediately north of No. 7 struck blue clay and no water at the same depth, 84 feet.

No. 8; 103 feet deep. No further data except that the well furnished a good supply of water. This well furnished black sand, at first thought to be gold-bearing, and some little placer mining was done at the dump. The most interesting fact connected with it is that while it struck water, well No. 37 not 300 feet away went down 212 feet in vain.

No. 9; 84 feet deep. Sand, 30; then clay, 10. The borer's comment is: "I will defy the world for better water."

No. 10; 168 feet. Clay, 40; hard sand, 30; then hard sand to the water. The unnumbered well across the street is only 116 feet deep, flowing. At 100 feet struck white, hard sand.

No. 11. This well, between No. 10 and No. 12, went 174 feet. Sand and clay, 90; then water all the way down; at 111 feet struck a flow that came 8 feet over the surface.

No. 12. Two wells at about equal distances west and east respectively of this number give the following data: West, 201 feet to the rock, quicksand down to 90 feet; blue clay from that down flowing well; water raised 6 feet above the surface. Across the street from this another well gave the same data. On the same block east there were two more flowing well.

No. 13; 84 feet deep; sand, 30; from that down flowing; east, 110 feet deep; 30 feet of sand to the water. This well yielded to the pump 75,000 gallons per day. When this amount was pumped out a well about one block to the east ceased flowing except at night, when the pumping at the former was stopped.

No. 14; 74 feet; blue mud, 40; flowing well. A short distance east of No. 14 a well flowing 8 feet over the surface gave the following data: Depth, 140 feet; filling, 10; blue mud, 40.

No. 15; 75 feet; blue mud, 75; flowed when bored. Another well on the same block went 140 feet, the first 40 being blue mud.

No. 16; 112 feet; good water.

The unnumbered well beyond the old land line, on Third street, was bored originally 175 feet. Water then raised to the surface, but only 600 gallons per day. This supply being insufficient, a diamond drill was put on and the well bored to a depth of 675 feet, but no more water was obtained. At well No. 39, about the same thing was done. The circumstances were, we believe, something as follows: Water was obtained at the ordinary depth for this neighborhood, when an injudicious use of giant powder injured the well and necessitated the use of the diamond drill. The well went to a depth of 560 feet, and, we think, found water.

No. 17; 140 feet; sand, 50 feet; at 130 feet struck a bed of acorns and leaves.

No. 18; 142 feet; blue clay, 40 feet; flowing well.

No. 19; 130 feet; quicksand, 40; blue clay, 35; water from that down; flowing well. About half a block northeast of this another well gives: depth, 180 feet; quicksand, 20; blue clay, 20; rock at 150 feet. A block southwest of No. 19 is another well, No. 41, 120 feet deep, with water within 8 feet of the surface. Well No. 50, in the same neighborhood, is 124 feet deep.

No. 21; 78 feet deep; flowing when bored. A curious fact is noticeable here. Well No. 22 is only one block from 21, yet its data, which are most complete, give no account of water above a depth of 132 feet.

No. 22; bore, 8 inches; depth, 144 feet. This well supplies quite a number of dwellings with clear, sweet, cold water. Sand, 28; blue clay, 8; cement and clay mixed, 6; light gray sand, 4; streaks of sand and clay, 7; solid blue clay, 4; fine yellow sand, 5; thin layers of clay, sand and cement, alternating, 18; yellow sand, 8; gray hard pan, 7; marl, black and yellow sand, mixed, 16; black clay, 3; black sand containing gold, 3; blue clay, 1; soft sandstone and yellow gravel, 4; washed gravel and gray sand, with fine stream of water, 12. The difference of level between the surface at 21 and at 22 is only 5 feet, 21 being the higher. This would indicate defects in the notes, great tilting of strata or else furnishes foundation for the underground river theory.

No. 23; 140 feet; quicksand, 60 feet.

No. 24; bore, 7 inches; depth, 144 feet. The water is pure, cold and sweet, rises within three feet of the surface, and cannot be lowered by pumping. It supplies fifteen families and a Chinese washhouse, besides water for sprinkling in front of the premises. Sand, 24 feet; yellow clay, 16 feet; soft sandstone, 6 feet; gravel and sand, 18 feet.

This neighborhood is peculiarly interesting. Less than 200 feet northeast of No. 24, is a flowing well, 150 feet deep. About thirty feet east of this last named is another, 240 feet deep, which gives 80,000 gallons per day, supplying a tannery. About 30 feet east again of this one, is still another, giving it is said about the same supply, but only 160 feet deep. Southwest of this about 100 feet, is yet another, 150 feet deep, the water rising to the surface and refusing to be lowered. About 250 feet north of Eleventh street, on Folsom, is another, 155 feet deep. None of these wells affect the others. At Ninth and Folsom, about two blocks north of the last named well, is a well 176 feet deep. In boring this the following were passed: sand, 49 feet; clay, 40 feet; quicksand, 20 feet; clay and cement in streaks; at 160 feet, sandstone, gravel, and black sand were passed into; at the bottom, gold-bearing quartz was found, assaying we believe $200 to the ton.

In our next we will continue this catalogue of wells, give some more profiles, and some general conclusions from the study of the wells.

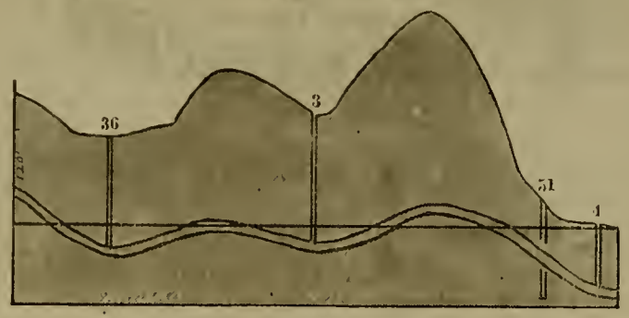

FIG. 1. PROFILE FROM EDDY AND DEVISADERO TO JACKSON AND SANSOME

FIG. 2. ARTESIAN WELLS IN SAN FRANCISCO.

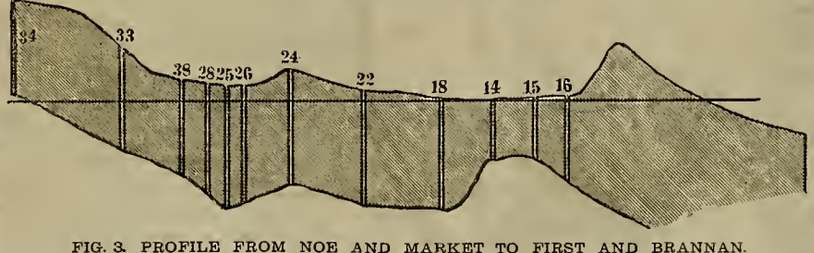

FIG. 3. PROFILE FROM NOE AND MARKET TO FIRST AND BRANNAN.

UNION FOUNDRY, SACRAMENTO.—Business is steady at these works. We observe some large castings for house fronts coming out in the foundry. They have a large variety of choice patterns for this class of work, as well as for improved machinery for mining and other mill work. Among the orders in the hands of the proprietors, Robert Vielson & Co., is a large flouring mill complete—to be erected in the town of Williams, in the flourishing county of Colusa. Among their future stock work will be a number of Miller's hay presses, a California invention. We found our friend Charles H. Moulthrop, engaged at the Union in making a complete, and evidently very fine set of working drawings of Doane's steam wagon, another California invention, of great promise, concerning which we shall soon have more to say. Among other new things found here are castings for a new system of propelling steamboats, in which a direct acting steam piston is forced against the water in an open cylinder. By special reason of some superiority in casting white metal, this foundry is making the grinding plates for feed mills for agricultural stores all over the State.

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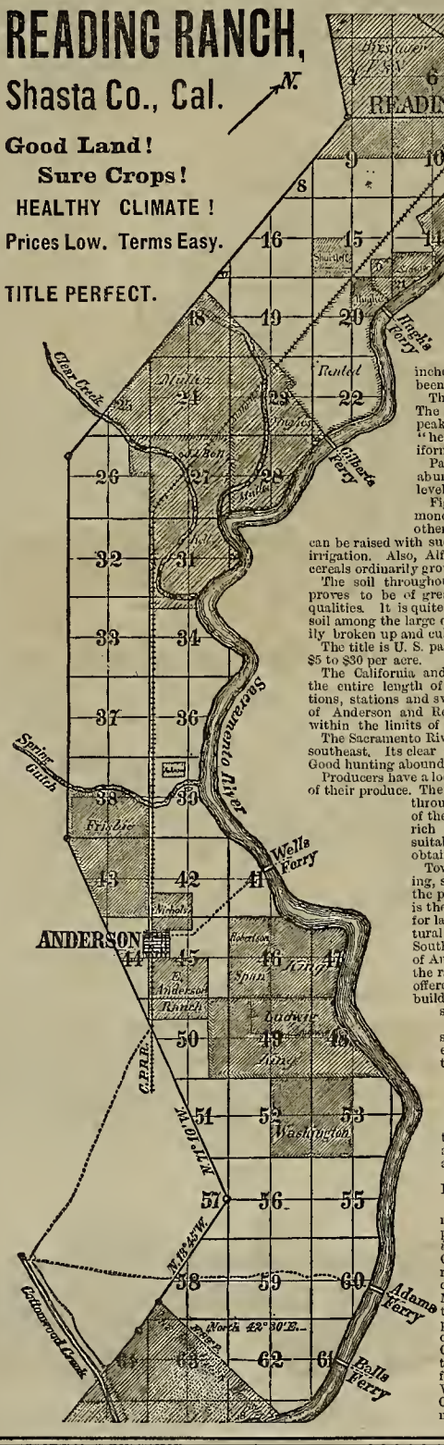

The Reading Ranch, in the Upper Sacramento valley, originally embracing over 26,000 acres of choice grain, orchard and pasture land, is now offered for sale at low prices and on favorable terms of payment, in subdivisions to suit purchasers.

The ranch was selected at an early day by Major P. B. Reading, one of the largest pioneer land owners in California. It is situated on the west side of the Sacramento River and extends over 20 miles along its bank.

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The California and Oregon railroad traverses nearly the entire length of the tract. There are several sections, stations and switches, besides depots at the towns of Anderson and Reading, all of which are located within the limits of the ranch.

The Sacramento River borders the whole tract on the southeast. Its clear waters are well stocked with fish. Good hunting abounds in the surrounding country.

Producers have a local market, which enhances the value of their produce. The railroad transportation route is level throughout to San Francisco. A portion of the land is auriferous and located near rich mines now being worked. Land suitable for settlers in colonies can be obtained on good terms.

Town lots are offered for sale in Reading, situated on the Sacramento river, at the present terminus of the railroad. It is the converging and distributing point for large, prosperous mining and agricultural districts in Northern California and Southern Oregon. Also, lots in the town of Anderson, situated more centrally on the ranch. Lots in both these towns are offered at a bargain, for the purpose of building up the towns and facilitating settlement of the ranch.

Purchasers are invited to come and see the lands before buying here or elsewhere. Apply on the ranch, to the proprietor,

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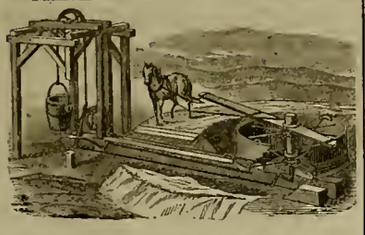

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S. P. BRESSLER, Elkhardt, Indiana.

Continued from page 229.

templates putting up a mill very soon, as he can easily produce 50 tons of ore per day, and says there is too much gold and silver in sight to lay idle any longer. The Northern Light mine still continues to produce the same good quality of ore, and Mr. Whitney, the President of this company, has a fine pile of rich ore on the dump ready to be hauled to the mill as soon as the Extra company are ready to crush the ore. Superintendent Springer is running a very large and substantial tunnel in the Winthrop mine, and has everything in good shape for the rainy season, and, judging from the looks of his ore dump, the Winthrop Co. have ore enough out and neatly piled up to last a 10-stamp mill a long time, and enough more good ore in sight to last for many years. This mine is so situated that there can be three years' crushing done before there will be any necessity for hoisting machinery, as the main shaft is already connected with tunnels to a sufficient depth to produce many thousand tons of ore.

NEVADA.

ITEMS.—Tuscarora is steadily improving. The Golden Eagle mine in the Bull Run range has ore that gives average assays of $500 per ton. Water power and pine timber are close by in abundance. The Richmond furnaces will be speedily rebuilt and will be in much better shape for rapid work. The leaching process seems to have been a success in the neighborhood of Pioche. A Danville company have a 13-inch vein, some of the ore assaying as high as $1,300 per ton. Wide and well-defined ledges are an everyday thing in Tem Pahute district. There has been struck on the Lodi ledge, Lodi district, a well-defined four-foot vein of chlorides and carbonates. At 30 feet depth the ledge is seven feet wide, the ore assaying all the way from $40 to $100 per ton. The Eclipse ledge, the first and largest yet discovered in Shaw district, carries rich ore, and there are hundreds of tons of loose quartz, some of it rich in silver, along the course of the vein. Two samples of ore from the second and lower levels of the Alexander mine at Grantsville assayed respectively $130.35 and $274.87. A large body of rich ore has been struck in sinking on the Blue Jacket lead. It continues to increase in size and to hold its improved quality. A very rich strike has been made in the 320-foot level of the Jefferson mine, the ledge is three feet thick and carries fine ore.

WASHOE.

SUMMARY.—Gold Hill *News*, Oct. 9th: The prospects for opening up another of the richest and largest bonanzas of paying ore in the Sierra Nevada, have not been equaled by anything on this Comstock since the opening up of the 1500 level of the Consolidated Virginia mine in 1873. This incline in that mine is now down over 200 feet on the slope below where the ore was first struck, having reached the 2200 level yesterday afternoon. In excavating for the last set of timbers, ore assaying $300 per ton was encountered, proving conclusively that the ore is not only continuous, but still holds its richness to that depth.

The angle at which the west clay wall was pitching when last seen would, if continued to that depth, give a width of over 250 feet to the ore vein. It is the intention to open the station and continue the main incline downward without any stop whatever. While this is being done chutes will be put in and a drift started westward to crosscut the ledge, and at the same time another started to connect at the earliest day possible with the north winze now being sunk below the 1700 level. To open the station, put in the chutes and get ready to start these drifts, will take from two to three weeks.

The south end of this new and splendid ore deposit is being approached as rapidly as men, powder and machinery can accomplish the feat at three different points. The first of these is by the North Con. Virginia shaft, which is now down 1466 feet, and is going directly down on top of the ore. Another is the joint Union Con. and Mexican winze which is being sunk below the 1600 level of those mines, and the third point is the north lateral drift on the 2000 level of the Ophir, which is being pushed with all the speed possible to complete a connection with the North Con. Virginia shaft.

A large drift, 8x10 feet in size, is being run from the Hale & Norcross shaft, at the depth of 2000 feet, to connect with the Chollar combination shaft. The crosscutting operations in the Belcher, Crown Point, Alta and other mines, are progressing as usual without any new or valuable developments to report.

BULLION SHIPMENTS.—McCrackin, Oct. 1st, $7,251.91; California, Oct. 2d, $59,854.03—total to date, $290,937.24; Independence, Sept. 30th, $6,719.20; Bodie, Oct. 3d, $12,250.53; 8th, $16,000; Northern Belle, Oct. 2d, $3,949.20—total for Sept., $58,430.94; Oct. 5th, $4,128.88; Grand Prize, Oct. 2d, $2,824.26; Ontario, Sept. 27th, $3,992.10; 28th, $3,229.50; 30th, $3,350.27; Oct. 1st, $3,628.48; Oct. 2d, $3,298.58; Oct. 3d, $3,092.92; Germania, Oct. 3d, $2,800.00; Silver Reef, Oct. 2d, $13,329.26; Hillside, Oct. 8th, $6,000; Navajo, Oct. 7th, $7,700; Homestake, Sept. 28th, $13,500; Tiptop, Sept. 28th, $10,000; Raymond & Ely, Oct. 1st, $3,100; Northern Belle, Oct. 2d, $3,900; 5th, $4,128.88; Orieutal Con., Oct. 3d, $3,000; Star, Oct. 8th, $3,000; Tyho Con., Oct. 4th, $3,755.25; Mauhattan, Oct. 8th, $11,500; Hackberry, Oct. 8th, $6,132.33; Hillside, Oct. 9th, $5,500; Leopard, Oct. 8th, $4,700.

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Mining Terms and Phrases.

The following comprises a list of the more common mining terms and expressions in general use on the Pacific coast, the greater portion of them being also employed in all English-speaking countries. Some, however, are of recent origin and confined in their application to the States and Territories of the extreme West. Of these latter a few are entirely new, having grown out of the exigencies of the occasion or been invented by a class of men who have shown themselves to be possessed of an imagination fertile in this field of invention. In some cases the words themselves are not new, but have simply been employed in a new sense or had an additional meaning added to them, a small number having been borrowed from the Spanish or other foreign tongue. For the most part, however, our mining vocabulary is made up of English words, having fixed and well-defined meanings and which have been legitimatized by long use:

ADIT.—An underground opening for enterlug a mine—a tunnel.

ALLUVIUM.—Soil formed by the action of water.

AMALGAM.—Quicksilver containing other metals, usually gold or silver, or both.

ARRASTRA.—From the Spanish *arrastrado*, dragged along. A machine consisting of a sweep revolved horizontally on a pivot, and to which heavy stones or other weights are attached and dragged along over a hard circular floor. Used for crushing and amalgamating ores.

BEDROCK.—The rock that forms the bed or bottom of any metalliferous deposit, commonly applied to the slate underlying auriferous gravel or that composes the banks of the buried rivers and other ancient channels.

BLIND LODE.—One that shows no croppings on the surface.

BONANZA.—A large and profitable ore body.

BOULDER.—A large, rounded mass of rock, worn smooth by the action of water.

BREASTING.—Taking ore from the face of a mine.

BULLION—Uncoined and unmanufactured gold or silver.

CAP-ROCK.—The formation overlaying the pay-dirt or ore, sometimes corrupted into *cab*.

CARBONIFEROUS.—Containing coal.

CRIPPA.—Spanish for a small piece or particle. A lump or mass of native gold, a "nugget."

CRUTH.—An incline from an upper tunnel or level to a lower one, through which to slide ore. Sometimes a chimney or column of ore is called an ore chute.

CONGLOMERATE.—Rocks composed of pebbles and gravel cemented together; pudding-stone.

CONTACT LODE.—One lying between two different kinds of rock, as, for example, porphyry and slate. Prof. J. S. Phillips, in his recent work on mineralogy and mines, very properly designates these as "intervening" lodes or veins.

CROPPINGS.—Ledge matter exposed on or above the surface; outcrop.

CROSSCUT.—A drift run at right angles with the ledge, for the purpose of prospecting it.

CUPRIFEROUS.—Containing copper.

DEBRIS—Fragments of rock detached from the sides of a mountain and piled up below. Sediment from hydraulic or other mines.

DENUDATION.—Rocks laid bare by the action of running water, or other agency.

DEPOSIT.—That which is laid or thrown down.

DETRITUS.—A mass of substances worn from solid bodies by attrition and reduced to small particles.

DISINTEGRATED—Separated into integrant parts without chemical action.

DRIFT.—Earth, pebbles and boulders that have been drifted by water and deposited over a country while submerged.

DUMP.—The place where ore is put after being taken from a mine.

EROSION.—The act of eating or wearing away.

FACE.—The extreme end of a tunnel, drift or excavation, where work is proseouted.

FIND.—A valuable discovery of ore or metal.

FISSURE.—An opening or chasm running lengthwise; a formation.

FLOAT-ROCK.—Fragments of a lode that have been floated by the water or by other means carried down and left on the surface. Ledges are sometimes found by tracing up the "float."

FLUVIATILE.—Formed by or belonging to rivers.

FLUX.—Any substance employed to promote the fusion of minerals or metals.

FOSSILS.—Petrified organic remains.

GANGUE.—The rock or mineral that contains the ores of metals. Quartz is commonly the gangue rock of gold and silver ores: matrix.

HORSE.—A mass of wall rock or other barren matter obtruded into an ore-bearing lode or fissure.

INCLINATION.—Leaning; deviation from an upright position. An *incline*, a slanting shaft or tunnel.

INTERSTRATIFIED.—Stratified between other bodies.

IRON PYRITES.—A hard, brittle mineral, of a yellowish brilliant color, found in various ores.

JUMP.—To jump a mining claim is to take illegal possession thereof by force or otherwise.

LACUSTINE.—Pertaining to lakes or swamps.

LAMINA.—(*pl.* lamine). A thin scale, layer or coat.

LAVA.—Melted rocks and minerals ejected from volcanoes.

LIMESTONE.—Rock from which lime is made through the expulsion of its carbonic acid or fixed air by burning; carbonate of lime.

LOCATE.—The process whereby a possessory right is established to a mining claim is called locating the same, the property so secured being designated a claim or location. This method of procedure is under the Spanish law called *denouncing* a mine.

LODE.—A longitudinal fissure or chasm filled with ore-bearing matter and having well-defined side walls. In our mining parlance, lode, lead, vein and ledge are synonymous terms. A blind lode is one that shows no croppings.

MICA.—A shining mineral of various colors and capable of being split into thin parts: By the ignorant sometimes mistaken for gold.

OPAQUE.—Not transparent.

OXID.—A combination of oxygen with another body; rust.

PETERING.—The pinching or giving out of an ore body.

PIPING.—Washing gravel in a hydraulic claim by discharging water upon it through a nozzle.

PLACER.—Earth containing deposits of gold dust.

PLATEAU.—A plain or flat surface.

PORPHYRY.—A barren, unstratified, reddish, purple or greenish rock, in which are imbedded crystals.

PRIMARY OR PRIMITIVE ROCKS.—Consist of the various kinds of slate, quartz, serpentine, granite and gneiss. They are the lowest group of rocks, are irregularly crystallized and contain few animal relics.

PROSPECT.—Searching for metalliferous deposits or examining the same when found, also the percentage of metal such deposits are found to contain on being so examined.

PYRITES.—A combination of sulphur with iron, copper or other metal; a sulphuret.

QUARTZ.—A silicious rock occurring in glassy crystals and forming a part of nearly all rocks; pure flint. Quartzite containing no valuable mineral is by the miners called "bastard quartz."

RANGE.—A long line of mountains.

REDUCED.—Separated from foreign substances. The reduction of ores consists in extracting from them the metals they contain.

REGULUS.—The impure metal. Melted ore containing all its metallic ingredients.

"SALTING" A MINE.—The act of introducing rich ores into a mine or gold dust into a claim for deceptive purposes.

SCHIST.—Clay slate.

SECONDARY ROCKS.—Those above the primary and below the tertiary; made up chiefly of sand, clay and pebbles cemented together and contain many organic remains. They consist principally of chalk, green sand, clay, limestone, marl, sandstone, etc.

SECTILE.—Being cut with a knife the particles do not fly off but remain. A mineral midway between the brittle and malleable.

SERPENTINE.—A mineral found in primary limestone, gneiss and mica slate. It yields to the knife, is susceptible of a high polish and soapy to the touch; colors: green, yellow, brown and gray.

SHAFT.—A pit or long, narrow opening, vertical or inclined, for entering a mine.

SHALE.—A fine grained, slaty rock.

SLAG.—Scum, dross, the excrement of a metal; vitrified cinders.

SPAR.—A crystallized, earthy mineral, vitreous or splendent; brittle, with white streak and of many colors.

STAMPEDE.—A sudden rush of miners to some locality where an important mineral discovery has been reported.

STOPING.—Breaking down ore from the roof of a tunnel or ore chamber. Ore stopes are the same as ore breasts, except that the former means the ore overhead, the latter in front or on the sides.

STRATUM.—A flat bed or layer of rock, earth, mineral, etc.; *pl*, strata, seldom stratums; stratified, arranged in layers.

STREAK.—The color a mineral presents when scratched.

STRIKE.—A valuable mineral development made in a sudden or unexpected manner; a find.

STRIATED.—Marked with parallel scratches or lines.

SUPERIMPOSED.—Lying or imposed upon something else.

SULPHITE.—A salt formed by a combination of sulphurous acid with a base.

SULPHURET.—Combination of sulphur with a metallic, earthy or alkaline base.

SUMP.—A pit sunk in the bottom of a mine to collect the water.

SUPERFICIAL DEPOSITS—Are composed of such metals and ores as lie on or near the surface, intermixed with soil, sand, gravel, etc. They are also called washings or stream works, these metals and ores being gathered by washing with water. Much gold, all platina and some tin and cinnabar are collected in this manner.

TAILINGS.—The auriferous earth that has once been washed and deprived of the greater portion of the gold it contained. This term is also applied to the sulphurets and slimes that escape from the ore mills.

TALCOSE SLATE.—A primary rock, soapy to the touch.

TRAMWAY.—A track laid down for the passage of cars from a mine.

TERTIARY ROCKS.—Those lying above the secondary and below drift, consisting of sandstones, clay beds, limestones, green sand, gypsum, rock salt, lignite, etc., with animal relics.

UP-RAISE.—Excavating in a mine upwards.

UP-CAST.—A shaft is "up-cast" when the current of air is upward, out of it, and "down-cast" when it moves in an opposite direction.

WALLS.—The rocky sides of a fissure. When the fissure has an inclination the lower or under side is called the "foot-wall" and the upper the "hanging-wall."

WHIM.—A machine, usually operated by a horse, for raising dirt, ore or water from a shaft.

WINZE.—A shaft connecting one drift or level with another, but not reaching to the surface.

ZINC-BLEND.—A sulphuret of zinc that, from its resemblance to galena, is sometimes called "mock-lead," also "black-jack." It generally contains more than half its weight of zinc, about one-fourth sulphur and some iron.

Of the invented words to which allusion has been made, though often outrageous and without any etymology, some really seem marked by such significance and force as constitute them a sort of natural language. A "petering" ledge, a "nugget" of gold and a "booming market" are each rudely suggestive of the idea we wish to express. There is also in the phraseology of the terms and expressions derived from the Spanish an innate fitness as well as a comprehensiveness that renders their employment very convenient. We have in the English no word that so aptly expresses the sudden and impulsive movement of a multitude of people from one place to another as the term "stampeds," from the Spanish *estampar*, to run away, or, as we say, "make tracks." So, too, we have no one word that suffices to convey the idea of a mine containing an extensive body of good ore like the Spanish term "bonanza." To the stranger many of these expressions doubtless sound odd and even slangy, yet not readily would any modern mining community consent to expurgate them from their nomenclature.

In the progress of our mining industries new branches of the business have been developed and many original inventions and methods of operating introduced, each of which has led to the coinage of various novel terms or compelled us to resort to the use of old words for giving expression to new ideas. In supplying the want that has thus grown up, it would not be strange if some queer and odd-sounding terms should have gained standing in our mining glossary. An acquaintance, however, with the derivation of these terms will tend to show that their use is not in all instances wholly inappropriate. To call a rack for gravel screening a "grizzley" seems not so absurd to one cognizant of the dextrous manner in which the grizzly bear casts aside the rocks hurled at him as it would to one unacquainted with that fact, and so of many similar examples that might be cited.

Sometimes, through lack of agreement on a single word or failure to find one that just meets the requirements of the case, no one term has been united upon to express the new idea calling for embodiment in speech. Thus, the terms debris, tailings, detritus, slums, etc., are all in use for designating the outflow from our hydraulic mines, there being in the language no one word that fully represents their character. In the suit lately on trial between the farmers and the miners, the above terms were used indiscriminately, the unmeaning and outlandish word "slickens," whereby some Western attorney had in the earlier stages of this suit sought to characterize this stuff, having not once been used in the progress of this trial.

In regard to the terms "Bull," "Bear," "long and short," "pool" and "deal," "put and call," and all the other slang pertaining to the Stock Exchange Board, it may be observed that the less the practical miner knows about these the better he is off.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of special mention:

STEAM PUMP.—George E. Dow, San Francisco. This invention relates to certain improvements in direct acting steam engines (for steam pumps), and it consists in the employment of a mechanism by which the main steam valves which operate the main piston may be moved with a degree of positiveness corresponding with any desired increase in the speed of the piston, so that a complete movement of the main valve and a full opening of the ports may be effected when the conditions require it most, that is, with high speed. It also consists in a means of operating, by which the change of stroke is accomplished without check, whatever may be the speed or pressure; and finally, in a reduction of the waste room between the valve and piston, so that the ports shall be short and direct, and no small ports communicate with the steam chest in such a manner as to form pockets that will become foul from precipitation of impure lubricants. Mr. Dow is foreman of the Hope Iron Works in this city. We shall shortly illustrate this steam pump, and describe it more in detail.

WAGON JACK.—James B. Newlaud, Sacramento, Cal. It consists of two horizontal frames connected by a link at each corner so that the two frames will have a parallel motion. The upper frame is raised and lowered by means of a lever and connecting bars. The lower or base frame is large enough to have a firm, solid bearing on the ground. The lever has its lower end secured between bounds at one end of the lower frame, and the connecting rods are attached to it near its middle, while their opposite ends are attached to the upper frame near its middle, so that by drawing the upper end of the lever forward and forcing it down to a horizontal position the frame is raised with a parallel motion. In use the closed frame is placed under the axle of the wagon or carriage and the upper frame is raised by means of the lever so as to lift the carriage or wagon wheels clear of the ground, a single operation serving to lift the entire end of the wagon or carriage and frame both wheels.

News in Brief.

INDIAN raid in Nebraska.

NEGRO insurrection in Jamaica.

YELLOW fever symptoms in Madrid.

CYPRUS already has a newspaper, the *Cypress*.

DESTRUCTIVE hurricane in Hayti, September 25th.

THE rinderpest has appeared in Northumberland.

COLORADO election gave the Republicans 3,000 majority.

THE sale of mushrooms in the City of Mexico is prohibited.

LAYARD is to discuss in London the British policy in the East.

ABOUT 400 Tyrolese emigrants have lately settled in Guatemala.

IN some fields near Ukiah the yield of hops is nearly a ton per acre.

BARK *Lady Head* carries 18,000 cases Fraser river salmon to London.

COLORADO boasts a real living glacier on the celebrated Wind River Peak.

ON November 5th, Washington Territory will vote on their new constitution.

THE Louisiana orange crop bids fair to be the largest and finest ever known.

THE Bosnian insurgents have abandoned open resistance to the Austrians.

RUMORED that the Ameer is collecting his forces to resist the English advance on Cabul.

THE total loss suffered by Austrian troops in Bosnia and Herzegovina has been about 4,000 men.

BANK OF GLASGOW has failed for $50,000,000. Too much credit to favored parties, one of the causes.

SIR FRANCIS GRANT, President of the Royal Academy, died suddenly in London on the 5th inst.

LARGE prairie fires reported in Red River of the North valley. Thousands of tons of hay destroyed.

IT is rumored that General Crook's pay-master has been robbed of $75,000 greenbacks by road agents.

IT is estimated that the stockholders of the City of Glasgow Bank must meet a deficit of $20,000,000.

MONTANA has contributed $10,000 towards the Southern scourge fund; Utah, by latest reports, $6,600.

THE newsboys and bootblacks of Cincinnati gave their earnings for one day to the yellow fever sufferers.

IT has been decided that the Utah and Oregon railroad may legally pass though the Bannack Indian Reservation.

A COMMISSIONER is to be sent from San Francisco to New York to study means adopted there to prevent election frauds.

SMITH, Fleming & Co., East India merchants, Leadenhall street, E. C., London, have failed. Liabilities, several millions of dollars.

THE Imperial Bank of Russia announces, that it holds 147,784,805 roubles in coin, against notes issued to the amount of 723,810,155.

RECEIPTS of bank notes at the Treasury Oct. 3d, for redemption were only $100,000, the smallest amount ever received in one day.

ONE man in Riverside, San Bernardino county has no less than 20,000 orange trees planted on sometbing over 300 acres of land.

THE Winnemucca *Silver State* says: The Humboldt river is lower than at any time since the whites settled in this part of the country.

OUT of the 313,977 acres of assessed land in San Benito county, nine individuals or firms own 181,103 acres of it, or considerably over half.

THE amount of money that France is pledged to expend to relieve her railroads and to build other public works will reach $1,000,000,000 in 10 years.

RUMORED understanding between Russia and Roumania giving former right of passage through the Dobrudja in case of future wars with Turkey.

DURING the past season much work has been done on the Oregon and California railroad, preparing it for the heavy fall shipments of grain to Portland.

NEW YORK City wants an International Exhibition in the year 1889, to commemorate the centennial of General Washington's inauguration to the Presidency.

THE New York elevated railway has been presented by the Grand Jury as a nuisance. The reasons are the dropping of oil and cinders, escape of noxious gases, and the intolerable noise.

LONDON *Times* says of the Bank of Glasgow failure: The opinion expressed by bank managers is that a more reckless course of gambling with other people's money has never been pursued by any body of managers or directors.

OF 8,291 volumes circulated last month by a San Francisco library, 6,631 are classed as romances, 243 as history, 222 as magazines, 200 as poetry and the drama, 244 as biography, 259 as travels, 238 as science and art, 20 as theology, and 234 as belles lettres.

JOHN SPANGLER of Marysville, Cal., wisbes to learn the present residence of his sister, Mrs. Andy Dodge. When last heard from in 1858 she was living at Shaw's Flat, Tuolumne county, Cal. Any information leading to her discovery will be thankfully received by him.

THOUSANDS of acres of the most fertile lands along the banks of Skipanon creek, Clatsop county, Oregon, are about to be reclaimed from the tides by means of diking. Several hundred acres have already been so reclaimed, and the land is making excellent pasturage.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch from Washington, D. C.

FOR THE WEEK ENDING SEPTEMBER 24TH, 1878.

STEAM OR HYDRAULIC STEERING APPARATUS—John Gates, Portland, Ogn.

OIL CUPS—Alden D. Kilborn, Oakland, Cal.

OIL STOVES—Henry L. Howse, S. F.

CONVERTING MOTION—William Meyers, Oaklnnd, Cal.

COOLING FAUCETS FOR BEER BARRELS—Charles C. Redmond, San Jose, Cal.

DEEP WATER SAFETY BATHS—Joseph J. Bamber, S. F.

TRADEMARKS—William C. Badger, S. F., overalls, jumpers and ready-made goods for outside wear.

Woodward's Gardens were never more attractive than at present. Besides three lions already mentioned, six monster living alligators, several Iguanas and a boa-constrictor have just been added. New stars are constantly engaged for the Pavilion exercises. Rates of admission as usual.

EXAMINE the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.94. Lewis C. Grover, President; L. Spencer Cobb, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

GENERAL MERCHANDISE.

[WHOLESALE.]

WEDNESDAY M., October 9, 1878.

BAGS—Jobbing.
Eng Standard Wheat. —@14½
Cal. Manufacture.
Hand Sewed, 22x36..14½@—
24x36..... —@—
23x40..... 15½@—
Machine Swd, 22x36..14½@—
Flour Sacks, halves....10½@11
Quarters..... 6 @ 7
Eighths..... 4½@ 4½
Hessian, 60 inch..... —@—
45 inch..... 12½
40 inch..... 12 @—
Wool Sacks,
Hand Sewed, 3½ lb..47½@50
4 lb do..... 52½@—
Machine Sewed.....50 @—
Standard Gunnies....14 @15
Bean Bags..... 8 @ 9
CANDLES.
Crystal Wax.....17 @—
Eagle.....12 @—
Patent Sperm.....30@—
CANNED GOODS.
Assorted Fruits,
2½ lb cans.....2 25 @2 50
Table do.....3 00 @3 25
Jams and Jellies..3 50 @3 75
Pickles, hf gal.....3 25 @—
Sardines, qr box..1 67½@1 90
Hf Boxes.....2 50 @2 75
Preserved Beef,
2 lb. doz.....4 00 @—
do Beef, 4 lb, doz.6 50 @—
Preserved Mutton,
2 lb. doz.....4 00 @—
Beef Tongue....6 50 @—
Preserved Ham,
2 lb. doz.....6 50 @—
Deviled Ham, 1 lb,
doz..... 5 00 @—
do Ham, ½lb doz.3 00 @—
COAL—Jobbing.
Australian, ton.. 8 00 @—
Coos Bay..... 6 50 @ 7 00
Bellingham Bay. 6 50 @—
Seattle..... 6 00 @ 6 50
Cumberland.....14 00 @—
Mt Diablo..... 4 75 @ 6 00
Lehigh.....13 50 @—
Liverpool..... 7 50 @ 8 00
West Hartley...10 50 @—
Scotch..... 10 50 @—
Scranton.....11 50 @—
Vancouver Id.... 7 00 @—
Charcoal, sack... 75 @—
Coke, bbl... .... 60 @—
COFFEE.
Sandwich Id, lb. —@—
Costa Rica..... 17¼@ 17½
Guatemala..... 17 @ 17¼
Java..... 23 @— 25
Manila..... 17 @—
Ground, in cs... 25 @—
FISH.
Sac'to Dry Cod.. 5 @ 5½
do in cases.. 6 @ 6½
Eastern Cod.... 7 @— 7½
Salmon, bbls.... 8 00 @ 9 00
Hf bbls..... 5 00 @ 5 50
1 lb cans..... 1 45 @ 1 30
Pkld Cod, bbls...22 00 @—
Hf bbls..... 11 00 @—
Mackerel, No. 1.
Hf Bbls.....10 00 @10 50
In Kits..... 1 80 @ 1 90
Ex Mess..... 3 25 @—
Pkld Herring, bx 3 00 @ 3 50
Boston Smkd Hg.. 70 @—
LIME, Etc.
Lime, Sta Cruz, hbl..... 1 25 @ 1 50
Cement, Rosendale..... 2 00 @ 2 25
Portland..... 4 00 @—
Plaster, Golden Gate Mills.... 3 00 @ 3 25
Land Plaster, tn 10 00 @12 50
NAILS.
Ass'ted sizes, keg 2 30 @ 3 00
OILS.
Pacific Glue Co's
Neatsfoot, No 1..1 00 @ 90
Castor, No 1.....1 10 @ —
do, No. 2.....1 05 @ —
Baker's A A.....1 25 @1 30
Olive, Plagniol....5 25 @5 75
Possol.....4 75 @5 25
Palm, lb..... 9 @ —
Linseed, Raw, bbl. 72 @ —
Boiled..... 75 @ —
Cocoanut..... 55 @ —
China nut, cs..... 70 @ 72½
Sperm.....1 40 @ —
Coast Whale..... 40 @ —
Polar ..... 45 @ —
Lard..... 90 @1 00
Oleophine..... 22 @ 22½
Devoe's Bril't..... 22 @ 23½
Photolite..... —@ —
Nonpariel..... 31 @ 32½
Eureka..... 18 @ 42½
Barrel kerosene... 20 @ —
Downer Ker..... 37½@ —
Elaine..... 37½@ —
PAINTS.
Pure White Lead. 8 @ 8½
Whiting..... 1½@ —
Putty..... 4 @ 5
Chalk..... 1½@ —
Paris White..... 2½@ —
Ochre..... 3½@ —
Venetian Red.... 3½@ —
Averill Mixed Paint, gal. 2 00 @2 40
White & tints...
Green, Blue & Ch Yellow.....3 00 @3 50
Light Red..... 3 00 @3 50
Metallic Roof...1 30 @1 60
RICE.
China, Mixed, lb.. 5½@ —
Hawaiian..... 7 @ 7½
SALT.
Cal. Bay, ton....15 00 @22 50
Common.....10 00 @12 00
Carmen Id.....12 00 @14 00
Liverpool fine...19 00 @—
SOAP.
Castile, lb..... 10 @ 10½
Common brands.. 4½@ 6
Fancy brands.... 7 @ 8
SPICES.
Cloves, lb..... 45 @ 50
Cassia..... 22½@ 25
Nutmegs..... 85 @ 90
Pepper Grain..... 15 @ 17
Pimento..... 15 @ 16
Mustard, & Cal., ½ lb glass.....1 50 @ —
SUGAR, ETC.
Cal. Cube, lb..... 11½@ —
Powdered..... 11½@ —
Fine crushed..... 11½@ —
Granulated..... 11 @ —
Golden C..... 9½@ —
Cal. Syrup, kegs.. 70 @ —
Hawaiian Mol'ses 26 @ 30
TEA.
Young Hyson, Moyune, etc.... 27 @ 30
Country pckd Gunpowder & Imperial..... 50 @ 60
Hyson..... 30 @ 35
Fooo-Chow O..... 35 @ —
Japan, 1st quality 40 @ —
2d quality..... 20 @ 25

METALS.

[WHOLESALE.

WEDNESDAY M., October 9, 1878.

IRON.—
American Pig, ton.....28 00 @30 00
Scotch Pig, ton.....28 00 @30 00
White Pig, ton.....28 00 @—
Oregon Pig, ton..... —@—
Refined Bar..... 2½@ 3
Horse Shoes, keg..... 5 00 @— —
Nail Rod..... —@ 7
Norway, Oval..... —@ 7
COPPER.—
Sheathing, lb..... 34 @ 35
Sheathing, Yellow..... 21 @ —
Sheathing, Old Yellow..... 12 @ —
Composition Nails..... 24 @—
Composition Bolts..... 24 @—
STEEL.—
English Cast, lb..... 13 @ 14
Anderson & Woods, ordinary sizes..... 15 @— —
Drill..... 15 @— —
Flat Bar..... 14 @ 19
Plow Steel..... 8½@ 12½
TIN PLATES.—
10x14 I C Charcoal..... 7 50 @ 8 50
Banca Tin..... 23 @— 24
Australian..... 17 @ 17½
ZINC.—
By the Cask..... 9 @— —
Zinc, Sheet 7x3 ft, 7 to 10, lb..... 9 @— 10
7x3 ft, 11 to 14..... 10¾@— —
8x4 ft, 8 to 10..... 11 @— —
8x4 ft, 11 to 10..... 11 @— —
NAILS.—
Assorted sizes..... 3 15 @3 25

Mining and Other Companies.

Keystone Quartz Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Sierra county, California.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 6) levied on the thirtieth day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Am't.
Carolan, James, Trustee.....	50	200	100 00
Hall & Charles, Trustees.....	68	1248	624 00

And in accordance with law, and an order of the Board of Directors, made on the thirtieth day of August, 1878, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the office of the Company, No. 201 Sansome street, corner of Pine, San Francisco, California, on the twenty-eighth day of October, 1878, at the hour of 12 o'clock M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

LOUIS VESARIA, Sec'y.

Office, No. 201 Sansome street, corner of Pine, San Francisco, California.

New Basel Gold Mining Company.—Principal place of business, 610 Merchant street, San Francisco. Location of works, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 24th day of September, 1878, an assessment of five (5) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary of the Company.

Any stock upon which this assessment shall remain unpaid on the 4th day of November, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 18th day of November, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. D. F. LEGAYE, Sec'y.

Office 610 Merchant street, San Francisco, Cal.

Orion Mining Company.—Location of Principal place of business, San Francisco, California. Location of works, Iowa Hill, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the fifth day of September, 1878, an assessment (No. 3) of seventy-five (75) cents per share was levied upon the capital stock of the corporation, payable immediately in U. S. gold coin, to the Secretary, at the office of the Company, 28 Sansome Street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the fifth day of November, A. D., 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the 20th day of November, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

P. CONKLIN, Sec'y.

Office, No. 28 Sansome Street (up stairs), San Francisco, Cal.

Pocahontas Mining Company.—Location of principal place of business, 411½ California street, San Francisco, California. Location of Works, El Dorado County, California.

NOTICE.—There are delinquent upon the following described stock on account of assessment (No. 14) levied on the 14th day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

OLD ISSUE.

Names	No. Certificate.	No. Shares.	Amount.
Roberts, W G, Trustee...	128	100	$450 00
Roberts, W G, Trustee....	130	100	450 00
Roberts, W G, Trustee....	131	100	450 00
Roberts, W G, Trustee....	132	100	450 00
Roberts, W G, Trustee....	133	100	450 00
Roberts, W G, Trustee....	134	100	450 00
Roberts, W G, Trustee....	135	100	450 00
Roberts, W G, Trustee....	136	100	450 00
Roberts, W G, Trustee....	137	110	535 50
Staples, A, Trustee.....	160	300	1350 00

NEW ISSUE.

Roberts, W G, Trustee....	113	17,500	$26,250 00
Kohler & Chase, Trustee..	122	89	133 50
Staples, A, Trustee.....	123	266	399 00
Staples, A, Trustee.....	125	279	418 50
Staples, A, Trustee.....	11	100	150 00
Staples, A, Trustee.....	27	100	150 00
Staples, A, Trustee.....	28	100	150 00
Staples, A, Trustee.....	117	50	75 00
Staples, A, Trustee.....	118	100	150 00

And in accordance with law and an order of the Board of Directors made on the 14th day of August, 1878, so many shares as may be necessary of each parcel of such stock will be sold at public auction at the office of the Company, Room 9, 411½ California street, San Francisco, Cal., on Wednesday, the twenty-third day of October, 1878, at the hour of one o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

M. C. SOUTHARD, Sec'y.

Office, Room 9, No. 411½ California street, San Francisco, California.

Summit Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the tenth day of September, A. D., 1878, an assessment (No. 5) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of said Company, 318 Pine street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the twenty-second day of October, A. D., 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the nineteenth day of November, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W CLARK, Sec'y.

Office, Room 6, No. 318 Pine Street San Francisco, Cal.

The California Fruit Growing Association.—Location of principal place of business, San Francisco, California. Location of property, El Dorado County, California.

Notice is hereby given, that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 9) of three ($3) dollars per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, No. 641 Sacramento street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 30th day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Monday, the 21st day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco, Cal.

POSTPONEMENT.—At a meeting of the Board of Directors of the California Fruit Growing Association, held September 23d, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till Saturday, the 26th day of October, 1878, and the day of sale of delinquent stock is hereby postponed to Friday, the 22d day of November, 1878. D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco.

Vigorit Powder Company.—Location of principal place of business, City and County of San Francisco, California. Location of works, California City, Marin County, State of California.

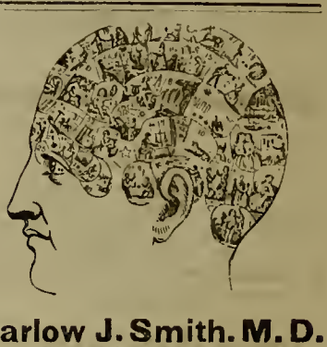
Notice.—There are delinquent upon the following described stock, on account of assessment (No. 1) levied on the first day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. of Cert.	No. Shares	Amount
Louis McLane, Trustee....	30	437½	$218 75
Louis McLane, Trustee....	32	½ of 875	218 75
G W Grayson, Trustee....	62	1312½	656 25
H H Shinn, Trustee.....	91	400	200 00
H H Shinn, Trustee.....	92	400	200 00
H H Shinn, Trustee.....	93	400	200 00
H H Shinn, Trustee.....	94	112½	56 25

And in accordance with law, and an order of the Board of Directors, made on the First day of August, 1878, so many shares of each parcel of stock as may be necessary will be sold at public auction, at the office of the Company, Room No. 1, 109 California street, on Wednesday, the second day of October, 1878, at the hour of 2 o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale. JAS. W. BAKER, Sec'y.

Office, No. 109 California street, Room 1, San Francisco, California.

POSTPONEMENT.—By an order of the Board of Directors made on the First day of October, 1878, the above sale is postponed until Monday, October 21st, 1878, at the same hour and place. JAS. W BAKER, Sec'y.



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Consulting Physician,
Professor of Phrenology and Mental Hygiene.

Proprietor of the Smithsonian Medical and Phrenological Institute, 635 California Street, above Kearny.

This Institute, by combining medical hygiene with the various Water Cure treatments and the most powerful Electrized Horseshoe Magnet in the world, claims to cure speedily and permanently all forms of acute or chronic nervo-vital derangements, Brain, Spinal and Heart diseases, St. Vitus Dance, Palsy, Epilepsy and all Rheumatic, Liver and Kidney troubles. The Institution has for the past 20 years made a specialty of treating all forms of weaknesses and diseases peculiar to males and females. By the use of hygienic remedies and electro-motorpathy the worst forms of impotency and seminal weakness in males and sterility in females are speedily and permanently overcome. Hygienic board, with or without rooms. Terms moderate. Electro-thermal, Russo-Turkish and Medicated Baths given daily.

Mrs. Dr. Smith as Matron has charge of the female bathing department.

DR. SMITH has practiced Phrenology the past 20 years, and during the last 20 years has been constantly using the science connected with Physiognomy in examining or diagnosing disease in this city, and claims to have made discoveries in the SCIENCE of Phrenology that enables him, by an examination of the head, even blindfolded, to determine the disease to which the person is constitutionally subject, or whether the disease at the time afflicting the person, is the result of accident or hereditary weakness; whether CONSUMPTIVE, DYSPEPTIC, RHEUMATIC, APOPLECTIC, NEURALGIC, LEUCORRHŒAL, or SEMINAL. Especially does the form of the head indicate the strength of the uterine, genital or reproductive system. The head is also an index of the natural strength of the lungs, heart, stomach, liver, kidneys, spleen, back or vertebræ, and it determines the power of the system in warding off and overcoming disease of all kinds.

Ladies or gentlemen, desirous of obtaining a thorough and correct Phrenological examinations with Fowler and Wells' charts, will meet with a respectful reception at his consulting rooms. Parties can depend upon a reliable delineation of the character of their intimate male or female friends, by presenting a clearly defined photograph.

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INVITATION TO INVALIDS

And all persons who are in any way out of health, who desire to know the nature and causes of their disease, may avail themselves of an examination through phrenology in regard to health free of charge, between the hours of 9 A. M. and 8 P. M. Sundays from 9 A. M. to 12 M.

CERTIFICATE OF PATNERSHIP.

The undersigned, having formed a partnership to carry on the business of Patent Agents under the firm name and style of Dewey & Co., Patent Agents, this certifies that the principal place of business of said partnership is situated at 202 Sansome street, in the city of San Francisco, State of California; and that Alfred T. Dewey, residing in the city of Oakland, State of California, and Warren B. Ewer, residing in the city of San Francisco, State of California, and George H. Strong, residing in the city of Oakland, State of California, are all the members of said partnership.

ALFRED T. DEWEY,
W. B. EWER,
GEO. H. STRONG.

STATE OF CALIFORNIA, } ss.
CITY AND COUNTY OF SAN FRANCISCO, }

On this second day of October, one thousand eight hundred and seventy-eight, before me, Chas. E. Kelley, a Notary Public in and for the said city and county, personally appeared Alfred T. Dewey, W. B. Ewer, and George H. Strong, known to me to be the persons whose names are subscribed to the within instrument, and they acknowledged to me that they executed the same.

In witness whereof, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written. CHAS. E. KELLEY,
[Seal.] Notary Public.

Endorsed—Filed October 7th, 1878.
THOS. H. REYNOLDS, County Clerk.
By J. WHALEN, Deputy Clerk.

CERTIFICATE OF PARTNERSHIP.

The undersigned, having formed a partnership to carry on the business of General Publishers under the firm name and style of Dewey & Co., Publishers, this certifies that the principal place of business of said partnership is situated at 202 Sansome street, in the city of San Francisco, State of California; and that Alfred T. Dewey, residing in the city of Oakland, State of California, and Warren B. Ewer, residing in the city of San Francisco, State of California, are all the members of said partnership.

ALFRED T. DEWEY.
W. B. EWER.

STATE OF CALIFORNIA, } ss.
CITY AND COUNTY OF SAN FRANCISCO. }

On this second day of October, in the year one thousand eight hundred and seventy-eight, before me, Chas. E. Kelley, a Notary Public in and for the said city and county, personally appeared Alfred T. Dewey and W. B. Ewer, known to me to be the persons whose names are subscribed to the within instrument, and they acknowledge to me that they executed the same.

In witness whereof, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written. CHAS. E. KELLEY,
[Seal.] Notary Public.

Endorsed—Filed October 7th, 1878.
THOS. H. REYNOLDS, County Clerk.
By J. WHALEN, Deputy Clerk.

Iron and Machine Works.

THOS. PENDEROAST. HENRY S. SMITH.

ÆTNA IRON WORKS,

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IRON CASTINGS

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PRACTICAL BOILER MAKER,

Marine, Stationary and Portable Boilers, Smoke Stacks, Hydraulic Pipe, Oil or Water Tanks, Ore and Water Buckets, Gasometers, Girders, Bridges and Iron Ship Building.

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ALL STYLES OF FANCY HEAD BOLTS.

HOT AND COLD PRESSED HEXAGONAL AND SQUARE NUTS, WASHERS, BOLT ENDS, TURNBUCKLES, ETC., ETC.

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Manufacture Iron Castings and Machinery of all Kinds at Greatly Reduced Rates.

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All kinds of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Bells and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch. ☞PRICES MODERATE.☜

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Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

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THOMAS THOMPSON. THORNTON THOMPSON.

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MANUFACTURERS OF CASTINGS OF EVERY DESCRIPTION.

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BUILDERS OF

Steam, Air and Hydraulic Machinery.

Home Industry.—All Work Tested and Guaranteed.

VERTICAL ENGINES,	BABY HOISTS,	STAMPS,
HORIZONTAL ENGINES,	VENTILATING FANS,	PANS,
AUTOMATIC CUT-OFF ENGINES,	ROCK BREAKERS,	SETTLERS,
COMPOUND CONDENSING ENGINES,	SELF-FEEDERS,	RETORTS,
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MANUFACTURERS OF

RAILROAD AND MERCHANT IRON,

ROLLED BEAMS, ANGLE, CHANNEL AND T IRON, BRIDGE AND MACHINE BOLTS, LAG SCREWS, NUTS WASHERS, ETC., STEAMBOAT SHAFTS, CRANKS, PISTONS, CONNECTING RODS, ETC., ETC.

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Propeller Engines either High Pressure or Compound Stern or Side Wheel Engines.

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Hoisting Engines and Works, Cages, Ore Buckets, Ore Cars, Pumping Engines and Pumps, Water Buckets, Pump Columns, Air Compressors, Air Receivers, Air Pipes.

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Batteries for Dry or Wet Crushing, Amalgamating Pans, Settlers, Furnaces, Retorts, Concentrators, Ore Feeders, Rock Breakers, Furnaces for Reducing Ores Water Jackets, Etc.

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Crushing Rolls, Clarifiers, Vacuum Pans, Air Pumps, Concentrators, Bag Filters, Charcoal Filters, Blow-up Tanks, Coolers and Receiving Tanks.

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Engines and Boilers of all kinds, either for use on Steamboats and made in accordance with the Act of Congress regulating the same, or for use on land. Water Pipe, Pump or Air Column, Fish Tanks for Salmon Canneries of every description.

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The undersigned, owners of LESCHOT'S PATENT for DIAMOND POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING AND TUNNELING DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

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L. & E. WERTHHEIMER, Ag'ts, San Francisco.

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Ores worked by any process.

Ores sampled.

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E. K. STEVENOT & CO.'S

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Refiners of Borax, Alum, Nitrate of Soda, Saltpeter, Potash, Etc.

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MINING ENGINEER and METALLURGIST.

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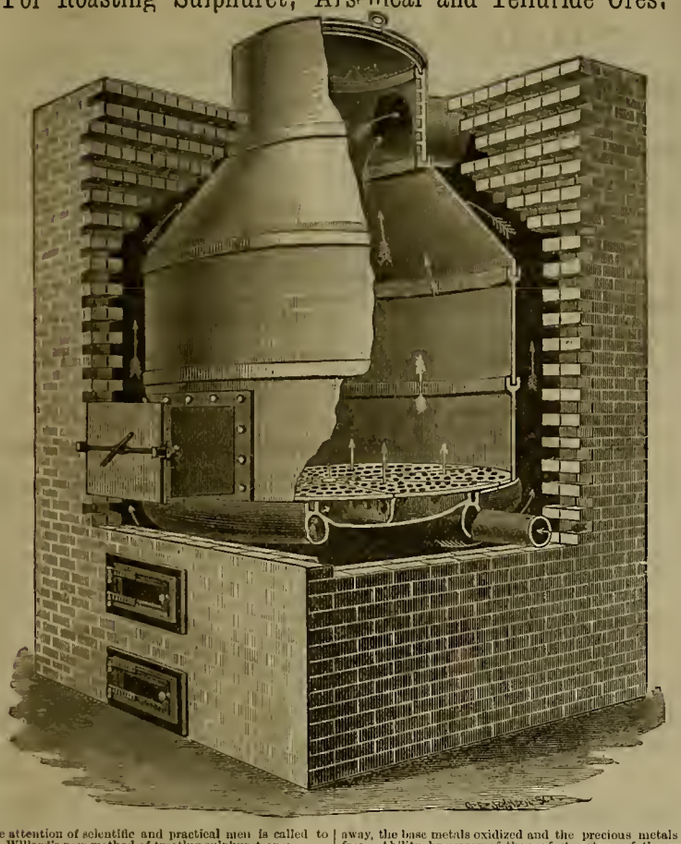
For Roasting Sulphuret, Arsenical and Telluride Ores.



The attention of scientific and practical men is called to Z. A. Willard's new method of treating sulphuret ores.

This process has been tried and tested on a large scale in Boston and in Colorado on every variety of ore, including sulphurets of iron, copper, lead and antimony, and arsenical and telluride ores of high and low grade, and in all cases with the most complete success.

The advantages claimed for the Furnace are: Perfect adaptation to the process. Simplicity and ease of construction. Cheapness—caused by shortness of time required in roasting, small amount of fuel needed, dispensing with skilled labor, and by the low cost and durability of the furnaces. Durability—the low heat used not injuring either iron or brick work. Economy of fuel—the amount used not exceeding one cord of wood to ten tons of ore. Economy of labor—no skilled labor, and very little labor of any kind, its automatic action only requiring one man to six furnaces. Perfect nature of roast—by which all the sulphur is burned away, the base metals oxidized and the precious metals set free. Ability, by reason of the perfect nature of the roast, to use chlorination (Plattner's method) for saving the gold in strictly gold ores. No loss by dust or volatilization.

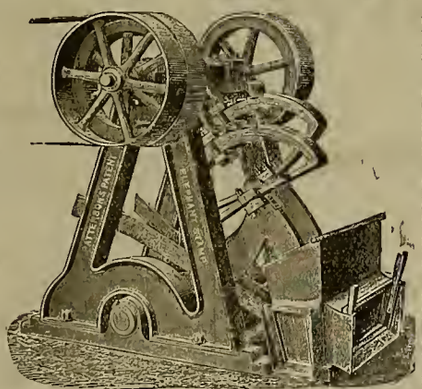
The cheapness and simplicity of this process renders it of vast importance in solving the question of the profitable reduction of low grade refractory ores.

Z. A. WILLARD, Patentee,

Baldwin's Hotel, Market St.,

SAN FRANCISCO.

Elephant Ore Stamp.



We beg to call your attention to this engraving representing the Elephant Ore Stamp. The advantages claimed for this Stamp are as follows:

CAPABILITIES.—The "Elephant" is capable of crushing as much stuff as a 12-Stamp Battery of the present system, having crushed as high as 11 tons of tough copper ore in one hour, through a No. 4 punched screen. The undersigned, however, will guarantee 20 tons per day of ordinary quartz through the same size screen.

WEAR.—The "Elephant" having only two parts, Shoe and Dies, the wear in this instance is equal to one-sixth of a 12-Stamp Battery. There being no Cam Tappets, Cam Shafts or Guides, the consequent wear on these parts is done away with; the leather thorough-brace, uniting the lever with the spring, would only require replacing at most, once a year.

POWER.—The "Elephant" only requires a seven horse-power engine to drive it, where a 12-Stamp Battery would require from 18 to 20 horse-power.

PORTABILITY.—The entire Battery, including Mortar, will weigh about six tons, thereby causing an immense saving in the way of freight to such places as Arizona, Mexico, Cariboo and Bodie. As no part of the machine weighs more than 1,800 lbs., the handling of the machine is comparatively easy, and in places where it would be necessary to pack the machine on mules, it could be easily made in pieces not to weigh over three hundred pounds.

The above engraving shows the Machine in exactly the position it would be placed in a mine; the reader will therefore see that all wood work is done away with, and that once the Machine is on the ground it will take but a few days to set it up and have it in full working order.

The "Elephant" can be seen working every day from 2 to 4 P. M. at No. 342 Main St, near Harrison, San Francisco

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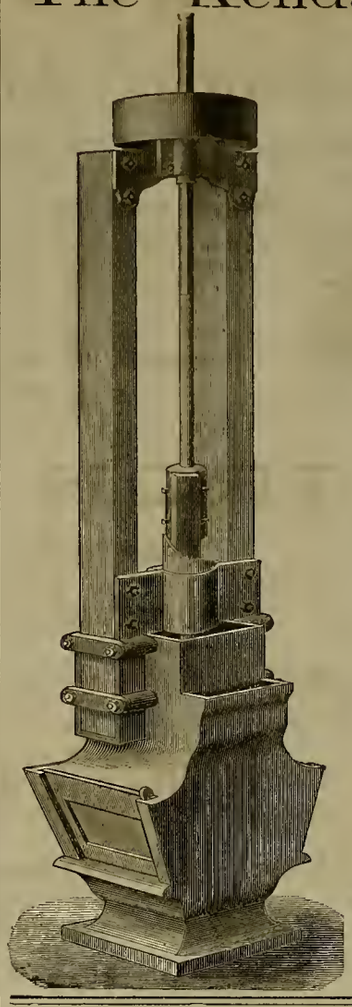

STEPHEN KENDALL, Patentee.

This Battery embraces the only genuine improvement that has ever been made in the process of reducing ores. The frame is all secured to the mortar, so that no extra framework is required. The stamp is rotated by a horizontal pulley on the top of the frame, and raised by the cam which is set horizontally on the girt timber. The upper end of the stem is made square, and works up through the pulley. When the stamp falls it crushes and grinds the ore fine by the continual rotary motion. The mortar has three discharge openings, and is adapted to either wet or dry crushing. A mill with an 800-pound stamp will crush five tons of average ore per day, shipping weight, 4,000 lbs., and requires about five horse-power. A 1,600 lb. stamp mill is in process of construction, which will give a capacity equal to any five-stamp mill. Several of them are now in successful operation in various parts of the country. For PROSPECTING PURPOSES this mill has no equal, as it can be set up and moved with such facility and operated at so small an expense. Address for further information,

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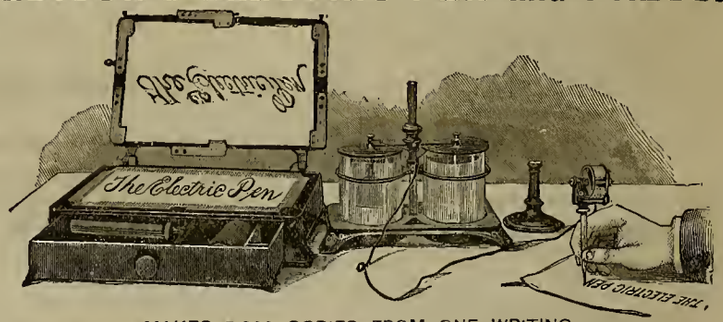

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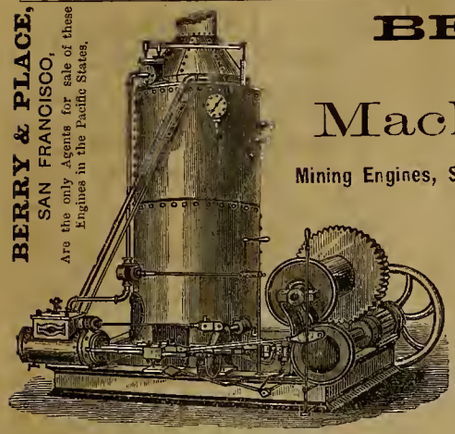

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MESSRS. DEWEY & Co.—*Gentlemen:* I received the Letters Patent for my invention on the 5th inst., and beg to thank you for the gentlemanly and business-like manner in which you have dealt with me from the beginning of my application. I shall always feel it a pleasure to recommend you to all I come in contact with who need Letters Patent. Respectfully, WM. DALE.

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SAN FRANCISCO, SATURDAY, OCTOBER 19, 1878.

VOLUME XXXVII Number 16.

Artesian Wells—No. 2.

Underground San Francisco

Well No. 25, on the map published in the last issue, is 157 feet deep. In boring it, 50 feet of quicksand was passed through.

No. 26; 140 feet deep; quicksand, 40 feet.

No. 27; depth, 95 feet. This is a flowing well, and cannot be lowered by pumping, and is pure, cold, soft water. Sand, 29 feet; clay, 6 feet; black mud, 10 feet; yellow clay, 8 feet; quicksand, 15 feet; black clay, 4 feet; marl, 9 feet; broken sandstone, 8 feet; sand and gravel, 8 feet.

No. 28; depth, 130 feet. This is a flowing well, and cannot be lowered by steam pump, and yields pure, soft, cold water. Sand, 28 feet; blue clay, 12 feet; yellow clay, 15 feet; sand, 14 feet; blue clay, 8 feet; yellow sand, 15 feet; quicksand, 10 feet; soft sandstone, 12 feet; blue clay, 4 feet; washed gravel and sand, 6 feet.

No. 30; 160½ feet; sand, 60 feet; clay at the bottom. Across the street from this well another went 142 feet, passing 40 feet of black sand.

No. 31; 141½ feet; sand, 60 feet; all hard sand and water down.

No. 32; depth, 98 feet. Water rises to surface, and has been pumped at the rate of 88,000 gallons per day, lowering it 20 feet only when it comes to a stand, and can be lowered no farther. Strata passed: Sand, 31 feet; blue clay, 14 feet; quicksand, 12 feet; yellow clay, 5 feet; sand, 18 feet; hard pan and soft sandstone, 10 feet; sand and gravel, 8 feet. At this depth struck bedrock, after bringing up chips of redwood; the lower stratum of sand contained gold.

No. 33; depth, 125 feet. Pure cold water, sufficient for all purposes intended. Sand, 31 feet; blue clay, 7 feet; sand, 20 feet; yellow clay, 3 feet; quicksand, 25 feet; light blue clay, 12 feet; sand, 10 feet; flinty sandstone, 9 feet; sand and gravel, 8 feet.

No. 34; 116 feet deep; water at 90 feet; rock at the bottom. Between 34 and 20, there is said to be about 25 wells.

No. 35; 128 feet deep. Yields a large amount of water for laundry and dwellings. Strata: Sand, 35 feet; blue clay, 9 feet; hard pan, 8 feet; yellow sand, 15 feet; yellow clay, 10 feet; sand, 12 feet; blue clay, 4 feet; quicksand, 16 feet; soft sandstone, 12 feet; sand and gravel, 7 feet.

No. 36; 157 feet deep. Quicksand, 60 feet.

No. 37. This well has already been spoken of as obtaining no artesian water at a depth of 212 feet, though so near to good wells. Quicksand, 24 feet; then hard sand without water, 80 feet; then blue clay all the way down. At 180 feet struck a log, perhaps manzanita or sycamore.

No. 38; 121 feet to black rock; pure water.

No. 43. A well in this neighborhood struck water at 57 feet, but not sufficient supply; at about 80 feet, gold-bearing gravel was met with; at 93 feet vegetable matter was brought to the surface. Dr. Joseph Le Conte pronounces it coniferous wood, and *probably* the root of redwood. At 120 feet this well struck a supply of water.

These wells illustrate well the general theory of artesian wells. The water, falling upon the surface, flows along until it reaches pervious ground, when it sinks down, with greater or less rapidity according to the nature of the material, until it reaches some stratum through which it cannot pass. On this it accumulates, running always to the lowest points. The pervious material on the surface at San Francisco is generally sand, which has been blown in from the ocean, or has been used in filling. The impervious strata which collect the water are composed of clay, or rock; the deepest stratum on which lies the best water being overlaid with a gravelly, porous conglomerate. On examining the data of the above wells it will be found that sand is generally passed through first, then clay, then sand again succeeded by clay, then sand again with the water-bearing gravel. Above both the first and second clay water may be obtained, but being more or less contaminated with the surface drainage of the immediate vicinity, is passed through and neglected by those wishing good wells.

The average depth of the deeper wells is 150 feet, the shallower ones ranging from 70 to 100 feet, but whether in all cases the shallow and deep ones are fed from different sources it is not possible to decide from the data. At a depth of from 150 to 200 feet, and in some cases less, rock is struck, which has been bored into hundreds of feet without water being obtained, as for instance in wells 39 and 40 as mentioned in the last issue. It is said that this same rock has been bored into at Benicia, the Government well there being 1,500 feet deep, but at that depth no water is obtained. We know of no satisfactory account of the geological character of this rock. If this were determined it might be stated definitely whether or not it does outcrop far in the interior, and hence whether or not water may be expected below it flowing under us to the west far out to sea.

It is difficult to determine in exactly what manner the water occurs under us. The Geological Survey gives no account whatever of the position of the strata in the city further than that it is the most chaotic jumble to be found in the State. This is due, it is said very indefinitely, to the "influence of the east and west line of depression by which the 'Golden Gate' has been opened." However, the strata which have been covered up by the drift of sand, correspond to strata found on the east slope of the Santa Cruz mountains in Santa Clara valley. In this valley the east and west compression which forced up the mountains elevated the strata with considerable regularity, so that they dip gently to the east. If this had been the case in our vicinity, we should expect the strata in the region represented by our map to dip in the same general direction. But the "influence of that break" has interfered with this. Figs. 4 and 5 show a general inclination of the surface from northwest to southeast, and lines joining the bottoms of the wells correspond to this with some regularity. By comparing Figs. 1 and 3 with Fig. 4, it will be seen that a depression exists running from northwest to southeast, in which wells 36 (Fig. 1), 33, 28, 25 and 26 (Fig. 3), and 1, 35, 25, 28, 31 and 32 (Fig. 4) are bored. The other profile line from northwest to southeast (Fig. 5) may represent the general direction of a similar depression, on which

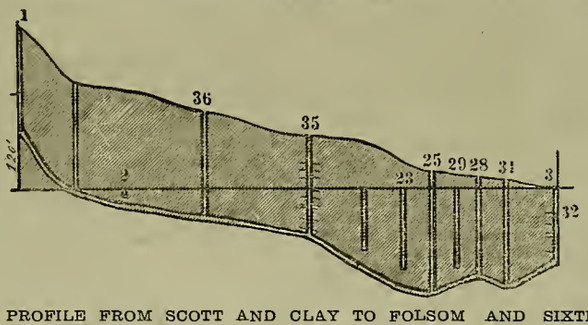


FIG. 4. PROFILE FROM SCOTT AND CLAY TO FOLSOM AND SIXTEENTH.

very many of the wells have been bored.

However, it is impossible to tell just how the water lies. The general impression is that it is to be found in the beds of old streams of the direction of which each well borer may have his own ideas. The finding of gravel in the successful wells and the existence of spots barren of water go to prove this. Wells 8 and 37 (Fig. 2), already mentioned, furnish an example. A well between 6 and 7, 260 feet deep, gives little water, while just across the street another well, only 82 feet deep, gives three times as much. In the neighborhood of wells 22 and 42, wells were run down about 80 feet, to the rock. They ran through clay and clean sand but gave nothing but salt water. Just across the street again, a well 120 feet deep furnished excellent water. Between 19 and 16 several attempts to obtain water were made before a good well was obtained. In the space of about a block four wells were bored. The first struck rock at 16 feet; the next at 30; another at 70, and still no supply of water; but after thus feeling around, a fourth, 75 feet deep, flowed over the surface. If there are channels underneath us in which the water runs, when and just how they were produced does not appear. They do not always correspond to present channels. The last named case is a proof of that, for the well that struck rock at 16 feet is very near the mouth of an old creek, as will be seen by referring to Fig. 2. Again, a well in the mouth of Islais creek, south of the city, proved a failure at about 140 feet. Wells very near the lagoon which puts up towards Tamalpais, back of Sausalito, in Marin county, where the formation is, we believe, the same as on our peninsula, also were failures. It would certainly be interesting to have some map of the country when the channels of these now underground streams were scoured out. In some views it looks more as though the successive layers of gravel, clay, sand, etc., had been pressed up into a series of waves and that the water seeks now the troughs of the waves.

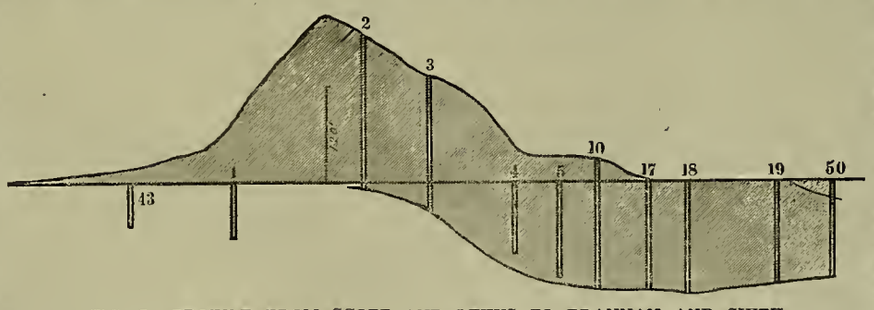


FIG. 5. PROFILE FROM SCOTT AND LEWIS TO BRANNAN AND SIXTH.

The interesting and unanswerable question now arises as to where the water comes from. Most of it, in the deeper strata at least, must be admitted at or near the outcrop. This outcrop may be around the bases of the hills and covered up in the large tracts of sand towards the beach. It has been estimated that 15,000,000 gallons of artesian water is pumped daily from San Francisco wells. That would make 5,475,000,000 gallons per year. If we consider the whole surface of the county as catching water for our wells (which is not the case) and take 23.3 inches as the average yearly rainfall, we would have a supply of 17,809,000,000 gallons per annum, or three times as much as is now used. But even considering that this much were furnished, it seems impossible that even the amount now obtained could be made available. For the artesian water is under pressure. Moreover, it has connection with the bay, as is proved by the effect which the tide has upon the level of the water in wells near the shore. This would indicate a constant flow into the bay. And it seems highly improbable that even the present supply could be sustained if the catchment surface is only our own neighborhood. It may be that not all the strata outcrop under the bay, in which case some of the supply might come from the other side. Ignorance of the relations of the strata on this side to those on the other prevents any attempt at judgment on this question. A well at Oakland point, 206 feet deep, is affected by the tide and from this it may be surmised that if strata extend unbroken from this side to the other they must dip very much to the east.

In the next we will continue this, giving, if possible, a figure explaining the effect of the tide on the artesian water, and perhaps further profiles. We invite discussion of the subject of artesian wells and desire all available information.

The South Pacific Coast Railroad.

We have watched with much interest the growth of this new and promising road, which we have already noticed at some length in the PRESS. Since that time the line has got into running order and now makes regular trips from San Francisco to Alma. The new ferry-boats, the *Newark* and the *Bay City*, are as fine as any on the bay, and make the trip across to the creek landing in less than half an hour. The wharves, slip and offices at the mouth of San Antonio creek are very nearly completed, and everything is in good working order.

From Mr. E. H. Mix, the engineer in charge of the mountain work, we learn the following particulars of the progress at this end of the line: In tunnels Nos. 3 and 4 a distance of 736 feet was made in the month of September. At the first of October the north end of tunnel No. 3 was in 1,426 feet, the south end 487 feet. The south end is now located in good solid ground, though the first hundred feet through the overlying strata was in very insecure and difficult ground. The east end of tunnel No. 4 is in 672 feet, the west end 574 feet. Tunnel No. 5 has been located and ground is broken at both ends. It will be 910 feet in length. The road is laid to the third crossing of Los Gatos creek, or two and a half miles above Alma, and is expected to reach the mouth of tunnel No. 3 in five or six weeks.

The mountains through which these tunnels are being built seems to be a sandstone, covered with overarching layers of schist. The whole of this sandstone is more or less thoroughly impregnated with hydrocarbons similar to petroleum. At various times "blowers" of gas have been struck which have given rise to slight explosions, but no accident has as yet resulted. This dissemination of hydrocarbons seems to be quite widespread throughout these hills, as we shall hereafter take occasion to notice.

The expectation is that the road will be in complete running order (as far as Santa Cruz) by the year 1880. And unless a great change in human nature occurs before that time, we venture to predict a heavy travel attracted that way by the beauty of the mountain scenery of this charming road.

THE Supreme Court of Nevada yesterday rendered their decision in favor of the Martin White mining company in the appeal case so long pending. The company's new mill is rapidly approaching completion, the contractors fully expecting to be on time with their contract.

THE Inyo *Independent* calls the Indian district, Mono, "a country for the next rush."

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—Eds.

Carson City, Nevada.—No. 1.

[From our Traveling Correspondent.]

This is, perhaps, the most beautiful and home-like town in the State of Nevada, and the next in size and population to Virginia City. It is situated in the upper portion of Eagle valley, and west from the Carson river about three miles. Carson City is the capital of the State of Nevada, also the county seat of Ormsby county. It contains a population of about 5,000. According to the Assessor's books, the real estate within the city limits is valued at $1,281,039. The city is well laid out. The streets are wide, level, clean and straight, and kept in good condition. The drainage is good. Shade trees and fruit trees and flowers abound. There are several excellent hotels, all kinds of mercantile houses in abundance, churches, school houses and theaters in numbers equal to the wants of a refined and intelligent population. Carson's railroad and stage connections make it an embarking point for a large portion of Nevada, as well as for many of the mining towns of Alpine and Mono counties, California. It is on the line of the Virginia and Truckee railroad, 30 miles from Reno, and 22 miles from Virginia City. Here is the terminus of the sleeping cars connected with the lightning express trains of this road. A daily stage leaves every afternoon for Genoa, south, and distant from Carson 14 miles, where connection is made with another line of stages for Monitor, Silver mountain, Markleville and other points in Alpine county, California. A six-horse coach leaves Carson every morning, upon the arrival of the passenger train from the West, for Aurora, via Genoa, distant 105 miles, and for Bodie about 12 miles farther. On the same road is a fast freight line called the Southern Transportation Company, which makes tri-weekly trips, carrying passengers and freight. During the traveling season, which embraces about eight months in the year, a daily six-horse coach is run to Glenbrook, on Lake Tahoe, the "Gem of the Sierras," distant 14 miles. This coach is driven by that celebrated old whip, Hank Monk, who has acquired such a world-wide fame by his drive with Horace Greeley from Carson to Placerville.

The Warm Springs.

These springs are about one mile and a half east of Carson. This property is now owned by Butts & George. The water is very hot, and rushes out in great volume from under or through a quarry of tertiary sandstone. The proprietors have enclosed with this sandstone five swimming baths, each 28 feet square, walls 15 feet high, lighted and ventilated in the roof. The water in the baths, is from four to eight feet deep, and so transparent that a pin can be seen upon the bottom, which, by the way is a smooth rock. The baths are drawn down every night, scrubbed out and filled with fresh water, as the immense volume from the spring is constantly passing through them. Upon analysis the water was found to contain sulphur, iron, soda and magnesia, and it is claimed that the water taken internally and externally possess remedial properties of great value. One thing I can attest, that it is a most grateful bath, and a great rejuvenator.

The State Prison.

This institution is situated at the Warm springs. The main prison building was built by Abraham Curry, in 1861, and occupied for a hotel, and was the place of meeting for the first Territorial Legislature. The buildings and walls around the prison yard are of sandstone, taken from the quarry upon which the prison is located. There are at present 140 convicts in the institution, of whom 65 are working in the shoe shop, 35 in the yard and quarry, the others being employed as laundrymen, cooks, carpenters, tailors, blacksmiths and waiters. The discipline of the institution is good, and its general management is very satisfactory. The officers at present in charge are General C. C. Batterman, Warden; Captain J. H. Mathewson, Deputy Warden; R. Gomoud, Captain of the Guard, D. H. Pine, Lieutenant of the Guard; J. J. Linn, Commissary; Harrison Gray, Bookkeeper.

The Mint

Is situated on Carson street, the main business street of the city, and within one block of the railroad depot. The building is a substantial stone structure, erected in 1869, at a cost, including the necessary machinery for the mint, of $240,000. The officers are: James Crawford, Superintendent; George W. Bryant, Melter and Refiner; Levi Dague, Coiner; W. P. Prescott, Assayer. There are employed, all told, 80 persons, of which 62 are males and 18 females. The coinage for the year ending June 30th, 1878, is as follows: Gold, 54,348 pieces, valued at $866,680; silver, 9,692,000 pieces, valued at $2,941,000. The deposits for the same year were in gold, $737,719.85, and in silver, $2,447,279.59.

The State Capitol.

This building was erected in 1870, and occupied by the Legislature in 1871. The material used in its construction is the sandstone from the Warm springs quarry, making a very substantial, solid-looking structure. It is situated in the center of a square, consisting of four blocks on Carson street, enclosed by a splendid iron fence with a stone base. The grounds are tastefully laid out and planted in shade trees. The building is in the form of a Maltese cross, with an entrance at each of the four ends. The executive departments are on the first floor, the legislative chambers, Supreme court rooms, and library are on the second floor. The State library—a special pet of Chief Justice Hawley—and the State mineralogical department, are features of the capitol that the State may well be proud of. The capitol building was erected at a cost of $175,000; cost of furniture, $25,000; cost of books and fixtures for State library, $40,000; cost of fencing and beautifying the grounds, $25,000. The capitol, with its tasteful and pleasant surroundings, is a just source of pride to the people of Carson and a credit to the State of Nevada.

The Orphans' Home,

Situated on the Warm springs road and within the corporate limits of the town, is a State charity and, as remarked to your correspondent by a citizen, the most noble and best conducted in the State. The building cost $12,000. There is 15 acres of land in the enclosure, which is chiefly devoted to raising vegetables for use of the inmates of the home. Orphans, as well as half-orphans, whose parents were residents of the State of Nevada, are entitled to its benefits. It is under the control of a State board consisting of the Surveyor-General, State Treasury, and Superintendent of Public Instruction, who have the entire direction or management of the home, including the appointment of those in immediate charge. The present parties in charge are Geo. B. Webb, Superintendent; Mrs. Geo. B. Webb, Matron; Miss Emma Verrill, Teacher. Number of wards at present in the institution, 65.

The Carson Opera House.

Among the improvements of recent date is the construction of an opera house, which is fully up to the requirements of a first-class theater. It has a seating capacity of 750, and is substantially and tastefully arranged. An elegantly upholstered dress-circle, comfortable orchestra seats, and a parquet are of the appointments. The house is well ventilated and so arranged that it can be emptied in an emergency in about three minutes. The stage is 34 by 48 feet, and provided with a complete set of stock scenes. The cost of this handsome theater is $15,000. W. G. A.

A MAMMOTH TREE.—Messrs. McKiernan, Manly & Hubbs, of Visalia, recently shipped from Tulare City a section of one of the largest, if not the largest, of all the big trees that have yet been discovered in California. The Stockton *Herald* says: The tree from which this section was taken was 111 feet in circumference at the butt, and stood 250 feet in hight, at which elevation it was broken off. At the breaking-off place it was twelve feet in diameter. These gentlemen have been at work getting this section ready for exhibition for nearly a year. The section is fourteen feet in hight and was cut from the body of a tree twelve feet from the ground, the base being so irregular in form, the irregularity extending up from the roots, that it was inexpedient to take the lowest part. At the distance of twelve feet from the ground the tree was twenty-six feet and six inches in diameter, this being the diameter of the base of the section exhibited. The top of the tree, or stub, as it really was, was felled twenty-six feet from the ground, the labor of felling it occupying four men nine days with axes. It made a noise when it came down that reverberated through the mountains like a peal of thunder. The work of taking out the section which is exhibited was then commenced from the top. The men dug the inside of the tree out with axes, these tools being the only ones that could be used to advantage. The wood was left six inches thick, exclusive of the bark, which ranges from three to ten inches in thickness. The diameter of the tree where it was felled (the diameter of the top of the section that is to be exhibited) is twenty-one feet. This shell was sawed down, making fifteen gigantic slabs. This tree stood six miles away from a public road, and a road was built this whole distance in order to get this section of the tree out. Each slab made a load for eight horses. The whole fifteen make two carloads. The owners of this great natural curiosity will exhibit it in this city, after which they will travel through the State, thence through the East and to Europe. This tree is claimed to be four feet larger in diameter than any other tree that has been discovered on the coast.

THE total number of shares changing hands in the New York mining exchange on Sept. 28th was 13,447, and the amount of money involved, provided there were no wash sales, was $5,226!

HARTLEY'S locations at Meadow Lake have been bonded to G. D. Roberts and A. E. Head, who are making quite extensive preparations for developing.

AT the Sulphur Bank Quicksilver mine there are six furnaces in working order. Four new ones are being constructed, and one is being repaired.

GOULD, the locator and namer of the famous Gould & Curry mine, is tending a little fruit store in Reno.

THE Idaho mine, Nevada county, pays its 10th dividend, $23,250.

An Opening for American Woolens in China.

The policy of our government in encouraging our consular representatives all over the world to report all opportunities for the introduction of American produce and manufactures is a wise one and may result in much advantage to our producers. It is not a new idea for consuls thus to keep their eyes open for trade. The representatives of other governments are thus alert and our own have already done good service in this direction. We trust their investigations and reports may continue. Many of them have plenty of time and the best possible opportunities for these investigations.

These remarks are called forth by a report by telegraph from Washington to the effect that the consul at Amoy, China, reports to the Department of State some important facts and suggestions relative to the trade in woolen goods. The States of the Pacific, especially California and Oregon, possess advantages for competing for the woolen trade of China which nothing can change or take away. Both San Francisco and Portland are nearer by some thousands of miles to all parts of China than any port of any other competing State in the world. California wool, and the coarser grades of Oregon, seem just adapted to Chinese uses. Some English writers have imputed the present demand for woolens in China to the enhanced cost of silk, and predict that a revival of the silk industry will cause a corresponding decline in the use of woolen goods. The consul shows that such a view is erroneous. Amoy is old, and the natural home of the silk worm and mulberry tree. Here Marco Polo discovered the beautiful cloth which he called "Zanitum"—satin. Observations from this point do not sustain the English theory. The demand for blankets, displacing dirty cotton coverlets, will certainly continue, and may be increased enormously. The use of all kinds of woolen goods must improve as their prices approximate those of cotton. Among other American articles made of wool, rugs, with pictures of tigers, dragons, etc., interwoven, are exceedingly popular.

This is exceedingly promising for our wool growing and manufacturing. The Chinese are fast learning the value of California flour and our mills are getting a profit on grinding and the "feed" in bran and middlings is left here for our dairymen and stock fatteners, and to enrich the manure which our soils need. This is much better than shipping wheat abroad, for it gives employment to our mills and millers and leaves a valuable constituent of the grain behind. It exports mainly the starch which we can best afford to part with. Not otherwise would he the building up a large trade in manufactured woolens instead of shipping the raw material eastward. It would invigorate our woolen mills and call into existence many new ones which are now being talked of. By all means let China call upon us for limitless quantities of woolen manufactures. We trust the consul at Amoy is correct in his forecast of the future.—*Pacific Rural Press.*

Cocoanut Oil Manufacture.

The Alameda Oil Manufacturing company is extensively engaged in the manufacture of oil from cocoanuts. It has a line of schooners running between this port and the South Sea Islands which bring at regular intervals cargoes of the cocoa. The fruit is gathered when ripe, by the natives, and the outer husk and shell being stripped off, and the meat broken into small fragments, it is packed in sacks and ready for shipment. Previous, however, to its packing, it is thoroughly dried in the sun, and thereby undergoes a process by which the fibrous matter is to a certain extent loosened, rendering the oily substance more easy for extraction.

The process of manufacture is similar to that used in the production of cotton seed oil. The cakes are first ground into a meal, then placed in sacks, about 10 inches wide by 24 inches long. These are placed in numerous compartments of a hydraulic press, and submitted to a pressure sufficient to extract the oil. The residue, in the form of cakes, is especially adapted to feeding stock, containing highly nutritive qualities. The oil is used at present for lubricating purposes, and also in the manufacture of soap; but there is no reason why it cannot eventually be refined to the extent of producing from it a palatable salad oil. This company is established at Alameda Point, and very little is known, generally, of the enterprise. The islands furnish this commodity to various countries of the world, Australia and California being the largest consumers, and an income of no inconsiderable amount thereby accrues annually to the natives. The Marshal and Gilbert groups furnish the largest amount.

ON the north side of the St. Gothard tunnel 1,000 men are employed underground, and 400 in the open air. Three hundred wagonloads of earth are excavated every day, and in the daily blastings 600 pounds of dynamite are used. The energy shown on the Italian side is said to be equally great.

NEWS is received of an important and rich mining development 10 miles west of Ellsworth, Nye county, Nevada. At 30 feet in depth the ledge is seven feet wide, carrying carbonates and chlorides assaying from $40 to $100. The find is owned by two poor prospectors named Holman and Duckett.

Mineralization of Gold.

Mr. Melville Attwood, whose paper on the "Milling of Auriferous Veinstones" was published in the PRESS of September 14th and 28th, read the following paper before the California State Geological Society on August 20th:

Since the publication of the few remarks on the milling of auriferous veinstones, which I made at our last meeting, numerous questions have been asked me in reference to it, many still wishing to believe that there are such things as *rebellious gold ores*, so that I have again taken up the subject, though it would be impossible to do full justice to it without occupying more time than I have at my disposal.

In the first place, I would suggest to any mine adventurer or superintendent, working lodes, which they think contain *rebellious gold ores*, or mineralized gold, that the best argument they can use would be *facts*, in the shape of ten or fifteen-pound samples of the veinstone, say, in pieces of one or two inches square, representing, of course, quantity. They can forward such samples to this society free of expense (owing to the liberality of Wells, Fargo & Co.), and, when received, I will get a committee appointed to examine and report on them.

To mill men, it is not only of the greatest importance, but one would think absolutely necessary for the success of their operations, to have at least some knowledge of the true condition of the material they are working; otherwise it is all speculation, and can but be compared to groping in the dark with a faint hope of stumbling upon the right treatment.

In the ninety-nine cases out of the hundred you will find, when people talk of having large lodes containing rebellious gold ores, assaying very high, but that by the ordinary mill process they cannot save the gold, that samples selected for assays were not fairly taken, and the real trouble arose from the fact of there being little or no gold in the lode to save.

To those who feel interested on this subject, I would recommend the careful perusal of an old work: "Baron Ingo Born's New Process of Amalgamation, translated into English by R. E. Raspe, 1791." I will merely quote one passage from it in reference to the mineralization of gold. He says:

"Bergman, whose name will be immortal in chemistry, and whose opinion may be taken for that of all the chemists together, sets forth that mineralization requires the presence of a menstruum which, dissolving the metals, deprives them of their form and appearance; and all the other combinations of metals, as likewise the disguises of native metals in different sorts of stone and matrices, are but so many different *mixtures*. From these ideas very naturally arises that common division of metals into native (nativa), disguised, (larvata), and mineralized (mineralizata)."

In a note at the end of the same section, he says: "I use here the name of gold ores without employing the least idea of their mineralization, or calciform state—which, in my opinion, never exists—I mean to express that gold particles, small and invisible, are disguised in them, and wrapt up in other minerals."

Richard Kirwan, in his "Elements of Mineralogy," published in 1796, absolutely denies the mineralization of gold, and says: "Gold being incapable in low heats of uniting with pure air, sulphur, arsenic or any acid furnished by nature, it is plain it can never be mineralized, in the strict sense of the word."

I have quoted from these old authorities to show that the question of gold ores is by no means new. I trust, however, for the future, such terms as "rusty gold" and "rebellious gold ores" will be only found in their proper place, amongst the list of "vulgar errors."

The gold of the Comstock lode is argentiferous, and occurs, more or less, in an unchanged form and composition throughout the whole length of the lode, and from the croppings to the deepest workings. Its diminished value is caused by the silver alloy. It consists—53.37% gold, 42.87 silver, and 1.76 of substances as yet undetermined.

I have just been handed a copy of the Forty-eighth Annual report of the San Juan del Rey Company, Brazil, dated London, June, 1878. It appears that, during the year, they stamped 62,745 tons, and that the mean loss on treatment was 31%. The gold contents of the veinstone, about $21 per ton. The average width of lode, 42 feet; length of stoping ground, 600 feet; stamps, duty heads, 135; working days, 355.44; tons stamped, 62,745; tons per day, 176.53.

In their report of June, 1867, they stamped 60,685 tons, with a loss of only 14.92%. No explanation is given for the great difference in loss, but their streaking or mode of concentration must be defective.

The company might do well to try some of our California concentrators. Mr. J. Hendy's concentrators have been used in this country for a great number of years, and appear to have made very clean work.

In reply to the questions respecting the Catalau process, it is one of the most primitive modes of making iron, and the cost of the furnace, forge and trompe, would not be much more than that required to build and fit up a good blacksmith shop.

If we made our own iron, it would give employment and bread to the many, instead of the enrichment of the few, which appears to be the result of importing it.

MECHANICAL PROGRESS.

The Telemachon.

Since Mr. Edison's wonderful inventions have been brought forward, the country has been seized with a desperate hankering after the wonderful and the popular interest and inventors' hopes run high. So much is said of astonishing matters in the Eastern daily papers, that one hardly knows what to believe and what to laugh at. We read that at Ansonia, Conn., William Wallace is experimenting with a new electrical machine. He calls it the telemachon, and claims that by it, when perfected, power can be transmitted hundreds of miles through an ordinary cable. For instance, a steam engine in Scranton, Pa., could be connected by a cable with a factory in New York and the latter be run for the cost of the cable and the greatly decreased cost of coal in Scranton. With this new invention working as it is claimed it will, the cities near the coal mines would become vast centers of power filled with engines sufficient to run all the factories of the Middle States at one-half the present cost of fuel. Mills would be filled with whirring spindles and rattling looms hundreds of miles away from the engines that run them. Only a small wire cable entering a building would show the source, though hardly the philosophy, of the transmitted force. The possibilities of the invention go further. The cable can be tapped like a telegraph wire, so that one continuous cable can do the whole work of the country, provided there is power enough at the starting point.

These are the possibilities of the telemachon as developed by Wallace. But Edison has been down to Ansonia and discovered still greater possibilities. He is confident that not only can power be transmitted by the telemachon, but that light and heat can be created by it. This would do away with the use of coal almost entirely. Great mills could be run by Niagara through the instrumentality of the telemachon, and lighted and heated by the instrument itself. The displacing of manual labor by the one would thus be more than made good by the decrease in the cost of living brought about by the other. In other words, the problem of physical life and action would be solved, and the world would make a stride of countless centuries towards the millenium.

An English Ore Crusher.—We read in the *Mining Journal* a short description of improvements in ore and mineral crushing machinery, introduced by T. H. Trogoning. The machine is driven by steam, water, or horse power, and substantially consists of two circular plates of unequal sizes, so fixed as to work out of center of each other, and making an eccentric motion. These plates are the grinding or crushing gear of the machine, and are kept at the required distance from each other and pressure on each other by the adjustment of a weight on a registering lever. The machine is fed by casting the material to be crushed into a receiving hopper, whence it passes into a hollow cylinder above the upper plate by an aperture. After being ground the eccentric motion of the plates forces the material into a gutter or "launder," whence it is removed in any direction by water or other means. At the end of the registering lever there is a reversible socket, with, say, four indentations, for the purpose of receiving the spindle, in connection with bottom crushing plate. The motion is communicated to the upper plate of the crusher by means of shaft and driving wheels, whilst the pressure is regulated by the forcing up or letting down the lower plate by means of the registering lever. Great claims are made for this machine in speed and amount of work done.

A Gain for the Bobtail Cars.—The New York *Tribune* says: The one-horse cars, known as "bobtails," are gradually taking the places of the old two-horse care on the surface roads. Soon after the opening of the Metropolitan Elevated railway, the Sixth Avenue Railroad Company began to put one-horse cars on its Canal street branch. These cars have now entirely superseded the two-horse cars on that part of the line. The change of cars on the Canal street branch has resulted in a decided gain to the company. For 16 two-horse cars 25 one-horse cars, without conductors, were substituted. It has been found that each of the smaller cars yields as much money as did any of the larger cars, and the company has been able to dispense with the services of 10 men and the same number of horses.

An English Magnetic Engine.—The operation of the machine invented by Mr. George Andrews, of London, depends on the property of attraction and repulsion of the negative and positive poles of permanent magnets respectively, the independent force counteracting the gravitation exercised by the weights employed to keep the revolving magnets turning, at the same time overcoming the friction to which every machine is necessarily liable; this force, therefore, has the effect of keeping the weights always wound up, and as the permanent magnets rather increase from use in power the machine will be self-sustaining as long as the material keeps in good order. By combining any number of magnets any required power might be achieved.

A New Metal.—The manufacture of a new metal, composed partly of steel and partly of iron, has been described in Paris. *Iron* says: The novelty of this new combination consists in the introduction of a thin sheet of iron between the surfaces to be welded. A cast-iron mold is divided into two departments by means of a transverse plate, or of a tube placed in the interior, and the two metals are poured into the respective compartments. Before fusion, both metals are submitted to complete refining, which removes all matters that hinder welding; they are then turned into the mold, the sheet-iron partition in which serves to prevent their mingling, and to facilitate welding by being itself brought into a state of fusion. The success of the operation depends considerably on the preparation of the metals, on their readiness to weld, and on the thickness of the partition. The last is determined by experiment, and the dimensions differ according to those of the ingots to be produced. The metal thus prepared is said to be adapted to the fabrication of rails, anchors, etc., where the hardness of the metal diminishes the wear, and increases the resistance of the masses. In the construction of safes, plates of this combination are said to be proof against all attempts to break or drill through them.

A Suggestion for Machine Shop Builders.—Locating machinery in shops is a matter which those in charge of the design and erection of the machine shops have in most cases found difficult to effect to the best advantage. With a complete plan of the buildings and a knowledge of the machines to be used it is difficult to locate machines to the best advantage at the first, or even after many trials. It nearly always happens after the position of some of them is laid down on the plan, changes suggest themselves which make it necessary to rub out all that have been drawn in and an entirely new start must be made. It is therefore always best, says the *Railroad Gazette*, to have plans of the different machines drawn on thin card-board, to the same scale as that of the buildings, and then cut the plans out and paste them on the plan of the building. They can then be shifted around in any desired position, until a satisfactory arrangement is obtained, and then be permanently drawn on the plan. Very much the best way, however, is to do this before the building is erected, as it usually happens that some changes in the plan of the buildings themselves is suggested in arranging the machinery.

Submarine Electric Light.—For the purpose of submarine lighting, Messrs. Barnet and Foster compress pure oxygen into a cylindrical reservoir of the plate iron, under a pressure of thirty atmospheres. This oxygen is supplied by a flexible tube to an alcohol lamp provided with means for the escape of the gaseous products of combustion. This furnishes a brilliant light for a period of four hours. Heinke and Davis use a glass cylinder upon the diver's helmet, which contains an electric lamp of polished copper. The carbons are arranged to last four hours without being renewed. The whole apparatus weighs about 27 kilogrammes, and is capable of furnishing a light equivalent to 20,000 standard candles.

The Screw Propeller.—A gold medal, value £25, has been offered by Mr. R. Carlyle for the best paper submitted to be read at the annual general meetings of the English Institution of Naval Architects in 1879, "On the construction of the screw propeller, its form, number of blades, pitch in proportion to diameter, etc., so as to give the smallest amount of slip with the greatest amount of propulsion for a ton of coal." All papers to be delivered on or before February 24th, 1879. No paper arriving after that date will be eligible to compete for the gold medal.

Steam Road Wagon.—O. A. Olmstead exhibited to us this week, says the *Sutter Banner*, the model of a steam road wagon and cultivator, his own invention, which appeared to us to be the very best thing for the work for which it is intended. The inventor, who is comparatively a poor man, is in search of some capitalist who will invest money in the machine. It appears to us that there is a fortune in the machine, and we have no doubt the man needed will be found. The model can be seen at the Half Way house, Marysville.

A European Railroad Turn-table.—We read that a model turn-table in the Austro-Hungarian department of the Paris exposition has a neat contrivance concerning the balls on which it rolls. Instead of having the lower circular trough entirely full of balls touching one another, and thus grinding and destroying one another, there is a light ring frame containing equidistant holes, in which the balls sit loosely, thus requiring fewer balls and moving more easily.

An American Locomotive's Tour Through Europe.—The specimen locomotive sent to the Paris expositiou by the Philadelphia and Reading Railroad Company is to be taken over the railroads of Italy and other countries, and an engineer has been delegated by the company to proceed abroad to take charge of the engine during its travels.

SCIENTIFIC PROGRESS.

Investigation into the Food Supplies of Trout.

The tenth annual report of the New York Fish Commissioners contains some valuable scientific investigations into the food supplies of trout. It appears from an abstract of the report which we read in the Utica *Herald*, that the Fish Commissioners authorized Profs. Lintner and Peck, the State entomologist and the State botanist, to make a thorough examination of the insects and plants growing in Caledonia creek, where the State hatching houses are located, and make a full report of the results. This creek has long been noted for the astonishing number of trout which have been taken from it, apparently without diminishing them as is usually the case in ordinary streams. It was found upon examination that the fauna and flora of this creek were also unusually abundant. The species of plants were not many in number, being only a water-cress, a chara and four mosses. But the quantity of each of these is large, and one of them, a rare moss, *Hypnum noterophilum*, or moisture-loving moss, which has not been found elsewhere in the State, and is known in only one or two other States of the Union, grows here in great profusion. Trout-food in the shape of animal life which inhabits the plants and the bottom of the creek, was found to be wonderfully abundant. A single bunch of moss brought up by the rake contained representatives of three classes of the animal kingdom, vertebrates, articulates and molluscs; and their number was so great as to astonish Prof. Lintner, who in all his experience had seen nothing equal to this. Such a revelation as this naturally suggested that there must be a relation between the great number of trout and the great quantity of trout-food existing in the creek. And, of course, if the plants and insects are to be furnished along with the fish for stocking streams, they must be raised and cultivated also. No difficulty is anticipated in doing this, except that each species of insect, or crustaceans or molluscs, must be kept by itself for breeding; and the two professors are now engaged in making experiments in this direction, which are expected soon to have practical results. Some streams are already furnished by nature with all that is necessary for the support of the fish. Others are barren, and can only be successfully stocked with fish by stocking also with food. Artificial ponds are often constructed, and these also will need to be planted with mosses and insects before stocking with fish. In case salmon, bass, or other species of fish are desired for certain localities, the appropriate food for each kind will be sent along with the young fish.

A Controversy About Mosandrum.

We lately mentioned the claimed discovery, by Dr. J. Lawrence Smith, of Kentucky, of a new metal to be called "mosandrum." It seems that the French chemists deny the claim. M. Marignac, after a careful examination of specimens containing the supposed new metal sent him by Dr. Smith, pronounces them to contain nothing but terbium. He (Marignac) nevertheless announces as his belief that the spectroscopic studies of M. Soret have demonstrated the existence in the mineral gadalinite (from which Dr. Smith's mosandrum was obtained), of a metal which appears to be new to science. He does not believe, however, that this is the mosandrum of Smith, but rather that it is the radical of an earth isolated by M. Delafontaine.

The *Polytechnic Review* anticipates a long controversy to settle this point, because but little is known at best of the rare metals accompanying the alleged mosandrum, and the methods of effecting their separation are consequently imperfect and uncertain. Indeed, says the *Polytechnic*, unless we are greatly mistaken, the name of the very metal terbium, with which Marignac affirms the mosandrum of Dr. Smith to be identical, upon many of the elementary charts of the chemical lecture-room is decorated with the appendage known as an interrogation mark, from which it will appear that Marignac's objection to the existence of mosandrum may after all be easily disposed of. We shall doubtless soon hear from Dr. Smith on the subject.

Notes on the Interior Rivers.—The Stockton *Independent* prints a letter from a member of the party engaged in surveying the proposed Sacramento drainage and relief canal, under Col. Isaac W. Smith, for which survey the last legislature appropriated $10,000, gives some interesting information. He says: "I did not know till I made the circuit of this survey that the great streams and smaller water courses draining the eastern water shed of the Coast range from Knight's Landing to Rio Vista, do not cut for themselves channels to the river. I knew the river like all our streams is on the highest ground, transversely, of the valley, and that such streams as Cache and Putah creeks sink to some extent, but I supposed, still, that they cut their channels and emptied at a high state of water, directly into the river. Such I find not to be the case. The "rim-land" of the river from Knight's Landing, where it is 1,500 feet wide to the mouth of Cache slough, three miles above Rio Vista, where it is only 100 wide, serves as a dam, and turns all this water, after flooding the great tule area, into the river via Cache slough. There is a well-defined ridge running from the Coast range to the river, at Knight's Landing, and these Montezuma hills from the Coast range, reach the river at this point, Rio Vista. The line of this proposed canal may be represented by a line from near Knight's Landing, following about the line of high water, or rather a little above the line of tule, and cutting this Montezuma ridge northeast of Denverton, a few miles, or eight or 10 miles southeast of Fairfield, say to Montezuma slough, Suisun bay. If the work is a success, it will accomplish a grand result. Thousands of acres of fine land will be reclaimed, and damage prevented to thousands more already reclaimed on the other side of the river."

The Sinking of New York Island.—Prof. Newberry in the October *Popular Science Monthly* revives the facts about the gradual sinking of Manhattan island and the adjacent territory. He says: A number of facts indicate that the coast of New Jersey and Long island is gradually sinking. From the marshes of New Jersey are taken the trunks of trees which could not have grown there except when it was drier ground, and on the shore stumps are seen, now under water, of trees which must have grown on land. So, too, the sea throws up in storms portions of turfy soil, once covered only by the air, and similar soil has been reached below the sea-level in pits dug through drifted sand along its margin. It is also said that the land boundaries have been changed and farms diminished even where the wash of the shore-waves produced no effect. The rate of this subsidence is very slow—only a few inches in a century—and it may at any time be arrested or reversed; but, should it continue, as it may, for some thousands of years, it would result in a submergence of land now valued at hundreds of millions of dollars, and a complete change of position in the seats of commerce and industry, which must always center about this harbor. This possible catastrophe is, however, so uncertain and remote that it seems hardly sufficient to disturb the equanimity of at least this generation of inhabitants.

A Claimed Discovery in Sugar Crystallization.—It is announced in the daily papers by telegraph from Washington that crystallized sugar has been obtained from cornstalks and sorghum. The following is the announcement: Dr. Collier, the chemist of the Department of Agriculture, has, for the past two weeks, been experimenting on a large scale in the manufacture of crystallized sugar from cornstalks and sorghum. The aggregate weight of cornstalks used was 11,237 pounds, and the weight of sorghum, 13,958 pounds. The weight of the juice from the cornstalks was 2,773 pounds, and from the sorghum, 4,963 pounds. The specific gravity of cornstalk juice was 1054; that of sorghum juice, 1058. The percentage of juice in the cornstalks, as they came from the field, was 24.68; percentage in sorghum, 35.56; 2,571 pounds of cornstalk juice yielded 382 pounds of syrup, and 4,355 pounds of sorghum yielded 660 pounds of syrup. This syrup contains 75% of its weight of sugar. The mill used in these experiments was an indifferent one, and the sorghum was in small stalks. Better results would have been reached had the stalks been larger. Dr. Collier says he is satisfied that there is not a farmer in the country but what can rely upon results 50% greater than he has secured, with a better mill. In these cases he got a good crystallized sugar.

A New Manganese Battery.—This element consists of a cylinder of compounded and porous carbon, pierced with holes parallel to its long axis, which serves as a porous cup and collecting plate, and this, with a rod of zinc, is enclosed in a glass vessel. In the cavities in the cylinder is placed binoxide of manganese, and the outer vessel is filled with water containing about 20% of chloride of zinc as free from lead and as neutral as possible. This couple may be recharged without recourse to the maker; and with it there is not formed the double chloride of zinc and ammonium that under certain circumstances incrusts the porous cups. The avidity with which chloride of zinc takes up water prevents evaporation and the cessation of the current by the drying up of the exciting fluid of the battery.

Heat Conductivity. — Experiments lately made by M. Schuhmeister on the heat conductivity of cotton, wool and silk, by a method similar to that employed by Stefan for determining the conducting power of gases, have led to the following results: The heat conduction of air being considered = 1, that of cotton is (on the average) = 37, sheep's wool = 12, and silk = 11; the cotton and the wool were unwrought. The latter was washed merino wool; the silk was in the state of cocoon fibers.

Solar Observations.—Says Mr. Lockyer in the *Nineteenth Century*: "Changes under one second of angular magnitude in the center of the sun's disk can now be faithfully recorded and watched from hour to hour; in other words, changes in cloud regions ten miles square in a body 92,000,000 miles away can now be chronicled."

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending Sep. 26.		Week Ending Oct. 3.		Week Ending Oct. 10.		Week Ending Oct. 17.	
Alpha	20½	14½	24½	18	19	15	16½	12½
Alta	20	16½	17½	15½	18	14½	16	11
Andes	2	90c	1.65	80c	1.40	1	1	50c
Alps	....	....	55c	....	1	65c	90c	....
Argenta	3½	3	4½	3½	5½	5	5½	5
Atlantic	....	....	....	....	....	....	90c	80c
Aurora Tunnel	3	2½	3	2½	3	2½	3	1½
Baltimore Con	2½	2	2.05	2	3.50	2	3	2½
Belcher	13½	8	13½	10½	12	9½	10	7½
Belmont	4½	3½	4½	3½	4	3	4	2½
Best & Belcher	39	30	38	31	32½	24	27½	20
Bullion	18½	12½	26	16½	16½	14½	15½	9½
Bechtel	2	1½	1.95	1.75	1½	1.20	2½	1.40
Belle Isle	60c	40c	60c	45c	70c	40c	45c	40c
Bodie	26	19	25½	20	23½	20	21	16½
Benton	9½	8	9¼	7½	9	7½	8½	6
Bulwer	13	12½	16	12½	20	14½	20	17
Boyle	....	....	....	....	....	....	....	....
Black Hawk	1	....	75c	60c	75c	50c	1½	1
Belvidere	2	1.80	2	1.60	1½	1	1½	1
Booker	1½	90c	1	75c	1	90c	1.40	90c
Caledonia	6	3.95	6½	5½	6	4½	5	3½
California	15½	13½	15	13½	14½	13	13½	11
Challenge	2½	1.60	3	2½	2.50	2	2.20	1½
Chollar-Potosi	68	47½	70	58	61	48	60	47
Comanche	....	....	....	....	....	....	....	....
Confidence	13½	9	14	11½	13	10	12.57	9½
Con Imperial	1.75	1	1.95	1½	1.65	1.25	1.40	1.05
Con Virginia	17	15½	16½	15	15	13½	14½	11½
Crown Point	11½	9	12½	10½	11	8½	10	7½
Con Washoe	....	....	2½	2	2.15	....	....	....
Champion	1½	50c	1½	1	2	1.25	1.80	1½
Concordia	....	....	20c	....	....	....	....	....
Dayton	....	....	50c	30c	50c	40c	....	....
DeFrees	50c	20c	30c	25c	30c	25c	25c	20c
Daney	....	....	....	....	....	....	....	....
Day	70c	45c	60c	45c	55c	40c	50c	40c
Eureka Con	49	37	46	44	46	42	45	44
Exchequer	8¾	5½	11¾	7½	8¼	6½	6¾	4½
Endowment	1.10	40c	1½	1	1¼	1	1.30	1
Gen Thomas	....	....	....	....	....	....	....	....
Grand Prize	6	5½	6	5½	5½	5	5.55	4½
Gila	30c	25c	50c	40c	55c	40c	45c	40c
Golden Chariot	....	....	50c	35c	....	....	15c	....
Golden Terra	3½	3	3½	....	....	....	....	....
Goodshaw	1	90c	1	40c	1	60c	1	75c
Gould & Curry	24	17½	29½	20	22½	17½	20½	13
Hale & Norcross	44	17½	38	27	30	21½	30½	21
Hillside	4½	4	4½	4	5½	4½	5½	4½
Highbridge	2.05	1.6	3.05	1.90	2.25	1.80	1.90	1½
Homestake	9½	9	9¾	9	9	....	....	....
Hussey	70c	40c	50c	25c	60c	30c	50c	30c
Independent	4	2.65	3½	3	3½	3	3¼	3.10
Julia	7½	6¾	7½	6¾	7½	6¾	7½	6½
Justice	12	9¾	12	10	11½	9	10	8
Jackson	16½	9	15	12	14	11	10½	9
Joe Seafes	....	....	....	....	....	....	....	....
K K Con	....	....	....	....	....	....	....	....
Kentuck	10	7	11	8	9½	6¾	8½	4½
Kossuth	80c	25c	45c	30c	35c	30c	30c	25c
Keystone	7	....	7	6½	....	....	....	....
Lady Bryan	5	4½	5	1.20	3½	3	3½	1.30
Lady Wash	3¾	2.90	4	3	3¾	2½	2¾	2½
Leopard	2	1	1½	1.20	1.30	1	1.10	70c
Leviathan	1½	70c	1.70	1.40	1.50	1	1	65c
Leeds	2.10	1.20	2½	1½	1.75	1.50	2	1.40
Lee	1	75c	60c	40c	75c	....	....	....
May Belle	....	....	....	....	1	....	5c	....
Modoc	45c	10c	40c	30c	50c	15c	20c	10c
Manhattan	6½	6	6¾	6	6	5½	5½	3
Martin White	7½	7	8½	7	8½	8	8	....
McClinton	1.05	75c	90c	75c	80c	30c	75c	60c
Meadow Valley	40c	20c	50c	40c	35c	20c	25c	....
Mexican	93½	62½	99	78½	82½	70c	77½	46
Midas	2½	....	1½	1	2	87½	....	....
Morning Star	6	4½	8	6¾	6	4½	5	3
North Con Virginia	13½	6¾	11	7½	9½	8	8½	6¾
New York	2½	1.70	2.40	2	2½	1½	2.20	1.60
Northern Belle	10⅝	9½	11	10½	10⅝	10	10	9½
New Cosso	30c	....	....	....	....	....	40c	....
Navajo	1½	1¼	1.60	1.45	1.50	1.10	1¼	80c
Occidental	60c	....	1	....	1¼	1	....	....
Ophir	98	62	87	66	65	53	62	40
Oriental	2½	1½	2.60	1.30	2	1¼	1½	95c
Overman	27	18	26½	22	27	21	26½	20
Panther	....	....	....	....	....	....	....	....
Phenix	5	3½	5½	4½	6	5	....	....
Phil Sheridan	2½	2½	2½	2½	2½	2	2	70c
Prospect	30c	25c	85c	75c	60c	....	40c	....
Raymond & Ely	6	4½	9	6	6½	5½	6	4
Richer	1½	90c	2.10	1½	6	2	2½	1
Rock Island	....	....	....	....	....	....	....	....
Rye Patch	....	75c	....	....	....	....	....	....
Rough & Ready	3½	2½	3½	2.35	3½	3	3	3½
Savage	27	19	29	22½	23½	18	24½	17
Seg Belcher	43½	35	44	37	38	30	39	38
Sierra Nevada	211	195	261	215	341	210	210	135
Silver Hill	3	3	4	3½	3.75	2.90	3.30	2½
Silver King	17	15	20	12	18	16½	16½	16
Silver Prize	15c	10c	10c	....	10c	5c	10c	....
Succor	2	1.90	2½	1.80	2	1.80	1.85	75c
Summit	2	1½	2	1.65	2	1½	2	1.30
Scorpion	12½	6¼	13	10	9½	6¾	7½	5½
Solid Silver	4	3	3	2	2.10	1.80	2	1.90
South Bodie	1	75c	85c	70c	90c	75c	90c	60c
South Standard	90c	60c	75c	50c	55c	50c	65c	50c
Star	1	75c	90c	75c	75c	....	75c	60c
St. Louis	75c	60c	1	70c	1	80c	1	80c
Syndicate	2½	2	2	2	2½	2	2	....
Tioga Con	4½	3½	3.90	2.80	2½	2½	3½	2½
Tiptop	2	1.30	3½	1½	1.75	1.50	1½	1½
Trojan	65c	50c	60c	40c	45c	35c	40c	35c
Union Con	157	132	193	149	187	160	184	123
Utah	58	44	56	41	43	35	39	22
Vermont Con	20	15½	12	10	9½	9	8	6½
Ward	1½	1	1.60	1.40	1.75	1.25	1.80	1½
Wells-Fargo	60c	45c	60c	50c	40c	20c	70c	20c
Woodville	65c	50c	90c	60c	70c	60c	65c	45c
White Cloud	....	....	....	....	....	....	....	....
Yellow Jacket	30	24	38	28	34½	28	33	21

Sales at S. F. Stock Exchange.

Friday A. M., Oct. 11.

365 Alta.....16@15½
80 Alpha.....16½
1545 Andes.....
290 Best & Belcher...27@27½
1140 Bullion.....15½@15¾
835 Belcher.....10@9¾
150 Bechtel.....
115 Bonton.....8¾@8¾
440 Con Virginia...14½@14¾
469 California.....13¾@13¾
395 Chollar.....62@63
845 Crown Point.....10@9¾
300 Columbia.....1.10
2605 Con Imperial...1½@1.15
220 Challenge.....2@2.20
1100 Caledonia.....5@4½
285 Confidence.....
105 Fairfax.....3½
630 Gould & Curry...20@20½
1870 Hale & Nor.....28¾@30½
285 Justice.....10
660 Julia.....7½@7¾
170 Kentuck.....8¾
50 Kossuth.....30c
50 Lady Wash.....2½
140 Lady Bryan.....3.40@3½
620 Leviathan.....90@75c
3005 Mexican.....75@77½
1000 Monumental.....1.50
1000 Margarita.....1½@1
180 Morning Star.....5
320 New York.....2@2.20
N Bonanza.....70@75c
200 N Con Virginia.....8¾
80 Occidental.....1
190 Overman.....25½@26½
1520 Ophir.....60@62½
700 Orleans.....3½
360 Phil Sheridan.....2@2½
210 Scorpion.....7½@7¾
370 Senator.....95@90c
100 Succor.....1½@1.85
350 Sierra Nevada...210@203
1980 Savage.....23¾@24½
220 St Louis.....90c
20 Seg Belcher.....38@39
470 Silver Hill.....3½@3.30
400 Rustler.....1
420 Richer.....3@3½
250 S Standard.....60@65c
830 Summit.....1.90@2
700 Star.....70c@75c
250 S Bodie.....60@70c
200 Sitting Bull.....1½@1.15
90 Silver King.....16¾@16
1350 Santa Mina.....70c
100 Syndicate.....
475 Tiptop.....1.40@1¾
305 Tioga Con.....3@3½
800 Tuscarora.....40c
Saturday A. M., Oct. 12.
70 Alpha.....15½@15¾
710 Alta.....15@14¾
600 Argenta.....5
1250 Bullion.....15@15½
320 Best & Belcher...25@25½
350 Belcher.....9¼@9¾
510 Belle Isle.....40@45c
470 Belmont.....3.30@3.80
420 Bodie.....20¼@20½
1700 Con Virginia...13½@13¾
435 California.....12½@13
115 Confidence.....12@12.57
340 Chollar.....58@60
770 Crown Point.....9½@9¾
1035 Caledonia.....4¾@5
2915 Con Imperial...1.20@1.10
520 H & Norcross.....28@28½
275 Hillside.....5
50 Highbridge.....1.90
450 Independence...31@3.10
1805 Ophir.....59@57½
495 Overman.....25@26
1330 Paradise.....4c@3
105 Raymond & E.....6@5½
1545 Savage.....22½@21¾
50 Succor.....1.80
735 Sierra Nevada...193@191
50 Star.....75c
760 Union Con.....175@174½
125 Utah.....37@36½
655 Yellow Jacket...31½@31
Monday A. M., Oct. 14.
800 Alta.....14½@12½
500 Atlantic.....80c
100 Andes.....80c
160 Alpha.....15
345 Best & Belcher...25@26½
1035 Paradise.....9½
165 Baltimore Con.....2½@2
340 Benton.....6@7
10 Challenge.....2
205 California.....12½@12
1155 Con Virginia.....13¾@13¾
490 Chollar.....59@58
260 Crown Point.....9½
1240 Con Imperial..1.30@1.40
160 Confidence.....12@12½
160 Caledonia.....4½@4.60
500 Columbia.....
630 Exchequer.....6@6¼
125 Fairfax.....4
580 Gould & Curry...18¾@18¾
770 Hale & Nor.....28@28¾
335 Justice.....9½@9¾
130 Julia.....7½@7¾
1400 Kossuth.....25@30c
105 Kentuck.....7
10 Lady Wash.....2
600 Leviathan.....65@75c
2280 Lady Bryan.....1½@1¾
1050 Mexican.....73@77½
200 N Bonanza.....75c
50 N Sierra Nevada.....45c
140 New York.....1½@1¾
670 Ophir.....56@55½
100 Overman.....2
350 Orleans.....
205 Phil Sheridan.....1½@1¾
300 Rough & Ready..3.90@4
980 Savage.....21½@22
670 Silver Hill.....2½@2¾
50 Succor.....1
50 Solid Silver.....2
300 Senator.....90c
50 Scorpion.....7¼@7¾
830 St Louis.....90c@1
300 Trojan.....40c
410 Union Con.....17½@17¾
140 Vermont Con.....8@7¾
100 Woodville.....55c
1826 Ward.....1.80@1.65
75 Wells-Fargo.....70c
585 Yellow Jacket...31@3½
AFTERNOON SESSION.
100 Argenta.....5½@5¾
200 Aurora T.....2½@2¾
355 Bodie.....17½@16¾
435 Bulwer.....18½@20
1780 Bechtel.....2c@2
420 Belvidere.....2@1.60
475 Black Hawk.....1@1.10
2220 Booker.....1@1¼
440 Belmont.....3.90@3¾
300 Belle Isle.....40c
190 Champion.....1.80@1¾
50 Chieftain.....20c
200 C Pacific.....1.90
200 Coso Con.....25c
1050 Day.....50c@45c
800 DeFrees.....25c
600 Dudley.....2
30 Eureka Con.....45
250 Endowment...1.10@1.15
490 Grand Prize.....3½@5
350 Gila.....40c
225 Goodshaw.....90c@1
940 Hussey.....50c@45c
660 Hillside.....5c@6
50 Highbridge.....1.90
150 Independence...31@3.20
50 Ida.....75c
200 Jefferson.....2
30 Jackson.....10
1300 Kentuck.....8½@8¾
150 Lee.....1.60@2
420 Mono.....5c@4½
1215 Mono.....5c@4½
30 Martin White.....8
100 Meadow Valley.....25c
375 McClinton.....55c@75c
50 May Belle.....50c
50 Northern Belle.....9½
150 New Cosso.....40c
100 Navajo.....1.15
1300 Oriental.....1@1¼
535 Paradise.....3½@3
355 Raymond & Ely.....5½
500 Rustler.....1
200 Richer.....2@1½
200 Riquiza.....2.35
2215 Ophir.....65c@63
200 Silver Prize.....10c
300 S Bodie.....60c
400 Sitting Bull.....1.20
160 Summit.....1.90@1.80
130 Tiptop.....1@1.50
100 Tuscarora.....10c
560 Tioga Con.....22@2.70
Tuesday A. M., Oct. 15.
130 Alpha.....14½@14½
1075 Alta.....12½@13
1000 Belcher.....2
820 Bullion.....14@13¾
450 Baltimore Con.....3
345 California.....12¾@12½
1260 Con Virginia.....12½@12
5556 Con Imperial..1.20@1.10
655 Caledonia.....4½@4.10
435 Crown Point.....9½@9
565 Chollar.....55@57
85 Confidence.....11½@11¾
1185 Exchequer.....6¾@6¾
2360 Gould & Curry...17½@17
1250 Hale & Nor.....27@28
650 Justice.....3@3½
260 Julia.....7½@7¾
210 Kentuck.....7
1245 Lady Bryan.....2.10@2
3250 Mexican.....62½@64
1810 Ophir.....55c@56c
415 Overman.....25@24½
1205 Sierra Nevada...172@183
200 Succor.....1
455 Silver Hill.....2.90@2
275 Benton.....6½
605 Belmont.....3½@2.90
890 Bechtel.....2@1.60
65 Black Hawk.....1½@1.10
1815 Bulwer.....19@17½
310 Bodie.....19@20
1500 Belle Isle.....1½@1¾
150 Belle Isle.....45c
490 C Pacific.....2@1.90
25 Champion.....1½
100 Chieftain.....20c
725 Dudley.....1½
1000 DeFrees.....50c
350 Day.....50c
100 Delmonte.....5
280 Eureka Con.....45
AFTERNOON SESSION.
1000 Atlantic.....85@90c
1370 Argenta.....5½@5¾
275 Belcher.....9¾@9¾
605 Belmont.....3½@2.90
890 Bechtel.....2@1.60
65 Black Hawk.....1½@1.10
1815 Bulwer.....19@17½
310 Bodie.....19@20
1500 Belle Isle.....1½@1¾
150 Belle Isle.....45c
490 C Pacific.....2@1.90
25 Champion.....1½
100 Chieftain.....20c
725 Dudley.....1½
1000 DeFrees.....50c
350 Day.....50c
100 Delmonte.....5
280 Eureka Con.....45
1300 Endowment...1.10@1.30
100 Fairfax.....4
200 Gila.....45c
1795 Grand Prize.....5@5.55
240 Golden Chariot.....15c
100 Goodshaw.....80c
590 Hillside.....4½@5
390 Highbridge.....1½@1.80
460 Hussey.....50c@45c
50 Ida.....75c
335 Independence...31@3.20
100 Jackson.....9
30 Kossuth.....30c
100 Leopard.....75@70c
675 Lee.....1½@2
195 Lady Wash.....2½
270 M White.....8@8½
320 Mono.....4½@5
755 Manhattan.....3@3.05
533 Modoc.....80c@1c
1150 McClinton.....75@70c
400 Mt Hood.....1
500 Margarita.....60c
550 Morning Star.....3½@3
470 New York.....1.80@1.85
1200 Sierra Nevada...46@50c
50 Northern Belle.....9¾@10
970 Navajo.....1.10
250 N Bonanza.....75c
100 Occidental.....1
590 Oriental.....1½@1¾
965 Phil Sheridan.....1½@70c
85 Raymond & Ely.....5½@5½
900 Richer.....1½@1
20 Rustler.....1
1200 Sta Mina.....70c
100 Silver Prize.....10c
150 Summit.....1.90
1150 Succor.....1.80@1.85
875 Tiptop.....1½
1150 Trojan.....40@35c
430 Tioga Con.....2½
130 Vermont Con.....8@7¾
Wednesday A. M., Oct. 16.
790 Bullion.....10c@9¾
1955 Belcher.....7¼@8¼
1575 Con Imperial..1.05@1.10
720 California.....12@11½
1380 Con Virginia.....11¼@11¾
520 Confidence.....10c@9¾
230 Chollar.....50c@47½
1335 Crown Point.....7½@7¾
1330 Exchequer.....5c@4½
305 Exchequer.....5c@4½
100 S Xavier.....1.30
875 Tiptop.....1¼
1150 Trojan.....40@35c
430 Tioga Con.....2½
130 Vermont Con.....8@7¾
Thursday A. M., Oct. 17.
500 Alpha.....12½@12
1165 Best & Belcher...20c@21
965 Phil Sheridan.....1½@70c
85 Raymond & Ely.....5½@5½
900 Richer.....1½@1
20 Rustler.....1
1200 Sta Mina.....70c
100 Silver Prize.....10c
150 Summit.....1.90
1150 Succor.....1.80@1.85
875 Tiptop.....1¼
1150 Trojan.....40@35c
430 Tioga Con.....2½
130 Vermont Con.....8@7¾
950 St Louis.....80c
1200 Sta Mina.....70c
100 Silver Prize.....10c
150 Summit.....1.90
1150 Succor.....1.80@1.85
875 Tiptop.....1¼
1150 Trojan.....40@35c
430 Tioga Con.....2½
130 Vermont Con.....8@7¾

360 Summit	2	50 Tiptop	1½
690 Syndicate	2	105 Vermont Con	6
450 San Xavier	2½@3	260 Washoe Con	2½
110 Scorpion	10@10½	1105 Wells-Fargo	45@50c
100 Silver Prize	10c	250 Woodville	50@55c
490 Tiptop	1.70@1.85	310 Ward	1.45@1.50
50 Tuscarora	10c		
950 Trojan	50@45c		
370 Tioga Con	2½@3		
100 University	1		
100 Vermont	10		

Pacific Board—Latest Sales.

Wed'sday A.M., Oct. 16.			
50 Alpha	12½@12¾	20 Bodie	19
40 Alta	11¾@11¾	150 Bechtel	1.60
110 Best & Belcher	20@20½	1400 Brilliant	1½
270 Bullion	10½@10¾	70 Bullion	10½@10¾
260 Belcher	7½@7¾	130 Con Virginia	12@12½
90 California	11¾@11¾	190 Caledonia	3½@3.30
450 Crown Point	7½@8	20 Confidence	3
1455 Con Imperial	1.10@1.15	100 Con Imperial	1.10
425 Con Virginia	11¾@11½	90 Crown Point	8½@8¾
75 Chollar	48	80 Exchequer	5½@5¾
260 Caledonia	3½@3¾	130 Gould & Curry	15½@15¾
250 Exchequer	5@5½	60 Julia	6
525 Gould & Curry	15½@15¾	150 Justice	8
235 Hale & Nor	21½@22	20 Keutuck	6½
260 Julia	6½@6¾	100 Leviathan	70c
710 Justice	7½@8	200 Mackey	1½
155 Kentuck	6½@6¾	50 Manhattan	3
290 Mexican	47½@47¾	230 Mexican	54½@55
235 Ophir	43@43½	280 Modoc	15c
40 Overman	20	100 N Sierra Nevada	25@30c
180 Savage	18½@17¾	50 Ophir	47½
10 Sierra Nevada	145	20 Overman	21
20 Silver Hill	2	10 Raymond & Ely	4
10 Union Con	142½	50 Savage	20@19½
80 Utah	23@24	20 Succor	1½
130 Yellow Jacket	22@21½	120 Solid Silver	2
AFTERNOON SESSION.		700 Tuscarora	6c
15 Alta	12½	545 Ward	1½@1¾
150 Belcher	8½@8¾	100 Woodville	50c
60 Best & Belcher	22½	250 Wells-Fargo	65@60c
		10 Yellow Jacket	24

California Board—Latest Sales.

Wed'sday A.M., Oct. 16.			
40 Alpha	2½	60 Best & Belcher	22½@22¾
30 Alta	12½@12¾	80 Belcher	8½@8¾
500 Atlantic	95@82½c	40 Bullion	10½@10¾
500 Atlanta	27½c	40 Crown Point	8½@8¾
48 Belcher	8½	140 Caledonia	3½
30 Best & Belcher	20@20½	50 California	11¾@11¾
20 California	12½@12¾	40 Con Virginia	12
400 Con Imperial	1.10@1.05	300 Con Imperial	1.10@1.10
30 Con Virginia	11¾@12½	860 Coso Con	25@30c
40 Crown Point	8½@8¾	120 Exchequer	5½@5¾
40 Exchequer	5¾	100 Fairfax	4½
150 Fairfax	4	450 Gold Gate	1½
100 Favorite	2½	300 Gould & Curry	15½@15¾
40 Gould & Curry	14¾@14¾	120 Goodshaw	80c
100 Goodshaw	80c	30 Halo & Nor	26@25½
30 Hale & Norcross	24@23½	40 Julia	6½@7
70 Julia	6½@7	90 Justice	8½
30 Justice	8½@8½	150 Kosauth	25c
30 Mexican	50@50½	250 Leviathan	80@70c
600 Mackey	1½@1.05	60 Mexican	54@55½
50 Ophir	45@46½	300 Mansfield	50c
10 Overman	22½	40 Ophir	47
500 Pacific	10@15c	40 Overman	22½
100 Santiago	45c	150 Pantloch	6½@6¾
40 Savage	19¼@14½	200 Prospect	45c
30 Sierra Nevada	160@155	185 Phil Sheridan	1½
300 Silver Jacket	1½	150 Silver Prize	10c
100 Silver Hill	2½	100 Santiago	1.10
500 Twin Peaks	10c	40 Savage	19½
100 Trenton	4½	30 Sierra Nevada	164@167
20 Union	145@144	1500 Twin Peaks	6@8c
20 Yellow Jacket	24	150 U Flag	12c
AFTERNOON SESSION.		30 Union Con	154½@153½
200 Almaden Q	7	20 Utah	23
400 Atlanta	32½@25c	100 Wells-Fargo	62c
280 Alexander	8@8½	40 Yellow Jacket	21@24½

Mining Share Market.

The *Bulletin* of Oct. 16tb says: "The indifference noted in the Mining share market last week is hearing its legitimate fruit this week. Investora being tolerably well filled with stock, the search for huyers has commenced." The result is inevitahly a downward tendency in everything, and it is to he ascribed not to news from the mines hut to the market alone. Since Thnrsday last there has heen a drop in nearly all the Comstocks. Utah rose $2 on Friday, hnt has since declined to $25. Sierra Nevada was $222 on last Thursday. Yesterday its hest price was $160. Union Con. has fallen $40 in the same time; Mexican, $25; Ophir, $15; even the honanzas show a slight fall. These last did not pay dividends last month, hut we helieve measures have heen taken to assure them on next "payday." Eureka Con. has remained steady, as it usually does. Bodie has heen to $18½, showing on the whole a slight downward movement, which prohahly need excite no attention. As a general thing the week in the market has been exceedingly dull and uninteresting.

POISONED, NOT DROWNED.—The London *Whitehall Review* considers that the fearful mortality, succeeding the sinking of the excuraion steamer *Princess Alice* hy the *Bywell Castle*, was due to the hefonled and poisonous condition of the water of the Thames. Near the scene of the disaster a colossal stream of fermenting London sewerage, "hlack as Erebus, effervescent with the vilest gases and potent as prussic acid," poured into the river. It was into water saturated with such compound that the unfortunate passengers were suddenly plunged. Many who could swim did not succeed in aaving themselves. Colored dresses were discolored in half an hour. Healthy bodies decomposed almost immediately. Does not this indicate something more than drowning?

AT Kaeping, China, a flat piece of country about twenty miles long, is covered with coal and iron stone. The coal is bituminous, having from 70% to 75% of gas, and from 7½% to 15% of ash. It has every appearance of heing excellent.

THE Bank of England has raised the price of the Eagle one farthing, and Napoleons one penny. This action is caused by the influx of one million pounda aterling in gold Oct. 7th.

A NEW 20-foot ledge is reported from Deadwood, Black Hills.

MINING SUMMARY.

The following is mostly condensed from journals published in the Interior, in proximity to the mines mentioned.

CALIFORNIA.

AMADOR.

MARBLE DISCOVERY.—*Dispatch*, Oct. 12: Mr. H. L. Joy, discovered, recently, an extensive quarry of excellent marble, on the ranch of Mr. Hector Donley, about half a mile from Slabtown. Mr. Joy has had much experience in marhle, and he thinks his discovery presents a superior quality, and a very large quantity. Amador county has several other marhle mines, which are destined at some futuro day to prove very valuahle. We do not see why the establishment of large marble works somewhere in this county would not be a profitable undertaking at this time. Such an industry would have all the material, and a spleudid and varied quality, right at its door, the cost of which would be hut little above the simple expense of taking it from the quarry. This is a matter that is at least worth inquiring into. The marble deposits of this county are entirely too valuable to be allowed to remain much longer comparatively untouched.

MISCELLANEOUS.—*Ledger*, Oct. 12: The Downs mine has struck a pocket estimated to yield $200 per ton. Carpenters are husy at work erecting a substantial huilding over the shaft of the Moore mine. The Grass Valley fluming operations near Volcano are heing prosecnted with energy. Rich gold-hearing gravel has been cut in the excavations, some spots yielding as high as a dollar to the pan. The Californuia mine, in Drytown district, was sold at sheriff's sale, on September 28th, to Knight & Co., of Sutter Creek, for $892.48, amount of judgment and costs. The Loyal Lead mine was also sold hy the sheriff on September 28th, to Geo. Allen, of Bntte Creek, for the sum of $3,493, amount of judgment and costs. The great tunnel undertaking at Volcano ia in a distance of 1,200 feet, with 1,000 feet more to run. The Montirichard made a flattering clean-up this week. The Modoc mine, beyond Volcano, is to rcsume work forthwith. J. McNamara, of Jackson, is going up to take charge.

CALAVERAS.

GRAVEL MINES.—*Chronicle*, Oct. 12: There has heen a slight increase of the volume of water in the ditch since cool uights became chronic—enough to permit of the running of three or four gravel mills in this vicinity. The mill at Duryea mine started up Tnesday and will prohahly continue steadily in operation in the future. The Rough Diamond mine is also being vigorously worked and the mill is running day and night. Indications are favorahle that the water supply will permit of nninterrupted operations. Several hundred carloads of gravel have heen pnt under the stamps of the Hoey & Sliter mill, lately, and work in the mine is going steadily forward. There is no water yet for hydraulic operations.

CRUSHING.—Garland's mill at Mosquito is now running on rock from the San Joaquiu mine, owned hy J. J. Holmes, Esq. The rock is so rich that a large portion of it had to he sacked to prevent loss.

EL DORADO.

RICH GRAVEL.—*Mountain Democrat*, Oct. 12: At Rohinson'a mine, Prospect Flat, a hed of gravel has heen struck which prospects from 20 cents to $1.00 a pan, and it has every appearance of heing an entirely new hench, as extensive as it is rich.

KELSEY.—The interest in mines and mining in this part of the county seems to he increasing every day. The success of the Gold Deposit so far, and the consequent activity in and about the mine, has infused new life into the miners, and the result is that they are searching the hills and ravines for more just such mines. I saw several prospectors yesterday, and althongh they had not made any great strike, they showed me some good prospects from aeveral locations. One specimen of ore resemhled the Gold Deposit, and prohahly was from that lode, although it was ohtained two miles from the present site of that mine. Other specimens, but of different character, were equally rich, and I have no douht it will lead to developments that will hring into view several more mines in this immediate neighhorhood.

LOS ANGELES.

TEMESCAL TIN.—S. F. *Bulletin*, Oct. 9: A correspondent writes: I never was more disappointed than in my visit to the great tin mines. While there is every evidence of tin in great ahnndance, there is no work going on, nor does there seem to have heen for many a day. The tunnels and shafts are all full of water, and everything looks quite as dilapidated as Rip VanWinkle's old gun. I have understood, however, that the mines have been bonded to a English company for $1,000,000, and that work will begin soon.

SANTIAGO CITY.—S. F. *Bulletin*, Oct. 9: A correspondent writes: The city is laid out some five miles from Silverado, and if the ores in Shrewshury canyon and vicinity prove as good as many expect for them, this new town will he quite a center for milling purposes, etc. The Santiago canyon is about 25 miles long and shows as many different formations as any one locality. Near the mouth, on the seaward side, I ohserved a red sandstone formation, a aingle stratum 100 feet in thickness, and on tbe opposite side, only a little above, I noticed a white sandstone formation, evidently a marine deposit, about 50 feet in thickness, underlaid hy a bituminous coal stratum over three feet in depth, which is supported by a thick slate stratum underneath. Below this some 30 feet is a five-foot stratum of kennel coal. Five miles further up the canyon the formation hegins to change. Here I found traces of slate and soapstone, also a stratum of bituminous coal two feet thick, showing considerahle sulphurets. Above this, porphyry sets in with an occasional show of limestone. Silicate and mica are also represented. In the vicinity of the mines the canyon divides into almost innumerable smaller canyons, and the mountains become very rugged indeed. In some cases the walls are precipitous, showing immense ledges or reefs of granite porphyry and carbonate-stained shale, with an occasional show of slate. In the Silverado canyon I saw a ledge of ore that purports to have assayed tin to the value of above $200 per ton. One assay gave 33% of tin. This ledge shows well, and from all appearances bids fair to take the lead as a tin mine.

TIN AT SILVERADO.—Anaheim *Gazette:* The latest sensation at the Santa Rosa mining district is caused by the establishment of the fact that there exists a large and valuable deposit of tin ore near the town of Silverado. The first discovery was made about two months ago, and was followed hy a general stampede in search of tin. Several claims were located hut the excitement soon subsided as the difficulty in testing the ore failed to fix the character and value of the metal with certainty. Meanwhile, interested parties have procured a chemical analysis of the rock, and several tests have been made hy different assayers, giving as the result over 30% of tin, or a value of ahout $160 per ton. At the discovery point on the George Washingtou mine the ledge is hroad and well defined, carrying several veins of a foot and over in width of mineral. It is from this mine that the tests have heen made. Mr. R. B. Campbell is the discoverer of another ledge bearing mineral of the same appearance, which has not yet been tested. The ore is identical in character with the ore from the renowned Temescal tin mine, and it is thought to heloug to the same helt.

SILVERADO.—Santa Ana *Times:* The prospecting fever is in great measure over, and claims are heginning to he opened. Taylor & Co. are at present sacking ore that is richer than any ever before shipped from this district. The pay streak is 14 inches thick. Mr. Lake is trying to let a contract to run an incline of 50 feet on his ledge, his business at Santa Ana demanding all his time. Dr. Harding, of Anaheim, has contracted to run 100 feet on the Wildcat, second extension north on the Southern Slope. The Emma company have shown some good galena, and they intend pushing work in the future. T. H. Lyncb & Co. have just finished a trail two miles in length from Shrewshury's canyon to their mine. They will commence taking out ore immediately. Work is heing doue on the Santa Rosa, Southern Belle, Victoria, Southern Slope, Gold Hill, Emma, Florentine, Blue Light, Warwick, and many others.

MONO.

BODIE.—*Standard*, Oct. 9: The greatest enthusiasm is heing displayed hy all owners of mines and locators, and the proof of the earnest desire of such to develop their various properties is given in the fact that hut few men are seen lounging around the streets during working hours. The principal feature of the week, so far as reported, is the fine hody of ore disclosed and heing extracted from the mines of the Con. Pacific Co. Various assays and experiments with the "horn" shows high grades of gold-hearing quartz, which is found in ahnndance. A vein varying from the size of a razor-hlade to 3 feet in width has heen encountered in the drift now heing run, and hut a few days only are required to establish the fact of a real, live honanza, and such a one as will make even that found in the Bodie pale into insignificance. A moat remarkable discovery was made a few days ago on the flat, near the Booker mine. While prospecting a miner broke off a piece of rock from a houlder standing up in the valley, and, with an idea that it hore a mineral appearance, had it assayed. The result was $111 in silver, with no trace of gold. What or where it may lead to is, of course, a mere matter of conjecture, hut dozens of locations have been made on the adjacent slopes, and a scene of activity prevails in the vicinity. The leading mines, such as Bodie, Bulwer, Standard, South Bulwer, Con. Pacific, Mono, etc., are all looking well, and work going on with energy and success. Many mining experts are constantly arriving, and, as yet, we have to hear the first doubtful opinion given as to the stability of our properties here. The town on the hill, consisting of hoisting works, hoarding houses and dwellings of superintendents and miners is constantly growing, and bids fair soon to rival its more pretentious neighhor, Bodie, in point of numbers.

BODIE MINE.—There is no important change to report, although the indications throughout are more favorable, and show an improvement. In the Bruce winze the ledge is widening, and the ore is very rich. The Bruce stopes continue to yield good ore. The new shaft is down 120 feet, and hereafter more rapid progress will be made in sinking. The bottom is in ledge-matter and looks well, and indicates that it will develop into pay ore in further sinking.

STANDARD.—In the north drift, 300-foot level, the ledge is 2½ feet wide, of good ore. A very good ledge has been cut in the west crosscut, 450-foot level. The stopes continue to look well.

EXCELSIOR.—This mine is located north and adjoining the Richer, and was formerly named the Gold Fish. Work will be commenced hy sinking the main shaft, which is now down 70 feet. Ore has been extracted from the old workings which will work as high as $60 or $70 per ton, and great expectations are indulged in of the future of this mine.

BODIE TUNNEL.—In over 500 feet. Two small quartz veins have heen cut while running the last 30 feet, and the face of the tunnel is now in a very favorable formatiou, indicating the near presence of an ore body.

ORIENT.—A depth of 80 feet has been reached in the shaft. In going down two veins were encountered at 40 and 60 feet respectively, one heing 18 inches, the other two feet wide, from which good assays were obtained.

SIGOURNEY.—The tuunel has developed a strong vein principally silver-bearing ore, average assays from which were $80 per ton for 400 feet. Work has now been discontinued in the tunnel, and a shaft will at once be commenced.

OTHER MINES.—The Mono is occupied in preparing machinery. The superintendent thinks the ledge is not far from the present workings. The Washhurn, on the east slope of Bunker hill, has a four foot and increasing vein. Indications are that the Black Fox will strike ledge within 10 feet. The California shaft is down 135 feet, following the vein. No particular change in the Red Cloud Con. Prospects encouraging.

NEVADA.

KNIGHT OF MALTA.—Grass Valley *Union*, Oct. 10: This quartz claim has been honded to Grass Valley parties, for 12 months, who are now runniug a drift on the ledge at the depth of 50 feet, for the purpose of reachiug a point that will be considered hest for sinking a new shaft. The ledge in places is four feet in width, shows well in free gold, and carries an ahundance of sulphurets. The ledge is on the same system of east and west veins as the Idaho and Eureka, and the quartz and country rock look the same.

NEW YORK HILL.—Grass Valley *Union:* At a crushing of quartz from the New York Hill mine just cleaued up at the Omaha mill, there were 51 loads or about 100 tons, and the product was $10,000, or ahout $100 per ton. This does not include the sulphurets which are very rich, as shown hy all the lots that have passed through the chlorination works. Five tons of sulphurets from the crushing made previous to the present one, gave a returu a few days ago of $350 per ton, or $1,750. The rock just crushed was not estimated at over $50 per ton, as it showed but little in free gold and had nothing of a specimen character, but it is evident from the result that it was rich in very fine gold which was geuerally dissemminated through the quartz. The mine continues to produce the same quality of rock.

PLACER.

LARGE RESERVOIR.—*Argus*, Oct. 12: The Blue Tent M. Co., the head of whose ditch on the South Yuha, is nearly opposite Emigrant Gap, have taken preliminary steps toward constructing an immeuse reservoir, one of the largest in the State, in Summit valley. The company have ohtainecl title to the grouud hy purchase. The hight of the dam is to he 35 feet, and its capacity is estimated at 2,000 millions of gallons, equivalent to ahout 2,000,000 10-hour inches of water. Mr. E. A. Smith, civil engineer, of Placerville, has just completed the survey.

SHASTA.

COPPER CITY.—Reading *Independent*, Oct. 10: The shipment from the Extra mill now averages ahout $1,100 in gold and silver hullion per day, and plenty of good ore in sight to hack up these shipments for the next year without sinking a foot deeper in the ledge than they are at present, as there seems to he good ore in this mine wherever they cut the ledge, and if we have no very severe storms, this company will add to the bullion product of Shasta this month ahove $30,000, which is from only four pans. The Potter mine is improving, showing the same good quality of ore as they sink on the ledge. There is no waste, no assorting of ore necessary, and everything from the foot to the hanging walls goes through the mill, yielding a handsome profit. The Jennie June mine is second to none in this camp. Mr. Sallee says his entire dump from this mine will assay $40 per ton, and it is mostly gold and of a free milling quality of ore, which adds greatly to its value, as it can he milled much cheaper than the majority of the ore of this district. The Northern Light is still producing the same character of rich ore, which seems to be as plentiful as ever. The things most needed in this district are half a dozen more good quartz mills, as there is plenty of rich ore in sight in the Jennie June and Northern Light to keep them constantly running, to say uothing of the Winthrop, which could furnish ore enough alone to run 50 stamps.

MISCELLANEOUS.—The report from all outside prospects is very flattering. The Norton Bros. have a very good prospect situated hetween Copper City and Pit river. W. B. Crane, Superintendent of the Extra, has more machinery on the road for reducing ores, which will he placed in operation in a few days.

SIERRA.

DOWNIEVILLE FOUNDRY.—*Mountain Messen-*

Continued on page 252.

A Curious Edible Fungus.

Our engravings on this page represent two specimens of a curious edible fungus found in different parts of the United States, and known popularly as "Tuckahoe" or "Indian Head," and botanically as *Lycoperdon solidum.* It belongs to the same genus as the "puff-balls," but instead of growing above ground as puff-balls, it is subterranean and is found attached to the roots of large trees, upon which it is parasitic. As seen in Fig. I, a piece of the root is often found enclosed in the mass of the fungus. The form in which this *Lycoperdon* is commonly found is roundish and about the size of a man's head, and it is frequently used as food by the Indians. From these two circumstances is derived the common name "Indian head." Indian bread would not be inappropriate, for when the fungus is broken open, it has the appearance of dried dough, being full of cavities and very granular in its structure. The outside surface of the fungus is rough, filled with cracks and of a dark, ashy black color; inside, its color is whitish and starchy. Chemical analysis shows the composition of the fungus to be nitrogenous matter, 4.06; mineral substances, 1.61; starch, 81.80; water, 12.50. It is pronounced highly nutritious.

This "Tuckahoe" is one of the most famous of the edible fungi and has long been known for its good qualities. According to Dr. John Torrey, it was first brought to the notice of the public by Dr. Clayton, who sent it to Gronovius, under the name of *Lycoperdon solidum,* and as such described it in the Flora Virginica about one hundred and twenty years ago. Next it was described by the late Dr. Von Schweinitz, in his "Synopsis of the Fungi of North Carolina," under the name of *Scleroticum cocos.* About the same time, Dr. Macbride, of Charleston, South Carolina, sent to the Linnæan Society of London his observations on that fungus. Without being aware of having been anticipated by Schweinitz, Dr. Torrey described it in the New York *Repository* about the year 1819, under the name of *Sclerotium giganteum.* He gave also a chemical analysis of it, showing that it is chiefly composed of a singular substance named sclerotine. Braconnot, some years after this, described the same principle, which he called pectine. In the *Synopsis Fungorum* of Fries the fungus is called *Pachyma cocos.* In the Proceedings of the Linnæan Society of London is an account by Rev. E. J. Berkely of a large subterranean fungus that is sold as food in the streets of Shanghai, undoubtedly the same as the Tuckahoe.

New Incorporations.

The following companies have filed certificates of incorporation:

CAMERON G. & S. M. Co.—Capital, $5,000,000. Directors—Cameron H. Kinney, D. A. Macdonald, Peter Amivaux, George Beveridge and Pierce Dorgan.

HIGHLAND M. Co. — Whitewood district, Dakota T. Capital, $2,000,000. Directors—J. B. Haggin, George Hearst, Wm. Willis, Joseph Clark, A. E. Head.

BLACK HILLS C. & W. Co.—To acquire water rights and supply water to towns and cities in Dakota T. Capital, $1,000,000. Directors—J. B. Haggin, George Hearst, William Willis, Joseph Clark, A. E. Head.

DEADWOOD M. Co. — Whitewood district, Dakota T. Directors—J. B. Haggin, George Hearst, Wm. Willis, J. Clark, A. E. Head.

RED JACKET CON. M. Co.—Devil's Gate district. Directors—D. L. Thomas, John Crockett, Philip Henkle, H. O. Reinhardt and A. D. Snedeker. Capital, $10,000,000.

SULTAN HILL M. Co.—Mono county. Capital, $10,000,000. Directors—Sumner D. Prescott, Joseph Wasson, E. C. Locke, T. E. Jewell and Clinton Gurnee.

BROWN MONSTER M. Co.—Mono county. Capital, $5,000,000. Directors, George S. Ladd, F. W. Eaton, Andrew White, W. P. Willard, C. R. Greathouse.

AZURE KING M. Co.—Arizona and elsewhere. Capital, $10,000,000. Directors—B. B. Minor, J. C. Alvarado, A. G. Hawes, W. E. Hate, H. De Veuve.

BLUE BELL C. M. Co. — Railroad district, Nevada. Capital, $1,000,000. Directors—E. Reilly, J. J. Bacon, Ira P. Rankin, M. P. Freeman and George W. Barbier.

ALBERT MICHELSON, a graduate of the San Francisco Boys' High School, and of the Annapolis Naval Academy, recently read a paper on "Experimental Determination of the Velocity of Light," at a meeting of the American Science Association at St. Louis. The paper was much commended, and A. G. Hemingway, of New York, at once gave $2,000 to enable Mr. Michelson to carry out his experiments.

A SMALL flow of hot water has been struck in the face of the east drift on the 1550 level of the Alta. The temperature of the water is 105°. The hottest water found in any of the levels above had a temperature of only 90 to 95°.

THE Neal mine, Indian district, Mono Co., is bonded to San Francisco men for $25,000

A PATENT dredging machine is to be tried in river-bed mining in Montana.

The Atlantic and Pacific Forests.—No. 7.

[By PROF. ASA GRAY.]

Now, a very considerable number of species of herbs and shrubs, and a few trees, of the temperate zone are found all round the northern hemisphere; many others are found part way round, some in Europe and Eastern Asia; some in Europe and our Atlantic States; many, as I have said, in the Atlantic States and Eastern Asia; fewer, which is curious, common to Pacific States and Eastern Asia, nearer though these countries be.

We may set it down as useless to try to account for this distribution by causes now in operation and opportunities now afforded, *i. e.,* for distribution across oceans by winds and currents, and birds. These means play their part in dispersion from place to place, by step after step, but not from continent to continent, except for few things and in a subordinate way.

Fortunately we are not obliged to have recourse to overstrained suppositions of what might possibly have occurred now and then, in the lapse of time, by the chance conveyance of

Fig. 1

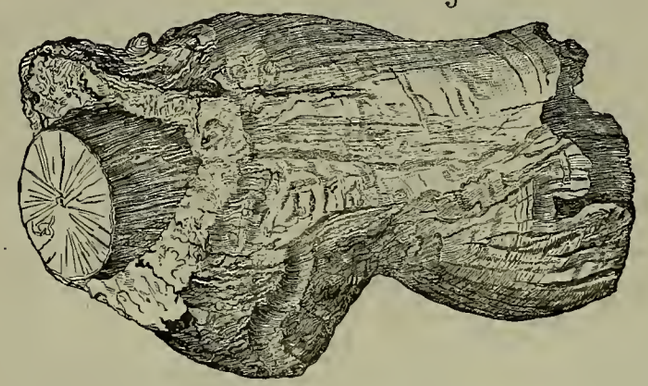
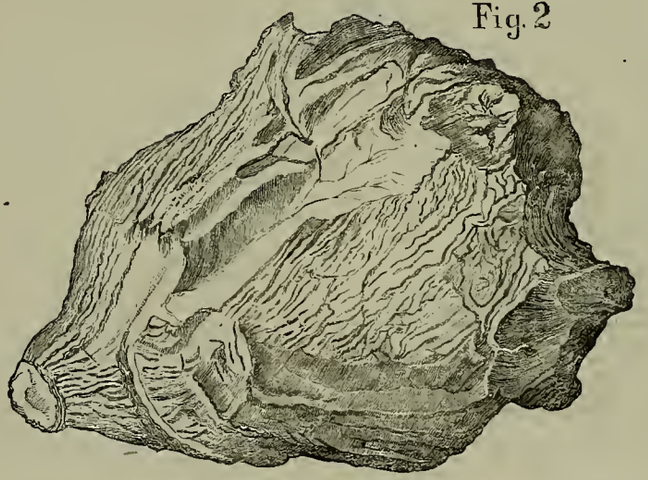


Fig. 2



TUCKAHOE OR INDIAN HEAD.—Lycoperdon Solidum.

seeds across oceans, or even from one mountain to another. The plants of the top of the White mountains and of Labrador are mainly the same; but we need not suppose that it is so because birds have carried seeds from the one to the other.

I take it that the true explanation of the whole problem comes from a just general view, and not through piecemeal suppositions of chances. And I am clear that it is to be found by looking to the north, to the state of things at the arctic zone; first, as it now is, and then as it has been.

North of our forest regions comes the zone unwooded from cold, the zone of arctic vegetation. In this, as a rule, the species are the same round the world; as exceptions, some are restricted to a part of the circle.

The polar projection of the earth down to the northern tropic, as here exhibited, shows to the eye—as our maps do not—how all the lands come together into one region, and how natural it may be for the same species, under homogenous conditions, to spread over it. When we know, moreover, that sea and land have varied greatly since these species existed, we may well believe that any ocean gaps, now in the way of equable distribution, may have been bridged over. There is now only one considerable gap.

What would happen if a cold period were to come on from the north, and were very slowly to carry the present arctic climate, or something like it, down far into the temperate zone? Why, just what has happened in the glacial period, when the refrigeration somehow pushed all these plants before it down to Southern Europe, to Middle Asia, to the middle and southern part of the United States; and, at length receding, left some parts of them stranded on the Pyrenees, the Alps, the Appenines, the Caucasus, on our White and Rocky mountains, or, wherever they could escape the increasing warmth as well as by ascending mountains as by receding northward at lower levels. Those that kept together at a low level, and made good their retreat, from the main body of present arctic vegetation. Those that took to the mountains had their line of retreat cut off, and hold their positions on the mountain tops under cover of the frigid climate due to elevation. The conditions of these on different continents or different mountains are similar, but not wholly alike. Some species proved better adapted to one, some to another, part of the world; where less adapted, or less adaptable, they have perished; where better adapted, they continue—with or without some change—and hence the diversification of alpine plants, as well as the general likeness through all the northern hemisphere.

All this exactly applies to the temperate zone vegetation, and to the trees that we are concerned with. The clew was seized when the fossil botany of the high arctic regions came to light; when it was demonstrated that in the times next preceding the glacial period—in the latest tertiary—from Spitzbergen and Iceland to Greenland and Kamtschatka, a climate like that we now enjoy prevailed, and forests like those of New England and Virginia, and of California, clothed the land. We infer the climate from the trees; and the trees give sure indications of the climate.

I had divined and published the explanation long before I knew of the fossil plants. These, since made known, render the inference sure, and give us a clear idea of just what the climate was. At the time we speak of, Greenland, Spitzbergen and our arctic seashore, had the climate of Pennsylvania and Virginia now. It would take too much time to enumerate the sorts of trees that have been identified by their leaves and fruits in the arctic later tertiary deposits.

I can only say, at large, that the same species have been found all round the world; that the richest and most extensive finds are in Greenland; that they comprise most of the sorts which I have spoken of, as American trees which once lived in Europe—magnolias, sassafras, hickories, gum trees, our identical Southern cypress (for all we can see of difference), and especially Sequoias, not only the two which obviously answer to the two big trees now peculiar to California, but several others, that they equally comprise trees now peculiar to Japan and China, three kinds of gingko trees, for instance, one of them not evidently distinguishable from the Japan species which alone survives; that we have evidence, not merely of pines and maples, poplars, birches, lindens, and whatever else characterize the temperate zone forests of our era, but also of particular species of these, so like those of our own time and country, that we may fairly reckon them as the ancestors of several of ours. Long genealogies always deal more or less in conjecture; but we appear to be within the limits of scientific inference when we announce that our existing temperate trees came from the north, and within the bounds of nigh probability when we claim not a few of them as the originals of present species. Remains of the same plants have been found fossil in our temperate region, as well as in Europe.

Here, then, we have reached a fair answer to the question how the same or similar species of our trees came to be so dispersed over such widely separated continents. The lands all diverge from a polar center, and their proximate portions—however different from their present configuration and extent, and however changed at different times—were once the home of those trees, where they flourished in a temperate climate. The cold period which followed, and which doubtless came on by very slow degrees during ages of time, must have long before its culmination have brought down to our latitudes, with the similar climate, the forest they possess now; or rather the ancestors of it. During this long (and we may believe first) occupancy of Europe and the United States, were deposited in pools and shallow waters the cast leaves, fruits, and occasionally branches, which are imbedded in what are called miocene tertiary or later deposits, most abundant in Europe, from which the American character of the vegetation of the period is inferred. Geologists give the same name to these beds, in Greenland and Southern Europe, because they contain the remains of identical and very similar species of plants; and they used to regard them as of the same age on account of this identity. But in fact this identity is good evidence that they cannot be synchronous. The beds in the lower latitudes must be later, and were forming when Greenland probably had very nearly the climate which it has now.

Wherefore the high, and not the low, latitudes must be assumed as the birthplace of our present flora;* and the present arctic vegetation is best regarded as a derivative of the temperate. This flora, which when circumpolar, was as nearly homogeneous round the high latitudes as the arctic vegetation is now, when slowly translated into lower latitudes, would preserve its homogeneousness enough to account for the actual distribution of the same and similar species round the world, and for original endowment of Europe with what we now call American types. It would also vary or be selected from by the increasing differentiation of climate in the divergent continents, and on their different sides, in a way which might well account for the present diversification. From an early period, the system of the winds, the great ocean currents (however they may have oscillated north and south), and the general proportions and features of the continents in our latitude (at least of the American continent) were much the same as now, so that species of plants, ever so little adapted or predisposed to cold winters and hot summers, would abide and be developed on the eastern side of continents, therefore in the Atlantic United States and in Japan and Manchuria; those with prefereuce for milder winters would incline to the western sides; those disposed to tolerate dryness would tend to interiors, or to regions lacking summer rain. So that, if the same thousand species were thrust promiscuously into these several districts, and carried slowly onward in the way supposed, they would inevitably be shifted in such a manner that the survival of the fittest for each district might explain the present diversity.

Besides, there are re-siftings to take into the account. The glacial period or refrigeration from the north, which at its inception forced the temperate flora into our latitude, at its culmination must have carried much or most of it quite beyond. To what extent displaced, and how far superseded by the vegetation which in our day borders the ice, or by ice itself, it is difficult to form more than general conjectures—so different and conflicting are the views of geologists upon the glacial period. But upon any, or almost any, of these views, it is safe to conclude that temperate vegetation, such as preceded the refrigeration and has now again succeeded it, was either thrust out of Northern Europe and the Northern Atlantic States, or was reduced to precarious existence and diminished forms. It also appears that, on our own continent at least, a milder climate than the present, and a considerable submergence of land, transiently superveued at the north, to which the vegetation must have sensibly responded by a northward movement, from which it afterward receded.

All these vicissitudes must have left their impress upon the actual vegetation, and particularly upon the trees. They furnish probable reason for the loss of American types sustained by Europe.

I conceive that three things have conspired to this loss. First, Europe, hardly extending south of latitude 40°, is all within the limits generally assigned to severe glacial action.

*This takes for granted, after Nordenskiold, that there was no preceding glacial period, as neither paleontology nor the study of arctic sedimentary strata afford any evidence of it. Or if they were any, it was too remote in time to concern the present question.

Second, its mountains trend east and west, from the Pyrenees to the Carpathians and the Caucasus beyond, near its southern border; and they had glaciers of their own, which must have begun their operations, and poured down the northward flanks, while the plains were still covered with forest ou the retreat from the great ice-wave coming from the north. Attacked both on front and rear, much of the forest must have perished then and there. Third, across the line of retreat of those which may have flanked the mountain ranges, or were stationed south of them, stretched the Mediterranean, an impassable barrier. Some hardy trees may have eked out their existence on the northern shore of the Mediterranean and the Atlantic coast. But we doubt not, taxodium and Sequoias, magnolias and Liquidambars, and even hickories and the like were among the missing. Escape by the east, and rehabilitation from that quarter until a very late period, was apparently prevented by the prolongation of the Mediterranean to the Caspian, and thence to the Siberian ocean. If we accept the supposition of Nordenskiold, that anterior to the glacial period, Europe was "bounded on the south by an ocean extending from the Atlantic over the present deserts of Sahara and Central Asia to the Pacific," all chance of these American types having escaped from or re-entered Europe from the south and east, is excluded. Europe may thus be conceived to have been for a time somewhat in the condition in which Greenland is now, and, indeed, to have been connected with Greenland in this or in earlier times. Such a junction, cutting off access of the Gulf stream to the polar sea, would, as some think, other things remaining as they are, almost of itself give glaciation to Europe. Greenland may be referred to, by way of comparison, as a country which, having undergone extreme glaciation, bears the marks of it in the extreme poverty of its flora, and in the absence of the plants to which its southern portion, extending 6° below the arctic circle, might be entitled. It ought to have trees, and might support them. But since destruction by glaciation, no way has been open for their return. Europe fared much better, but suffered in its degree in a similar way.

Turning for a moment to the American continent for a contrast, we find the land unbroken and open down to the tropic, and the mountains running north and south. The trees, when touched on the north by the on-coming refrigeration, had only to move their southern border southward, along an open way, as far as the exigency required; and there was no impediment to their due return. Then the more southern latitude of the United States gave great advantage over Europe. On the Atlantic border, proper glaciation was felt only in the northern part, down to about latitude 40°. In the interior of the country, owing doubtless to greater dryness and summer heat, the limit receded greatly northward in the Mississippi valley, and gave only local glaciers to the Rocky mountains; and no volcanic outbreaks or violent changes of any kind have here occurred since the types of our present vegetation came to the land. So our lines have been cast in pleasant places, and the goodly heritage of forest trees is one of the consequences.

The still greater richness of Northeast Asia in arboreal vegetation may find explanation in the prevalence of particularly favorable conditions, both ante-glacial and recent. The trees of the miocene circumpolar forest appear to have found there a secure home; and the Japanese islands, to which most of these trees belong, must be remarkably adapted to them. The situation of these islands—analogous to that of Great Britain, but with the advantage of lower latitude and greater sunshine—their ample extent north and south, their diversified configuration, their proximity to the great Pacific Gulf stream, by which a vast body of warm water sweeps along their accentuated shores, and the comparatively equable diffusion of rain throughout the year, all probably conspire to the preservation and development of an originally ample inheritance.

The case of the Pacific forest is remarkable and paradoxical. It is, as we know, the sole refuge of the most characteristic and wide spread type of miocene coniferæ, the Sequoias; it is rich in coniferous types beyond any country except Japan; in its gold-bearing gravels are indications that it possessed, seemingly down to the very beginning of the glacial period, magnolias and beeches, a true chestnut, Liquidambar, elms, and other trees now wholly wanting to that side of the continent, though common both to Japan and to Atlantic North America.* Any attempted explanation of this extreme paucity of the usually major constituents of forest, along with a great development of the minor, or coniferous, element, would take us quite too far, and would bring us to mere conjectures.

Much may be attributed to late glaciation;† something to the tremendous outpours of lava which, immediately before the period of refrigeration, deeply covered a very large part of the forest area; much to the narrowness of the forest belt, to the want of summer rain, and to the most unequal and precarious distribution of that of winter.

Upon all these topics, questions open which we are not prepared to discuss. I have done all that I could hope to do in one lecture if I have distinctly shown that the races of trees, like the races of men, have come down to us through a pre-historic (or pre-natural-historic) period; and that the explanation of the present condition is to be sought in the past, and traced in vestiges, and remains, and survivals; that for the vegetable kingdom also there is a veritable archæology.

*See, especially, report on the fossil plants of the auriferous gravel deposits of the Sierra Nevada, by L. Lesquereux; Mem. Mus. Comp. Zoology, vi., No. 2. Determinations of fossil leaves, etc., such as these, may be relied on to this extent by the general botanist, however wary of specific and many generic identifications. These must be mainly left to the expert in fossil botany.

†Sir Joseph Hooker, in an important lecture delivered to the Royal Institution of Great Britain, April 12th, insists much on this.

Useful Information.

The Blue Process of Copying Tracings, etc.

This process is now extensively used in the drawing-rooms of a number of firms and companies, and saves not only much labor but a great deal of weariness to the junior draftsmen to whose lot it usually falls to make copies or tracings of drawings. The *Railroad Gazette* says that in the office of Messrs. William Sellers & Co., and in the drawing-room of the Pennsylvania railroad at Altoona, all tracings, when more than one copy is required, are made by this method. It is described as follows in a short paper read by Mr. P. Baruce before the Institute of Mining Engineers:

The process is believed to be of French origin, and has been used for many years. Special attention seems to have been directed to it recently, and its great value to engineers appears likely to be fully recognized.

The manipulations required are of the simplest possible kind, and are entirely within the skill and comprehension of any office boy who can be trusted to copy a letter in an ordinary press.

These particulars may be summarized somewhat thus:

1. Provide a flat board as large as the tracing which is to be copied.

2. Lay on this board two or three thicknesses of common blanket, or its equivalent, to give a slightly yielding backing for the paper.

3. Lay on the blanket the prepared paper with the sensitive side uppermost.

4. Lay on this paper the tracing, smoothing it out as perfectly as possible so as to insure a perfect contact with the paper.

5. Lay on the tracing a plate of clear glass, which should be heavy enough to press the tracing close down upon the paper. Ordinary plate-glass of $\frac{3}{16}$" thickness is quite sufficient.

6. Expose the whole to a clear sunlight, by pushing it out on a shelf from an ordinary window, or in any other convenient way, for six to ten minutes. If a clear skylight only can be had, the exposure must be continued for thirty or forty-five minutes, and under a cloudy sky, sixty to ninety minutes may be needed.

7. Remove the prepared paper and drench it freely for one or two minutes in clean water, and hang it up by one corner to dry.

Any good hard paper may be employed (from even a leaf from a press copy-book up to Bristol board) which will bear the necessary wetting.

For the sensitizing solution take 1¾ oz. citrate of iron and ammunia and 8 oz. clean water; and also, 1¾ oz. red prussiate of potash and 8 oz. clean water; dissolve these separately and mix them, keeping the solution in a yellow glass bottle, or carefully protected from the light.

The paper may be very conveniently coated with a sponge of four inches diameter, with one flat side. The paper may be gone over once with the sponge quite moist with the solution, and a second time with the sponge squeezed very dry. The sheet should then be laid away to dry in a dark place, as in a drawer, and must be shielded from the light until it is to be used. When dry the paper is of a full yellow or brown color; after the exposure to the light the surface becomes a darker bronze, and the lines of the tracing appear as still darker on the surface. Upon washing the paper the characteristic blue tint appears, with the lines of the tracing in vivid contrast.

It will readily be seen that the process is strictly photographic, in the ordinary sense of the word—the tracing taking the place in the printing of the ordinary glass negative. Hence all details are closely reproduced, even to the texture or threads of the tracing-cloth.

A working drawing thus made furnishes its own background, and does not require to be placed over a white ground, as is often the case with a tracing. If desired the copy can be made upon common hand paper, which can be mounted upon a board in the usual way.

Inasmuch as such copies can be made from tracings only, it may be well to suggest, and urge, that drawings can be completed or nearly so in pencil upon paper in the usual way, and that all the inking can be done upon tracing-cloth laid upon the pencil-work. In this way the cost of the tracing (in the ordinary sense) can be wholly saved, and the single copy of the finished tracing can thus be made in the "blue" way to the best possible advantage.

It may safely be said that this method of copying can be employed if only one or two copies per week are needed of ordinarily complex drawing, with excellent results and with a very important saving of time and money.

A ready means of adding to or correcting the blue copies may be found in the use of a solution of carbonate of soda or potash, used with a pen or brush.

The Preservation of Iron Surfaces.—Mr. J. Gordon, of Carron, Falkirk, writes to *Engineering* as follows: In your journal, dated 9th current, I have just read with interest your remarks on Mr. Bower's process for the preservation of iron surfaces. After perusal, about twelve months ago, of Professor Barff's pamphlet on the subject of his patent, it at once occurred to me, as it has also to Mr. Bower, that the oxygen of air would have the same combining effect with heated iron surfaces as the oxygen of superheated steam. I therefore at that time, and have since, exposed several small pieces of iron, both malleable and cast, to the hot air used at the blast furnaces here, my belief being that the hot blast would itself raise the pieces of iron to the desired temperature, and also furnish the requisite oxygen for the formation of the coating of magnetic oxide on their surfaces. This opinion was confirmed by the experiment. The surfaces of the articles were found to be covered with the magnetic oxide, and where the coating was complete it perfectly resisted the oxidizing action of water or moist air; its powers of resistance seemingly bearing a proportion to the duration of time to which the surfaces were exposed to the hot blast.

Enlarging Figures for Molders' Patterns.—In the Italian department at Paris there is a system for enlarging busts, etc., which ought to be worth something to bronze founders, etc. The bust to be copied is marked off into equidistant horizontal planes, and also into radial vertical planes axial with its center line; the distances are carefully calipered; and a honeycomb frame, first built up of thin wooden boards, arranged in planes symmetrical with the marking on the original, is cut out to depths corresponding to the caliperings on the original. The interstices are then filled up with wood or with plaster material.

New Mixture for Oiling Wool.—One part of best resin, powdered, is mixed with equal weight of spirits of ammonia free from lime, and ten times this weight of water, and stirred cold until a jelly is obtained; this is then strained through a fine sieve to remove all undissolved particles of resin; and mixed with an equal weight of rape-oil, olive-oil, oleine, or any other oil suitable for oiling the wool, forming an emulsion, to which is added one hundredth part of its weight of glycerine. When using, this mixture is diluted with about half its weight of water, and treated as usual.

Cement.—For joining the porcelain beads to the metal spikes used for ornamental nails, a German authority recommends the use of a thick paste made of a mixture of Portland cement and glue. The same mixture is recommended as an excellent cement for foot-walks.

Good Health.

Cold and Warm Baths.

A writer in the London *Lancet* says: The effects of baths are produced mainly by their action on the cutaneous nerves. The sudden immersion of the body in cold water produces a shock, which is followed by a slight shiver in the muscle, and the contraction of the cutaneous capillaries. There is often also a slight gasping of the breath. There is a feeling of cold, and the temperature is at first slightly elevated and then depressed. The pulse and respiration are both quickened, and the amount of carbonic acid eliminated by the lungs is notably increased. If the water be very cold and the bath continued, these symptoms deepen in intensity; but if the body be quickly removed from the bath, the familiar phenomenon known as reaction appears, and the first effects are all reversed: there is dilatation of the cutaneous vessels, accompanied by a sensation of warmth and a general feeling of vigor. The cooling effect of a cold bath is brought about, probably, in two ways: first, by the actual conduction of heat from the surface of the body by cold water; and, secondly, by a modification of heat production, induced by the influence of the cutaneous impressions upon the heat-regulating centers in the upper part of the spinal cord and the medulla. The very rapid depression of temperature which takes place when hyperpyretic patients are immersed in water can hardly be explained by reference merely to the ordinary laws of heat, and it is almost certain that the central effects produced by cutaneous impressions play a very large, if not the largest, part in the process. The effects of the cold bath being mainly due to impressions made upon the cutaneous nerves, the modifications of the cold bath largely depend on their power of increasing its stimulating action. The colder the water, the more violent the impression. The frequent change of water, such as we get in the sea or in running streams, increases the stimulating effect. Great force of impact, as when water falls from a hight or comes forcibly through a hose upon the body; the division of the stream, as is seen in shower baths and needle baths; and the addition of acids or salt to the water, all act, it would seem, by increasing the stimulating power which the water exerts upon the cutaneous nerves.

Warm baths produce an effect upon the skin directly contrary to that which is brought about by cold water. The cutaneous vessels dilate immediately under the influence of the heat, and although this dilation is followed by a contraction of the vessels, this contraction is seldom excessive; and the ultimate result of a warm bath is to increase the cutaneous circulation. The pulse and respiration are both quickened as in the cold bath. The warm bath increases the temperature of the body, and, by lessening the necessity for the internal production of heat, it decreases the call which is made upon certain of the vital processes, and enables life to be sustained with a less expenditure of force. While a cold bath causes a certain stiffness of the muscles, if continued for too long a time, a warm bath relieves stiffness and fatigue, as every hunting man must know full well. The ultimate results of hot and cold baths, if their temperature be moderate, is about the same, the difference being, to use the words of Braun, that "cold refreshes by stimulating the functions, heat by physically facilitating them; and in this lies the important practical difference between the cold-water system and the thermal method of treatment."

How the Body is Built Up.

The muscle and fat of the body, remarks the *Journal of Chemistry*, are derived from the food, and animal heat is evolved from their combustion or their combination with the oxygen admitted by the lungs. When the muscles are inactive, slow combustion goes on; and for every grain of carbon burned, a perfectly definite amount of heat is produced. When the muscles contract, the combustion is quickened, and the additional heat is liberated in the muscles themselves. If external work be done, as in lifting a weight or hammering a nail, the heat is no longer developed in the body, but transferred to the weight lifted or the raised hammer, and is liberated when they fall, and the heat thus liberated is exactly equal to the combustion inside the body. Thus the body is an apparatus efficient beyond all others in transforming and distributing the energy with which it is supplied, but it possesses no creative power. A man weighing 150 pounds, by the consumption of a single grain of carbon can lift his body to a hight of eight feet, and by the consumption of two ounces, four drachms, twenty grains, to a hight of ten thousand feet. Mayer maintains, against Liebig and others, that the muscles in the main play the part of machinery, converting fat into the motive power of the organism. He saw that neither nerves nor brain possessed the energy necessary to animal motion, and believed they held fast or let loose muscular energy as an engineer, by the motion of his finger in opening or closing a valve, liberates and controls the mechanical energy of a steam-engine. These views are now quite generally accepted by scientific men.

Fumigation in Asthma.—At a meeting of a medical society in Philadelphia, Dr. W. M. Welch called attention to his treatment of asthma by fumigation. The powder to be burned is composed of two and one-half parts of nitrate of potassium, one-half part of belladonna and five parts of powdered stramonium leaves, intimately mixed with a small proportion, say one-half part, of pulverized white sugar, the latter being added to prevent the compound from burning too freely. The saltpeter may be dissolved in just enough water to make a saturated solution, which is mixed with the leaves, and subsequently the mass dried into a coarse powder, and sugar added. A small quantity is placed on a brick or tin plate and ignited, when it burns, giving off a cloud of smoke. He occasionally spreads sheets over a clothes-horse for the purpose of confining the fumes, and had obtained very satisfactory results during paroxysms of asthma.

Turpentine Vapor in Accidents from Chloroform Vapor.—Dr. Wachsmuth, of Berlin, has suggested a preventive of those accidents which frequently occur in the administration of chloroform to produce anæsthesia. He says: It consists in the addition of one part of rectified oil of turpentine to five parts of chloroform. The oil of turpentine in vapor appears to exert a stimulating or life-giving effect on the lungs, and protects these organs from passing into that paralyzed state which seems to be produced by chloroform narcosis. Dr. Wachsmuth, while lying on a sick bed, accidentally breathed the vapor of turpentine, and he experienced from this a strongly refreshing feeling. This fact induced him to try the plan of adding oil of turpentine to chloroform when the latter was used for anæsthetic purposes. The beneficial results surpassed his expectation.

Death from a Toy.—The London *Lancet* states that a little child at Briton has been killed by accidentally swallowing a squeaking air-bladder. It appeare that the toy slipped through the glottis with the bladder downwards, and the quill mouthpiece upwards, so that with every inspiration the bladder became more or less inflated, and thus prevented the entrance of air to the lungs, and produced death by suffocation. A verdict of "accidentally suffocated" was returned by the jury. The case must be unique.

No Stimulants.—The *Doctor* says that the other day a physician, to a patient inquiring, "What ought I to take or to do when my feelings of exhaustion come on?" replied, "Go and lie down like any other beast."

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The Week.

The week was ushered in hy news of anotber conflagration at a mine. On October 13th the hoisting works of the Lady Bryan mine took fire and hurned to the grownd. As is usual, the exact cause is not known. If, as binted, it was started hy a fireman's lamp, the company have probahly to thank carelessness for this drain of $30,000 or more upon their pockets. Work of repairing and rehuilding bas commenced as promptly as it did at the Richmond. Exceptiug tbis disaster, all has gone well on the Comstock, and this notwithstanding the condition of the stock market. Tbe Gold Hill *News* of the 16th inst. says:

"Stocks are down—have hroken fearfully during the week, hut tbose most familiar with the mines and developments on the line of the Comstock look at home in vain for the cause."

Reports from the outside mines are generally very good.

Tbe fall in the price of silver may affect the mincs to a considerable extent. It is not yet fully explained and those who a few moutbs ago propbssied a rise in the market, do not dare announce even a hope that it will soon become better.

Bodie wants more hotel accommodation. That may be a good sign; hut these rushes often are followed hy dangerous reaction. Silverado has hean promised what she has cried for so long—a mill—and is juhilant. The *Silver State* thinks it sees a mining revival threatening in Humboldt county. The Richmond furnaces will be rapidly rehuilt. Their destruction has heen much like all "ill winds." Because of it, the lead market has become a little firmer, which must accrue to the hsnsfit of many struggling camps in Utah and Nevada.

Los Angeles as a Mining County.

Was there prophetic virtus in the fact that almost tbe first mining in Califoruia was done in Los Angeles county? Seven years before the heginning of the "New Era," which in 1848 was usbered in by Marshall's discovery of the Sutter Mill placers, a Frenchman, Baric by name, was working away at gold-bearing quartz near tbe Mission of San Fernando. But when the placer excitement commenced, no one tbought of looking for mineral wealth in this chosen county of tbe sunny south. This beautiful land was left for the farmer and tbs borticulturist. Los Angeles was never placed among the counties of tbe great "Motber Vein," and was not thought of as related to the silver-bearing mountains of Inyo, altbongb the mountains near the southern corner of ths county bave been considered hy geologists as belonging to the Sierra Nevada range. About 1861, when the Geological Survey explored the county, copper and silver ore were brought tbem from ths San Gabriel mountains. The ore was found in cretaceous formation, and the survey decided tbat the deposits could not prove profitahls. The survey reported also some little gold-washing in ths same mountains, but not enough to excite attention. When the explorers ascended the peaks and viewed tbe ranges to tbe soutb, they pronounced tbem wild, chaparral-covered and little known, and added, that no indications of metalliferous ores were observed in the Santa Ana mountains.

In tbe Temsscal range, just over the boundary of the county, tiu has been discovered, ore tbat has assayed as bigh as 60% of the metal; hut nothing bas come of it, and a very recent writer says: "Tbs tunnels and shafts are all full of water, and everything looks quits as dilapidated as Rip Van Winkle's old gun." Later, coal was discovered near tbe Santa Ana river. Neitber did this attract much attention, and of one of the "locations," a gentleman wbo visited the place in 1872, and pnblished bis report as late as 1877, says tersely: "Tbe whole thing is worthless." Of over 1,300 specimens sent to the Paris cxpositiou, Los Angelcs county claims hut two, and neither one of these is characteristic, one being a copper and the otber a quicksilver ore.

Visitors who bave passed through tbe county in midsummer—wbo have felt the warm sun and genial breeze of its semi-tropic climate, and feasted tbe æsthetic eye and the more suhstantial inner man amoug the green groves of the orange and lemon—remember the county as a land literally "flowing in milk and honey," where the wheat, and the corn aud the tropical fruits grow side by side, even at the fect of snow-capped peaks. But no one has ever thougbt or spoken of Los Angeles as a mining county.

There lies now on tbe desk before us a box of minerals from the Silverado region in the southeastern part of Los Augeles county. There are 12 specimens. One professes to he a tin ore. Another is coal. Anotber is a brilliant sulpburet from a gold mine. And the remainder are supposed to be ores of silver. None of these have been assayed, but they remind us that others like them and from the same place bave been put to the test and not fonnd wanting. Tbey remind us that hundreds and thousands of miners bave been rusbing to this new mining conuty within the last month or two, that numberless claims bave been staked out, tbat ores have been extracted and eveu shipped to San Francisco, tbat opinions of experts bave been sougbt aud given, tbat developments bave been made sufficient to warrant a call for a mill—a call, too, that bas not gone unauswered, and that the permanence of tbe mines bas been assured so as to revive trade in the neighboring towns and make a cousiderable market for the otber class of products of the couuty, drawing supplies from Anaheim if not from Los Angeles itself.

Notwithstanding the verdict of the visitor of 1872, Los Angeles coal has become a product of no little importance. It bas not become widely known as yet, nor are sufficient facts at hand to warrant a final judgment of it. But this much is certain: considerable capital has found its way into the mines and quite large shipments of coal have been made.

Besides the Silverado district and the Black Star coal mines, another part of the county now claims notice for its mineral deposits. But a week or so ago the discovery of large tracts of graphite was reported, almost simultaneously with a similar report from Shasta county. The exact location we believe is not generally known. If the heds ars of good quality and in considerahle quantity, they will in time prove valuahle.

We have seen no account of the discovery of the Silverado mines. Such an account would be very welcome now. But we have no doubt that the fast increasing development may he laid at the door of the hard times that have driven many sensible mcn fresh from the overcrowded cities, to seek wages hy prospecting or by working persistently and economically old ahandoned claims. Such outgrowths from tbe hard times have been noticed in other counties. A revival in Nevada county may be instanced, and the discovery and opsning up of mining districts in other parts of California and in Nevada, may with show of reason he ascribed to this cause. But wherever the credit of it lies, the good has heen done, and Los Angeles is henceforth listed as a mining county.

Notes on Contributions to Our Cabinet.*

We acknowledge the receipt, from P. A. Clark, Esq., of Silverado, Los Angeles Co., of twelve specimens from that neighborhood. We bave sbown them to Mr. J. S. Phillips, of 504 Wasbington. street, San Francisco, and wbat we say of them is upon bis authority. We give them witb our cahinet nnmbers:

No. 553. Dunlop location, Blus Light Co., 2d extension south on Grayback lode, Santa Rosa mining district. Sulphurets of antimony and lead in ferruginous quartzose rock. Probably silver ore.

No. 554. Blus Light location, Ist extension south on Grayback lode. Sulphurets of antimony and lead, in hornblendic and quartoze rock. Probably silver ore.

No. 555. Flannigan location, 3d extension south, Grayback lode. Sulphurets of antimony, lead and iron, with carbonate of lime and hornblendic gangue. Probably silver ore.

No. 556. Same locality as No. 555. Sulphuret of lead, with carbonate of lime and hornblendic gangue. Appearance of chloride of silver. Shonld be assayed.

No. 557. Specimen of coal from Santa Clara coal mine about five miles west of Silverado and about one mile west of cbange in formation from limestone and slate to sandstone and slate, and about five miles south of the Black Star mine. Witbout making elahorate tests should say it is very good coal, better tban tbat obtained in tbe Mount Diablo region.

No. 558. Southern Slope Galena lods, Santa Rosa mining district. No galena; sulphuret of zinc (black jack), in hornblendic limestone and calcite.

No. 559. Southern Slope Co., Galena lods. Very heavy; sulphuret of antimony witb calcareous gangue.

No. 560. Mountain View Co., Grayback lode, 1st extension north. Character of ore found in tbe canyons on tbis lode. Blue carbonate of copper (azevite) sulpburet of lead and probably silver. Shonld be assayed.

No. 561. Montezuma Co., Ophir lode. Tbe Ophir is a gold mine. Very brittle sulphuret of iron, with quartz and calcite. Probably auriferous.

No. 562. California Con., No. 1, American Union lode, Shrewsberry canyon, tbree miles south of the Blue Light mine. Sulphurets of iron and zinc (pyrite and sphalerite) with quartz.

No. 563. Great Fall Co., and lode, Shrewsberry canyon, Santa Rosa district. Sulphuret and arseniuret of iron (pyrite and arsenopyrite) witb hornblende and feldspar.

No. 564. Tin ors, Georgs Wasbington Co., and lode; ledge crops out 40 feet wide, traceable for several miles. Looks like hornblendic mixture. Tin doubtful. Cannot judge without an assay. The Temescal tin ores are said to be very peculiar, different from tin ores from any other locality. Hence tbe difficulty of judging.

*Under this heading we shall continue to mention and describe, according to merit, such specimens of ores, minerals, fossils, curiosities, etc., as may be sent to us by mail or express prepaid. Each article will be numbered, marked with the name of the donor and the locality, and safely kept. A full account of the place, occurrence, etc., adds much to the value of such contributions. In another column we will gladly answer any reasonable questions regarding specimens so contributed.

Return of Our Commissioner.—Within a week Mr. Henry G. Hanks will be witb us again. The work that be has accomplished for our coast is already too well known to need notice now. And it would be superfluous to say tbat he will be gladly welcomed, as he bears bome our laurels. He bas, too, laurels of his own, which he richly deserves. Tbe French gave him a diploma of honor and a gold medal, as tokens of their appreciation of the skill and judgment exhibited hy him in his management of the Pacific coast display. And when he is hack at home he will be rewarded not only by our esteem hut hy the sight of new enterprises, supported by foreign capital, growing up among us, as monuments of the good services he has rendered. This is no chimera, as time will very soon show.

Patronize Them.—Persons having book hinding to do cannot do hetter than call on Bartling & Kimball, No. 505 Clay street. Tbey do uniformly good work, and in former years bave exhibited beautiful specimens of ornamental and gilt edge hinding, rich and durahle, which would he a credit to tbe trade anywhere in the civilized world. Having a large estahblishment and every appliance of the trade, they manufacture any style of blank hook required, and do up this and other johs in the hook binding line at short notice.

A system of loading hsavy guns hy means of compressed air has heen iuvented by R. C. Smith, of Edinhurgh, Scotland. The rammer consists of a series of telescopic tubes, into wbich the air is admitted so that when tbe cbarge is thus thrust home communicatiou is establisbed hetween the rearmost tuhe and a series of internal tuhes (which are extended along with the others) permitting the air to escape. Sponging is effected in the same way. The wbole process is said to be very expeditious.

A new mining camp has recently been started 14 miles ahove Poncha springs, Colorado. The district bids fair to he a lively one.

Carbon Paint as a Preventive of the Oxidation of Iron.

Dr. Lanszweert, a chemist of this city, has beeu conducting a series of experiments during many years for tbe purpose of finding some preparation tbat could bs placed upon iron, and so change the surface and become a part of it, as to prevent oxidation, eitber in ths air or in salt water. Tbese experiments have resulted in tbe discovery of a preparation of almost purs carbon, with other ingredisnts, wbich, whsn applied to iron, appears to bave the dcsired effect. It bas been placed upon the bottoms of iron and wooden sbips on voyages to England and China, and so far as reports have been received it bas exceeded Dr. Lanszweert's anticipations. It has been noticed, and recorded in scientific journals, that harnacles, otber crustacea, and salt water confervæ, do not attacb to and grow upon charred wood, *the carbon of the charred wood being unfavorable to them.* The basis of this paint being carbon, it appears to bave the same effect, and therefore promises to be of great advantage in preventing tbs fouling of the bottoms of wooden and iron ships.

Dr. L. is now conducting anotber series of experiments, for the purpose of ascertaining if bis carbon preparation, placed upon and incorporated in wood, will resist the attacks of the *teredo* and *limnoria*. For tbis purpose he has prepared planks and timbers, and caused them to be placed in tbe water at various points in our barbor, and also at Santa Monica, where the borers are more tban usually destructive. As these borers are batched, and enter tbe wood especially in May and June, a complete list of these experiments cannot bs announced until the wood has remained in the water for a year.

From all that can be learned of the numsrous tests, it appears to be a snccessful paiut in proventing ths rusting of iron, either in the air or in fresh or salt water. As a paint for both wooden and iron work, it flows freely, and bas a fine, smootb surface. Tbe principal ingredient heing carbon, of course its color is only black; but it makes an excellent fonndation for other colors of the ordinary oil paints.

Dr. Lanszweert has devoted a long life to chemical experiments. In addition to his contributions to purely scientific chemistry, he is confident of having now made a discovery that promiscs to be of great practical aud economic value.

The Mines and the Courts.

Buying on Margins.

The *Bulletin* gives the following statement of the case of G. H. Gray vs. Stephen Otis. Tbe defendant is a stockbroker. On tbe 7tb of January last, Gray requested Otis to sell for bis account ten sbares of Alta mining stock, "seller 10," at $22, handing him $40 as margin. Otis replied that $40 was not a sufficient margin for such a transaction, whereupon Gray promised to make up the usual margin but neglected to do so. Otis sold the stock on the morning of January 7tb, at $22 per share, "seller 10." At ths afternoon session the stock rose some dollars per sbare. On the day following it went to $30, and continued high for several days. On tbe 8tb, Otis "filled" the stock at $28. On the 9th, the defendant met Gray and informed him what he bad done. Gray repudiated the transaction, and on the next day ordered Otis to "fill" for him, the stock being at $14. Otis declined, on the ground that he had already "filled" at $28. Gray brought suit to recover the difference between $14 per sbare, the value of the stock on tbe 10th, and $22, making $80 on the 10 shares, besides tbe $40 margin.

In giving the opinion, Judge Freelon said: Neither party has appealed to any custom or rules of the Stock Boards. The Code and statutes do not provide for such cases. Tbe common law authorities bearing on the case are meager and conflicting. It must he considered that the hroker was in a position to lose everything and gain nothing hut his commission. Had the stock gone to $280 or 2,080 instead of $28, the hroker might have been ruined, or bad it gone down to a dollar, be would have only gained a few cents. If there can he any equity in such a transaction, it seems to he all on the hroker's side, especially as he tried to find Gray to give him notice. Iu tbe cass of Sterling vs. Jaudin, 48 *Barbour*, under like circumstances, no notice even was held necessary. And that autbority goes to show that in just snch a case as the one before the Court, the defendants bad a right to use bis hest judgment as to the time and place of purcbase, heing bound, however, to make tbe purchase at the then market price. Such being the view of the Court, judgment will be given for the defendant, with costs.

Root, Nelson & Co. are proprietors of the Uuion foundry, Sacramento, noticed in our last issue. Mr. Williams recently sold his interest (in the real estate and works) to the present firm—consisting of three partners.

During the week ending with Tuesday, October 8tb, 27,450 pounds of quicksilver and 55,270 pounds of sulphur were shipped from Calistoga to San Francisco.

An extensive cave of the surface into a Scranton, Pa., coal mine, has tbrown from 300 to 400 mcn ont of employment for a time.

Mines and Work of Almaden.—No. 5.

[Translated for the Press from "Annales des Mines."]

III.—Deposits of Mercury.

The ores of mercury which have rendered Almaden so famous dispose themselves nearly in a triangle, whose apexss would be Almaden, the ancient mine of Las Cuevas near Gargantiel, and Almadenejos or Valdeazogues.

Some indications of cinnabar have been found outside of these limits to the west and northwest of Almaden; it seems even, according to the sayings of the people of the country, that spots of cinnabar can be found in certain banks of quartzite for considerable distances; but it is only in the space indicated that the mercury has given rise to researches or serious exploitations. The mins of Las Cuevas has been for a long time abandoned; those of Almadenejos have diminished to such an extent, that about 1860, their exploitation was given up; therefore, all the mercury which Almaden produces comes from the mine situated beneath the town.

The cinnabar is nearly always found in the sedimentary rocks; we have already said that it was known only in a small number of spots in contact with the melaphyre. The principal deposits are in the silurian strata; but it is found also in the devonian. At Guadalperal, in the hill of Hinojo, the beds which contain cinnabar, enclose a large number of fossils of the devonian epoch. At Valdeazogues, the cinnabar forms red spots in a limestone of the same age. To the north of Chillon in the midst of a mass of devonian rocks which run from Chillon to Puerto del Ciervo, we have found banks of quartzite feebly impregnated in places with sulphide of mercury. There have never been found, it is true, fossils in the mass of the ore itself as at Idria, but *bilobites* and *graptolites* have been found in the encasing rocks. The deposit at Guadalperal is in a partly altered frailesca, without fossils, but surrounded by devonian rocks which are full of fossils. It is necessary always to remember that it is in the silurian rocks of Almaden only that mercury is found in quantity sufficient to be advantageously exploited.

1. Description of the Mine of Almaden.

The mine of Almaden comprises three principal deposits, nearly parallel to each other, and with a general direction from east to west. The most southerly one bears the name of San Piedro y San Diego; the two others, very near to each other, bear the names, the one San Francisco, the other San Nicholas. The section, Fig. 8, nearly perpendicular to the direction of the veins, gives us an idea of their bearings.

The cinnabar impregnates certain beds of quartzite or of sandstones, nearly vertical, enclosed by beds of schiste; sometimes the sandstone, impregnated with cinnabar, has for walls other sandstones not impregnated. What is remarkable is that the cinnabar passes at times suddenly from one bank to the other, following the direction of this new stratum whatever its inflections may be. When, on the contrary, the cinnabar leaves the bed of quartzite, to pass to the wall or hanging wall in the schiste, it takes only very restricted development.

The sterility of the schiste is such that pieces of this rock imprisoned in the midst of the cinnabar have been found not to contain a trace of mercury. This fact does not seem to be peculiar to the deposits of Almaden. The schiste, which seems nearly always to exist in the neighborhood of veins of mercury, is generally very poor; it appears to have resisted impregnation, and therefore the mercury is more concentrated in the beds which are more permeable to the mercurial vapors.

Hence, the cinnabar impregnates at Almaden certain beds essentially silicious. It fills spaces more long than wide, however; the small length of these beds, 150 to 180 meters only, compared with their least thickness, 9 to 10 meters, shows that if on account of their origin these deposits should receive the name of veins, they are very far from presenting the ordinary character of vein deposits; there have never been, at least in parts now known, great fissures extending for a considerable distance, filled entirely or in part after their formation. One sees no vein walls, nor symmetrical disposition upon two walls, nor crystallino gangues, nor ramifications (crossings), faults or other accidents usual in most metalliferous mines.

We have already described the rocks of the hillock of Almaden, in which are found the cinnabar veins, and have only a little to add upon their character in the neighborhood of the mineral. In going from south to the north, in any one of the levels, one meets first the frailesca, more metamorphosed in the mine than anywhere else; it is here formed in great part of magnesian limestone; it is very firm, without great hardness, and presents in a great many places drusal cavities, lined with crystals of dolomite. The schiste which one next meets has a coarse texture, sometimes nearly earthy; the parts the most consistent present two systems of fractures, the one longitudinal, the other transverse, but very oblique. In contact with the mineral the schiste is very black, lustrous magnesian, and carboniferous to such an extent as to leave a mark upon the fingers.

Then follow the deposits of San Pedro y San Diego. It is formed of a white sandstone, regularly impregnated with cinnabar. The ore is distinguished by its beautiful red vermilion color, particularly in the western part (San Pedro). Towards the east the ore becomes poorer as we descend, and nearly disappears at a depth of 290 meters. The rich part of the vein forms then in the vein itself a column bearing to the west. In continuing, going from San Pedro towards the north, one traverses first, several meters of black schistes, similar to those of the southern wall, then quartzites with alternating beds of schiste. These quartzites have been also metamorphosed as is proved by their extreme firmness, the small veins of quartz which traverse them, and the geodes with crystals which are found in them.

The next two veins, San Francisco and San Nicholas are separated from each other only by a thin band of quartzite with schistes, comparable to those which separate San Francisco from San Pedro y San Diego; but the sandstone constituting the vein itself is black, while that of San Pedro is white; it is also more hard, more compact, less regular, and less thoroughly impregnated with cinnabar. Likewise the ore of these two deposits is less beautiful, and darker than that of San Pedro. The schiste forms again the northern wall of San Nicholas and prolongs itself far to the north, without enclosing anything of value.

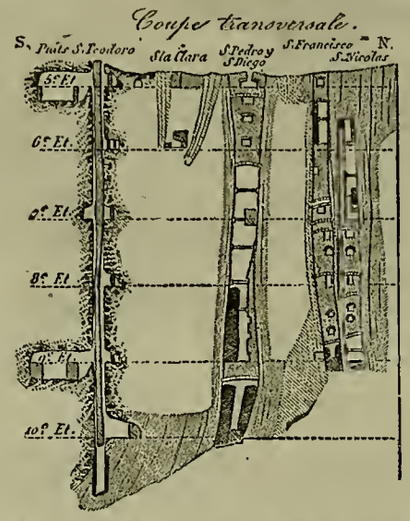


FIG. 8. CROSS-SECTION OF VEINS AT ALMADEN.

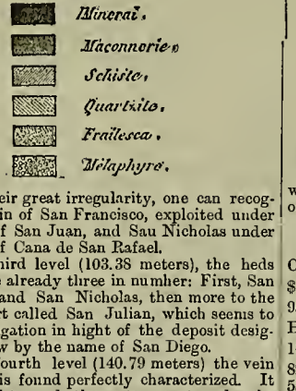
Let us now pass to the study of the veins in depth: The levels exploited or planned are 10 in number. Their depths below the mouth of the shaft San Teodoro are as follows:

1st level (etage)	44.8	meters
2d "	74.30	"
3d "	103.38	"
4th "	140.79	"
5th "	170 47	"
6th "	191.57	"
7th "	215.03	"
8th "	237.64	"
9th "	263.55	"
10th "	288.63	"

The old works of the upper levels are filled in or are in ruins and are absolutely impassable. The following is the only information we could obtain of the position of the vein in the upper levels from an examination of old maps.*

In the first level (depth of 44.80 meters) ore is found toward the eastern extremity, corresponding to-day to the mine of Castillo, that is to say to a shaft opened in the middle of the village of Almaden. This ore was mined by a crosscut called the "Socaoon de Castillo."

The works of the second level are but little developed and indicate but a slight yield. In spite of their great irregularity, one can recognize the vein of San Francisco, exploited under the name of San Juan, and San Nicholas under the name of Cana de San Rafael.



At the third level (103.38 meters), the beds worked are already three in number: First, San Francisco and San Nicholas, then more to the south a part called San Julian, which seems to be a prolongation in hight of the deposit designated below by the name of San Diego.

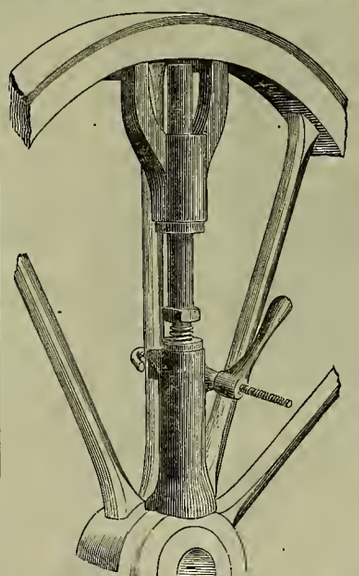
At the fourth level (140.79 meters) the vein San Diego is found perfectly characterized. It is exploited towards the eastern part under the name of San Carlos and San Pablo; its direction at this place is east of west, or more exactly north, 100° east. Towards its western extremity, one observes an interruption in the works, afterwards one sees it again deflected to the south. An agglomeration of ore, joining as it goes down with the San Pedro (western part of San Pedro y San Diego), reaches to the fourth level, where it ends. To the north one still finds the San Francisco and the San Nicholas exploited throughout their eastern part.

From the fifth level the works are in a good state of preservation and everywhere accessible. We give (Figs. 5 to 14) the plans of the different levels. They are so disposed, the one below the other, that the most cursory examination enables one to form an idea of the bearing of the vein at different levels, the drifts, the mason work, and the empty spaces were originally filled with the ore which has been removed. In referring the reader to these plans we can confine ourselves to a concise description by always beginning with the most southern vein.

[To be Continued.]

*For a detailed description, see the work already cited, of M. M. Bernaldez and Rua Figueros.

Sugar Cane Harvester.—Mr. John Howell, of Woodland, Yolo County, has devised a machine which is intended for harvesting sugar cane. The cane has heretofore always been cut by hand, and this machine is intended to serve the same purpose for cane that a reaper does for grain. It is to cut it off close to the ground, and as the stalks fall back into the machine they are carried through a stripper and the leaves stripped off, all at one operation. The machine is propelled over the ground by horses, like an ordinary header. Mr. Howell is desirous of finding some one to interest themselves with him, and assist in defraying the expenses of obtaining patents on the invention.



MILES' IMPROVED TIRE SETTER.

Bullion Shipments.—McCrackin Con., Oct. 9th, $7,524.57; Standard, Oct. 8th, $19,014.16; Jefferson, Oct. 7th, $1,754.95; Indian Queen, Oct. 7th, $5,743.74; Hillside, Oct. 10th, $6,500; 12th, $5,600; 16th, $5,700; Ontario, Oct. 6th, $3,346.82; 7th, $6,082.58; 9th, $3,474.38; 10th, $3,557.08; 11th, $3,077.70; Silver Reef, Oct. 6th, $8,242.42; 9th, $7,536.17; 11th, $3,912.82; Germania, Oct. 7th, $5,000.00; Northern Belle, Oct. 9th, $6,212.43; 12th, $4,509.67; Tybo Con., Oct. 7th, $7,427.04; 11th, $7,431.31; Con. Virginia, Oct. 12th, $50,710.25; California, Oct. 12th, $94,177.46; Sierra Nevada, Oct. 12th, $17,042.83. Total for September, $91,550.19. Belmont, Oct. 10th, $4,054; Independence, Oct. 14th, $12,000; Navajo, Oct. 14th, $7,500.

A Cure for Loose Tires.

A device which will enable a teamster to tighten up his wheels without the labor and expense of a trip to the blacksmith shop, and a long delay while the tire is being "upset" and "shrunken," will often prove of great value. In this dry climate the difficulty from slacking of wheels is much greater than in more humid regions. We illustrate a cheap piece of mechanism on this page which is claimed to do its work most effectively, and not only to act as a speedy cure to the trouble of loose tires, but in its action upon the wheels by enabling the teamster to keep them always taut, makes them last much longer. The tire-setter is the invention of J. A. Miles, the patent being obtained through Dewey & Co.'s agency. It has been widely used during the last few months of busy teaming, and we have seen many testimonials of its satisfactory and valuable work.

The inventor gives the following description of the adaptations of his device: It is calculated that the running gears of a wagon will outlast two sets of wheels by the old method of cutting and resetting; as the tires are belted on the wheels, the wagon is run a large portion of the time when it is too loose to run without injury to it. A wagon should never be run unless it is tight enough to keep the tire to its place without the aid of bolts. Therefore, any appliance for keeping the tire in its place, except for very light wheels, is wrong, as the moving of the tire on the felloe is a sure indication that it should be tightened; and by having this implement at hand you can accomplish the object in a few minutes, which by the old plan would cause a delay of a couple of days, besides an expense that would more than half cover the cost of this machine.

Now, by the aid of this implement, and using it as occasion requires, you can make the wheels last as long as the other parts of the wagon; therefore, you double the lifetime of your wagon, besides saving all expenses of repairing wheels, which is the largest part of the cost of keeping a wagon in running order. There is also the advantage which this plan has over the old process, that after keeping your wheels in just the right condition during the dry season, the leathers can be taken out and that process called dishing is prevented, which ruins more wheels than all other causes combined. For very loose tires it will be necessary to wedge between the ends of one or two of the felloes. They are made to fit all sizes of wheels. It can also be made to answer the purpose of a cheese and wine press, also a jack-screw and wagon-jack, for which purpose it has been especially adapted in its construction.

The principle upon which the tire setter works is quite plainly seen from the engraving, and its mode of use is explained as follows: Place the setter on the hub on the outside of the wheel as it stands on the wagon, opposite the upright spoke (as shown in the cut). Bring the clamp around the spoke and tighten the screw sufficient to hold the spoke from pulling out of the hub; then, with the wrench, raise the felloe from the shoulder of the spoke about an eighth of an inch. Take a piece of rather thin leather, cut a hole as large as the tenon on the spoke, slit it on one side, bring it around the tenon between the spoke and the felloe, loosen the screw and trim down to the size of the spoke. Take the next spoke and bring it to an upright position and serve in the same manner. Continue on until your tire is tight enough. To put in a spoke to replace one that has been broken out, fit your spoke and drive it into the hub; saw the tenon off about one-quarter of an inch in length, place the tiresetter on the hub and raise the felloe until the tenon will slip into place.

The inventor, Mr. J. A. Miles, may be addressed at corner of 26th and Folsom Sts., San Francisco. The setter is also for sale at different points throughout the State.

Yosemite Ramblings.—The Yosemite party of which F. C. S. wrote us in last issue remained for two weeks and a half in the valley, and then continued their ramblings. They went northward through Sonora and Murphy's to the Calaveras Big Trees. Of Sonora, F. C. S. writes: "The rich placers being exhausted the town lost much of its population and active business life, but it has been found that the soil where only gold was sought for as well as the hillsides is capable of producing all that the farmer may desire, and a healthy prosperity is promised. Vineyards, orchards and mulberry plantations, remunerative to the grower and increasing in value, now occupy the deserted mining grounds."

Lake Tahoe, Genoa springs, Carson, Gold Hill and Virginia City, Steamboat springs and Reno were visited. At Virginia City a half day was spent underground in the 1600, 1700 and 1900 levels of the C. & C. shaft. From Reno the party came through the mountains to Sacramento, and thence home.

The San Buenaventura people are predicting that the newly-discovered oil wells about Santa Paula will make that village a second Oil City.

An $8,000 nugget is reported to have been found at Cassiar, where the gold yield is increasing.

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We invite the acquaintance of all parties connected with inventions and patent right business, believing that the mutual conference of legitimate business and professional men is mutual gain. Parties in doubt in regard to their rights as assignees of patents or purchasers of patented articles, can often receive advice of importance to them from a short call at our office.

Remittances of money, made by individual inventors to the Government, sometimes miscarry, and it has repeatedly happened that applicants have not only lost their money, but their inventions also, from this cause and consequent delay. We hold ourselves responsible for all fees entrusted to our agency.

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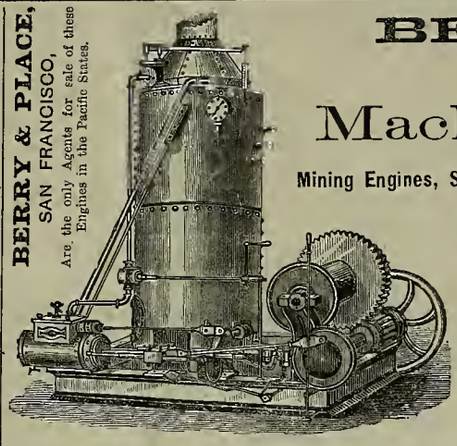

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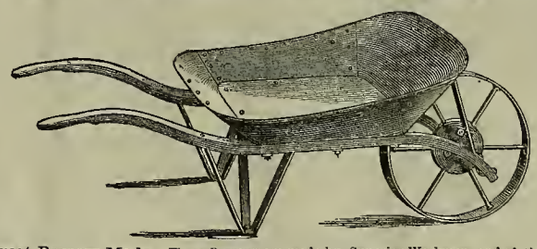

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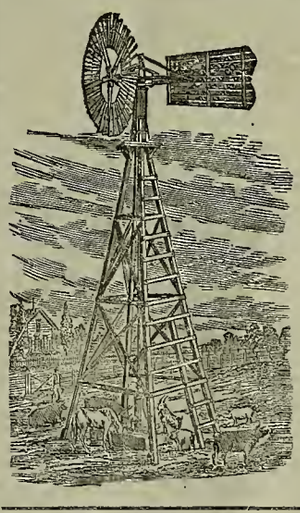

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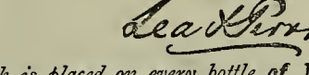

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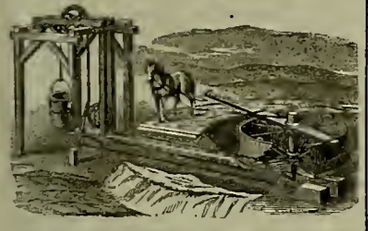

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No. 534 California Street.

Continued from page 245.

ger, Oct. 12: While at the Sierra Buttes mine this week, our attention was called to the casting now being turned out by Taylor & Forbes, of the Downieville foundry. A gentleman connected with the mills remarked that the work looked as though it was intended for exhibition, so finely was it done. They now have about all the trade in their line in this section, and they deserve it.

PLIOCENE.—The machinery at this mine gave out again last week and the mine is now full of water with both pumps at the bottom of the shaft. In less than 36 hours after the stoppage Manson was in San Francisco and had a new steam pump ready for shipment. It left the hay on Monday. The cause of the trouble was the breaking of the head of the double-acting pump, a casting an inch and a half in thickness. While this was being repaired the steam pump gave out and the water rose so rapidly that it was impossible to raise either pump. When the new pump is placed and the others are repaired, any one of the three will he capable of keeping the mine clear of water, and work will advance rapidly it is hoped. The company are hound to reach hottom if money and pluck avail anything.

TUOLUMNE.

DISCOVERY.—*Union-Democrat*, Oct. 12: It is reported that some parties have found a rich veiu or pocket of gold-bearing quartz on land in or adjoining Silas Reed's ranch, Bald mountain. The parties came from Santa Barhara and made the find quickly and easily. How extensive it is we are not informed, other than enough has already heen found to yield quite a sum of money.

ITEMS.—Parties have heen at work on the Monte Cristo mine, near Summersville, for the past three weeks, and the result is some very pretty ore showing free gold and sulphurets. Several of the old placer claims at Jamestown are heing reopened, and oue or two new ones are in full blast; all showiug good indications of netting their owners a golden harvest.

NEVADA.

WASHOE DISTRICT.

CON. VIRGINIA.—Gold Hill *News*, Oct. 16: Daily yield of ore, 190 tons. The south drift on the 1950 level is being steadily advanced, the face in vein porphyry carrying streaks of quartz and low-grade ore.

CALIFORNIA.—Daily yield of ore, 270 tons. The ore stopes on hoth the 1650 and 1750 levels are looking well and are yielding good ore. The north drift on the ore streak on the 1950 level is making steady progress, the face still in ore that will more than pay for the cost of extraction and milling. No. 6 winze below the 1750 level is down 41 feet, the hottom still in low-grade ore. It is expected that this winze will soon reach the west clay wall of the ore vein. The main north drift from the Con. shaft on the 1650 level is in a distance of 518 feet, the face in low-grade ore and quartz.

SIERRA NEVADA.—Assays of samples from the hottom of the incline yesterday were as follows: $289.39, $383.82, $173.53, $126 18, making an average of $243.23. The average for the face of the crosscut near the 2100 level was $292.42. We were shown assays that went as high as $500 to $800, and one that went over $1,600, and heard of some that were even higher, the samples heing, of course, selected.

LADY BRYAN.—On Sunday morniug last the entire hoisting works of this mine, along with some 300 cords of wood, the blacksmith aud carpenter sbop, aud a large amount of winter supplies were destroyed by fire. All will he put in shape for a resumption of operations as soon as men aud money can he made to do the work.

JUSTICE.—On the 1300 level, in winze No. 1, good progress is heing made, sinking in favorahle ground with spots of ore. Nos. 4 and 5 crosscuts east and south, lateral drift, 1300 level, are all in quartz showiug some ore. West crosscut, 1400 level, is passing through a mixture of quartz and bird's-eye porphyry, and in this crosscut shows the ledge to be growing in width very much as depth is attained. On the 1150 and 1225 levels, drifts are heing run through north ore chimney preparatory to stoping ore, and extracting at present a few tons of ore per day of first-class quality.

UNION CON.—The progress of work on the 1600 level has heen somewhat interfered with by a flow of water struck in the drift, which is heing driven east on the 1600 level. The finding of this water and the soft ground in which it occurred may lead to something of interest in that direction.

BELCHER.—The joint cast crosscut from the bottom of the incline on the 2360 level has reached and penetrated into the quartz vein, which, although looking well, shows nothing of value. East crosscut No. 1 on this level is still in quartz and porphyry of a favorahle character.

CROWN POINT.—The joint east crosscut on the 2300 level is making good progress, the face in a fine character of quartz and vein matter.

NORTH CON. VIRGINIA.—The pits for the stone foundations for the new machinery are about finished, ready to hegin the mason work. Sinking the main shaft is progressiug at the rate of 2 feet per day.

OVERMAN.—The east drift from the 1600 station of the old shaft will he in condition to start a drift north on the ore vein in a day or two more.

TROJAN.—The car samples of ore extracted during the week average $38 per ton. The east crosscut from the south drift on the fourth station level is in 40 feet, the face in favorable quartz. The south drift from the top of the upraise, No. 3, on this level is advancing through fair ore. The west crosscut, 400 feet south of the fourth station, is steadily advancing through quartz and vein matter.

HALE & NORCROSS.—The pumps and all the machinery are working well and smoothly.

JULIA CON.—The flow of water from the 2000 level has greatly decreased, and is now handled with great ease by the pumps. The main south drift on the 2000 level is being pushed vigorously forward, the face following the east clay wall of the ore vein. East crosscut No. 2 is making good progress, the face in lively vein matter.

BENTON CON.—The north drift on the 1250 level is steadily advancing toward the north line, and will soon have the entire length of the vein laid hare on that level ready to hegin crosscutting. The north lateral drift on the 1350 level is also making good headway, the face in favorable vein matter.

BRILLIANT.—Grading of the new shaft and grounds for hoisting works, and the road to the Overman road from Virginia, are finished, and the road to connect with Alta road is nearly completed, and in a few days will commence sinking the new shaft.

GOULD & CURRY.—The joint east crosscut from the joint Savage winze, on the 1900 level, is steadily advancing, the face iu favorahle vein matter.

NEW YORK.—The north and south drifts running parallel with the ore vein on the 1100 level are beiug advanced at the usual rapid rate of speed, the face of each in easy working vein porphyry carrying occasional streaks of excellent quartz.

BEST & BELCHER.—The joint east drift on the 1900 level is still advancing in veiu matter.

ALTA.—Sinking the winze on the ore body below the 1450 level is making good headway, the hottom still in quartz and ore of a good quality. The east drift on the 1550 level is entering excellent quartz, carrying some good ore.

YELLOW JACKET.—The machinery is all right again, aud rapid progress will he made hereafter in sinking. The west crosscut from the main south drift is in 98 feet; face in a mixture of porphyry and quartz.

CON. DORADO.—Sinking the new working shaft is making excellent progress, being in very favorable working ledge material, showing frequent streaks of good-looking quartz.

SAVAGE.—The east crosscut should soon reach the hody of quartz in which low grade ore was found on the 1600 level. It was almost a "milling propositiou" on the 1600 level and should certainly be found to have improved to a considerable extent at a further depth of 500 feet. Sinking the north winze below the 2000 level is making good headway, the bottom in vein matter.

NORTH BONANZA AND FLOWERY.—Sinking below that point will be continued with all the speed possihle. The old North Bonanza incline and tuunel, 300 feet to the northward of the main shaft, where so much rich ore has heen from time to time taken out, is heing put in working order preparatory to the steady extraction of ore.

ATLANTIC CON.—Uuder new ownership and management this old mine helow Silver City is beiug reopened in first-class shape and its practical workiug aud development will he resumed under more favorahle auspices than ever. John Yule, the new Superiutendeut, is a good mining man of much practical experience and unbounded energy.

SUTRO TUNNEL.—The main south hranch toward the Julia shaft is pushing ahead at a lively rate in regular Comstock vein matter.

BULLION.—The 2050 station in the main incline is opened and a drift started to crosscut and prospect the ore vein at that point. The prospects at that point are very encouraging.

CALEDONIA.—The north drift on the 1600 level is being driven steadily forward, the face in vein matter of a very favorable character.

LEVIATHAN.—The lateral drifts hoth north and south on the 750 level, following the foot wall, continue pushing ahead at a good rate of advancement, with good streaks and feeders of ore constantly encountered, especially in the north drift.

CHOLLAR-COMBINATION SHAFT.—The north drift on the 1600 level will connect with the Sutro tunnel in a day or two more.

ALPHA CON.—The west crosscut on the 2400 level is steadily advaucing, the face in quartz and low grade ore.

GOLDEN PRIZE.—The open cut or upper stope, at the surface of the north vein, shows a fine face of pay ore.

MORNING STAR.—The repairs to the main tunnel will soon be completed to the face ready to begin the crosscutting and prospecting of the ore vein.

CON. SUPERIOR.—The repairs to the main tunnel running to drain the ore vein are making the hest of progress.

CON. IMPERIAL.—Sinking the south incline winze below the 2400 level is making the best of progress, the hottom in quartz affording favorahle assays. The west crosscut on the 2400 level still shows a fine character of quartz in the face.

SILVER HILL.—The east drift on the 900 level is showing some very favorable ore indications. The St. Louis drift and the east crosscut on the 800 level are each steadily advancing in very favorable ground.

SUCCOR.—Nothing has heen done in the mine during the past week owing to the breakage of the large spur wheel of the pumping engine. A new spur wheel cast at the Gold Hill foundry, will be ready for use in a few days.

IMMENSE DISCOVERY.—Reno *State Journal*, Oct. 12: The news from the Loonis mine, five or six miles north of Reuo, is most encouraging: A shaft was sunk at the uorth end of the ledge and a good ledge unearthed, which assayed from $20 to $500. Another shaft was sunk 1,000 feet of this and some good ore struck. Determining to examine still further they went 1,000 feet south again and sunk another shaft, and again the ledge appeared. Elated at their wonderfully good find they went to a point 1,000 feet east of the line of the above shafts only to find the ledge there as good as at the other points. Then ahout 1,000 feet west are croppings which are valuahle. An expert was sent up by San Francisco stockholders to examine the mine, and he has gone back with a most glowing report. He made a close inspection of the various shafts, examined critically the surrounding country and asserts that a great discovery has heen made. T. V. Julien, the Superintendent of the Loomis, is enthusiastic over the good ledge and its remarkable extent. The theory is advanced that the whole mountain is one vast ore body. Judging from the extent we think the theory cannot be far from correct.

PARADISE DISTRICT.

YIELDING.—*Silver State*, Oct. 12: The whole of Silver hill, upon which is situated the most of the mines, seems to he a mass of untold wealth. Mines heretofore thought to he harren are yielding rich ore. The Alpine, a recent location, is now yielding some remarkahly rich ore. The White Bell company have found a rich streak. The Wild Goose has some excellent ore on the dump, while the Paradise M. Co. are getting out richer ore (if that can he) than ever. The Rocky Point mine has struck fine ore, which would work, perhaps, $160 to $200 per ton. The Red Deer Co. are about leasing or bonding their mine to some outside parties.

UTAH.

BUTTE MINE.—Salt Lake *Tribune*, Oct. 11: Ten tons of ore from the Butte mine, in Big Cottonwood, was sampled yesterday in three lots. The first class went 300 ounces of silver to the ton; the second, 120 ounces; and the third, 40 ounces. The Butte mine, which is now heing worked hy Messrs. Hall & Clark, is looking very well, and promises to show up a fine body of ore.

News in Brief.

TURKEY is fast fixing up with Crete.

LOCUSTS are ravaging Japan rice plants.

FINE grapes were grown this season at Silver City, Nevada.

TERRIFIC storm along the Massachusetts coast on October 12th.

CALIFORNIA salmon eggs are shipped at times to Europe.

THE United States have an average of over 180 fires per day.

EBENSBURG, Pa., is almost completely in ashes. Loss between $350,000 and $400,000.

PREMATURE fishing in September destroyed millions of prospective salmon.

PRESIDENT HAYES has recognized the independence of Roumania.

NOW comes the news that Turkey is again on the most friendly terms with Russia.

SIT MING COOK, the Chinese consul at San Francisco, has entered Hastings' law college.

TWO consecutive dry seasous have, it is thought, caused the dying of pine trees noticed now in Arizona.

SPAIN does not like the growth of English influence in Morocco. She may possibly pick a quarrel.

A DEPRESSION in trade, exceeding anything experienced in 75 years, prevails in the West Indian islands.

THE Puget sound white potato crop is said to he a partial failure. Season too dry except in low or hottom lands.

A LITTLE boy in Nevada county drank concentrated lye, supposing it to he milk. He died in dreadful suffering.

A FIRE near Moscow destroyed 23 stone houses, 31 wooden houses, and 70 warehouses, valued at about $1,600,000.

HEAVY and continuous floods are devastating the lower countries of Japan. Seven villages are reported entirely submerged.

THE wagon and agricultural implement dealers report business more active than they ever before knew it in their line in Utah.

AN immense numher of hogus coins are circulating in Idaho. The are made of hlock tin, hismuth and powdered glass.

THERE were 696 deaths from cholera at Casa Blanca, Morocco, hetween the 7th and 24th of Septemher. The epidemic is now decreasing.

JOHN BIDWELL, of Chico, has received an order from the Agricultural Department at Washington for 100 hushels of harley for distribution.

THE numher of standard silver dollars coined to date is ahout 17,000,000, and it is not helieved there are more than 2,000,000 in actual circulation.

THE attempt to estahlish direct communication hetween San Francisco via the Colorado river and Fort Yuma is ahandoned for the present.

SWIFT county, Minnesota, has had a hig prairie fire. Many farms, with houses, barns, cattle and grain were destroyed. Many farmers are destitute.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch from Washington. D. C.

FOR THE WEEK ENDING OCTOBER 1ST, 1878.

AMALGAMATORS.—Charles P. Bowen, Silver City, Idaho Ter.

HOPPERS FOR CUBE SUGAR MACHINES.—Wm. Jasper and Stephen Boushey, San Francisco.

MACHINERY FOR MAKING CUBE SUGAR MACHINES.—William Jasper, San Francisco.

LASTS.—Joseph E. Chenette, Hillsborough, Ogn.

APPARATUS FOR SAVING FLOAT GOLD.—Julius J. Muller, San Francisco.

LIFE BOATS.—Charles Dickenson, Portland, Ogn.

SUCTION PIPES FOR PUMPS.—Eric O. Leermo, Gold Hill, Nev.

PENCIL CLASPS.—Wm. A. Scollay, San Francisco.

MEDICINAL PREPARATIONS.—Trademark—Mathew Palen, San Bernardino, Cal

MEDICINAL PREPARATIONS.—Trademark—Channing White, San Francisco.

COUGH SYRUP.—Trademark—Williams & Moore, Stockton, Cal.

ILLUMINATING OILS.—Trademark—Yates & Co., (2) San Francisco.

CIGARS.—Trademark—Liebes Bros. & Co., San Francisco.

——The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of special mention:

APPARATUS FOR SAVING FLOAT GOLD.—Julius J. Muller, San Francisco.—Dated October 1st, 1878. This apparatus is intended for saving the fine particles of gold which are found in suspension in the water from gravel or placer mines or quartz mills. It consists in placing on a frame in a tauk a series of hlankets so arranged as to fill the upper portion of the tank, and leading the water containing the float gold into the tank *under* the hlankets, so it rises through the hlankets, which allow the water to pass through hut catch the gold. Suitable devices are employed to retain the hlankets in position firmly. The supply trough, into which the water is led, is connected with the tank by telescopic pipes which admit of it heing raised or lowered to regulate the pressure or head without having to connect or disconnect said pipes. The whole frame carrying the hlankets may he removed from the tauk when it is desired to clean the blankets. It is well known to miners that large quantities of gold in a finely disseminated condition escape with the water used in working the ore or gravel. This is technically termed float gold. Various devices have been arranged for preventing this loss, hut most of them have failed in attempting to hring the float gold in contact with mercury. With the device above described, the water heing closely confined and having to rise up through the hlankets to escape, is quieted, as it were, and the hlankets resist the passage of even the finest particles of gold. The water is not led into the device until it is comparatively free from mud or dirt, so that only a small quantity of debris will remain in the tank, and can easily be removed. The object of the apparatus is to pass large quantities of water which carry but a limited quantity of sediment and some float gold through the blankets, thereby effecting such a concentration of the material and fine gold that the latter may he easily separated and saved.

AMALGAMATOR.—Charles P. Bowen, Silver City, Idaho.—Dated October 1st, 1878. This is an improvement in that class of amalgamators in whicb the ore is forced into a body of mercury by mechanical means, so as to he thoroughly stirred up with the mercury. It consists in the use of a receptacle for the mercury, in the center of which is an open-hottomed tuhe or cylinder in which a screw revolves, so that when the pulp is forced into the top of the cylinder the screw will force or draw the pulp down through the mercury, discharge it through the hottom of the tube into the mass of mercury, where it rises to the top. Water is admitted around the vessel containing the mercury, which keeps the pulp stirred up and flows it over the edge of the vessel into a tank, whence it is drawn off to the settlers. It also consists in forming openings in the central tuhe or cylinder just below the surface of the mercury in the vessel, so that the action of the screw will draw fresh mercury from the vessel into the tuhe and mix it thoroughly with the pulp, and so keep up a continuous downward current of fresh mercury and pulp through the tuhe or cylinder on which the screw operates. In this way all the particles of precious metal are brought in direct contact with the mercury and amalgamated hy the action of the screw, while stirring and mixing the pulp and mercury is not sufficiently rapid to "flow" the quicksilver. The operation of this device is continuous, and it can he employed in connection with seve-

ral settlers. The mercury is always bright and in a condition to perform its office, which is not the case where it is distributed over a copper surface exposed to the air.

WATER HEATING AND ELEVATING ATTACHMENT FOR STOVES.—L. H. Lawrence, Montecello, Napa county, California, and Alfred Strawbridge, Sharon, Pennsylvania. The improvement consists in attaching to a stove a chamber enclosing a valve for directing the heat either up its stove pipe in the usual way or through a flue into a cylinder which connects with its stove pipe at a point some distance above the stove. Under this cylinder is placed a tank, having a pipe and faucet at its top and projecting through the cylinder, and at the bottom is another pipe connecting with a tube leading to the well, cistern, or other reservoirs. By directing the heat into the cylinder and around the tank, the air in the tank is exhausted and driven out. By turning the hot draft out of the cylinder and up its stove pipe, and admitting cold air around the tank under the cylinder, a partial vacuum is formed in the tank. Then the power of the vacuum will draw the water up into the tank from the well or cistern, through a check valve in a tube. When the tank is filled, the heat may be turned into the cylinder again and the water in the tank heated for household purposes. By the means described, an arrangement is provided which draws the water up from a reservoir, well, or cistern into a tank, and heats it, all being accomplished by means of the ordinary waste heat from a stove.

IMPROVEMENT IN LASTS.—Joseph E. Chenette, Hillsborough, Washington county, Oregon.—Dated October 1st, 1878. This invention relates to certain improvements in lasts, such as are employed in the construction of boots and shoes, and it consists in a novel method of screwing and locking the front part of the last to the rear or main portion. A novel means is adopted for nailing the sole of the boot or shoe to the last, so that the last shall not become perforated by nail holes, and so that a perpetually renewed surface shall be provided for the reception of the nails.

Woodward's Gardens were never more attractive than at present. Besides three lions already mentioned, six monster living alligators, several iguanas and a boa-constrictor have just been added. New stars are constantly engaged for the Pavilion exercises. Rates of admission as usual.

EXAMINE the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.94. Lewis C. Grover, President; L Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

MODEL MAKER AND MACHINIST.—I. A. Heald, No 514 Commercial St., San Francisco, (fourth floor).

METALS.

[WHOLESALE.

WEDNESDAY M., October 16, 1878.

IRON.—	
American Pig, ton	28 00 @30 00
Scotch Pig, ton	28 00 @30 00
White Pig, ton	28 00 @— —
Oregon Pig, ton	—@— —
Refined Bar	2½@ 3
Horse Shoes, keg	5 00 @— —
Nail Rod	—@ 7
Norway, Oval	—@ 7
COPPER.—	
Sheathing, lb	34 @ 35
Sheathing, Yellow	21 @
Sheathing, Old Yellow	12 @
Composition Nails	24 @—
Composition Bolts	24 @—
STEEL.—	
English Cast, lb	13 @ 14
Anderson & Woods, ordinary sizes	15 @— —
Drill	15 @— —
Flat Bar	14 @ 19
Plow Steel	8½@ 12½
TIN PLATES.—	
10x14 I C Charcoal	7 50 @ 8 50
Banca Tin	23 @— 24
Australian	17 @ 17½
ZINC.—	
By the Cask	9 @— —
Zinc, Sheet 7x3 ft, 7 to 10, lb	9 @— 10
7x3 ft, 11 to 14	10 @— —
8x4 ft, 8 to 10	11 @— —
8x4 ft, 11 to 10	11 @— —
NAILS.—	
Assorted sizes	3 15 @3 25

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by SUTRO & Co.]

SAN FRANCISCO, October 9, 3 P. M.

LEGAL TENDERS in S. F., 11 A.M., 99¾@99⅝. SILVER, 1⅜@1.40. GOLD in New York, 100¾

GOLD BARS, $30@$10. SILVER BARS, 8@15 ⅜ cent. discount.

EXCHANGE on New York, 1⅞; on London bankers, 49½@49¾. Commercial, 50; Paris, five francs ⅜ dollar; Mexican dollars, 83@91.

LONDON Consols, 94 3-16; Bonds, 106¼ ex coupon.

QUICKSILVER in S. F., by the flask, ⅜ lb, 44c. ex coupon.

Signal Service Meteorological Report.

Week Ending October 15, 1878.

HIGHEST AND LOWEST BAROMETER.

Oct 9	Oct 10	Oct 11	Oct 12	Oct 13	Oct 14	Oct 15
29.99	30.06	30.08	30.11	30.11	29.83	30.15
29.90	30.00	30.01	30.06	29.93	29.08	30.00

MAXIMUM AND MINIMUM THERMOMETER.

62 / 55	65.5 / 52	61 / 53	65 / 56	60 / 52	61 / 55	61.5 / 52

MEAN DAILY HUMIDITY.

83	78	80	79	09	86	08

PREVAILING WIND.

SW	W	SW	SW	W	SE	W

WIND—MILES TRAVELED.

258	204	245	245	241	312	210

STATE OF WEATHER.

Fair.	Clear.	Cloudy	Cloudy	Fair.	Rainy.	Clear.

RAINFALL IN TWENTY-FOUR HOURS.

					1.27	

Total rain during the season, from July 1, 1878, 1.83 in.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Keystone Quartz Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Sierra county, California

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No 6) levied on the thirtieth day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Am't.
Carolan, James, Trustee	59	200	100 00
Hall & Charles, Trustees	68	1248	624 00

And in accordance with law, and an order of the Board of Directors, made on the thirtieth day of August, 1878, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the office of the Company, No 201 Sansome street, corner of Pine, San Francisco, California, on the twenty-eighth day of October, 1878, at the hour of 12 o'clock M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

LOUIS VESARIA, Sec'y.

Office, No. 201 Sansome street, corner of Pine, San Francisco, California.

New Basel Gold Mining Company.—Principal place of business, 610 Merchant street, San Francisco. Location of works, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 24th day of September, 1878, an assessment of five (5) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary of the Company.

Any stock upon which this assessment shall remain unpaid on the 4th day of November, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 18th day of November, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. D. F. LEGAYE, Sec'y.

Office 610 Merchant street, San Francisco, Cal.

Orion Mining Company.—Location of Principal place of business, San Francisco, California. Location of works, Iowa Hill, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the fifth day of September, 1878, an assessment (No. 3,) of seventy-five (75) cents per share was levied upon the capital stock of the corporation, payable immediately in U. S. gold coin, to the Secretary, at the office of the Company, 28 Sansome Street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the fifth day of November, A. D., 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the 20th day of November, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

P. CONKLIN, Sec'y.

Office, No. 28 Sansome Street (up stairs), San Francisco, Cal.

Pocahontas Mining Company.—Location of principal place of business, 411½ California street, San Francisco, California. Location of Works, El Dorado County, California.

NOTICE.—There are delinquent upon the following described stock on account of assessment (No. 14) levied on the 14th day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

OLD ISSUE.

Names	No. Certificate.	No. Shares.	Amount.
Roberts, W G, Trustee	128	100	$450 00
Roberts, W G, Trustee	130	100	450 00
Roberts, W G, Trustee	131	100	450 00
Roberts, W G, Trustee	132	100	450 00
Roberts, W G, Trustee	133	100	450 00
Roberts, W G, Trustee	134	100	450 00
Roberts, W G, Trustee	135	100	450 00
Roberts, W G, Trustee	136	100	450 00
Roberts, W G, Trustee	137	119	535 50
Staples, A, Trustee	160	300	1350 00

NEW ISSUE.

Roberts, W G, Trustee	113	17,500	$26,250 00
Kohler & Chase, Trustee	122	89	133 50
Staples, A, Trustee	123	266	399 00
Staples, A, Trustee	125	279	418 50
Staples, A, Trustee	11	100	150 00
Staples, A, Trustee	27	100	150 00
Staples, A, Trustee	28	100	150 00
Staples, A, Trustee	117	50	75 00
Staples, A, Trustee	118	100	150 00

And in accordance with law and an order of the Board of Directors made on the 14th day of August, 1878, so many shares as may be necessary of each parcel of such stock will be sold at public auction at the office of the Company, Room 9, 411½ California street, San Francisco, Cal., on Wednesday, the twenty-third day of October, 1878, at the hour of one o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

M. C. SOUTHARD, Sec'y.

Office, Room 9, No. 411½ California street, San Francisco, California.

Summit Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the tenth day of September, A. D., 1878, an assessment, (No. 5,) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of said Company, 318 Pine street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the twenty-second day of October, A. D., 1878, will be delinquent, and advertised for sale at public auction, and, unless payment is made before, will be sold on the 23rd second day of November, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W CLARK, Sec'y.

Office, Room 6, No. 318 Pine Street San Francisco, Cal.

The California Fruit Growing Association.—Location of principal place of business, San Francisco, California. Location of property, El Dorado County, California.

Notice is hereby given, that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 9) of three (3) dollars per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, No. 641 Sacramento street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 30th day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Monday, the 21st day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco, Cal.

POSTPONEMENT.—At a meeting of the Board of Directors of the California Fruit Growing Association, held September 23d, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till Saturday, the 26th day of October, 1878, and the day of sale of delinquent stock is hereby postponed to Friday, the 22d day of November, 1878.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco.

Vigorit Powder Company.—Location of principal place of business, City and County of San Francisco, California. Location of works, California City, Marin County, State of California.

Notice.—There are delinquent upon the following described stock, on account of assessment (No 1) levied on the first day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. of Cert.	No. Shares	Amount
Louis McLane, Trustee	30	437½	$218 75
Louis McLane, Trustee	32	½ of 875	218 75
G W Grayson, Trustee	62	1312½	656 25
H H Shinn, Trustee	91	400	200 00
H H Shinn, Trustee	92	400	200 00
H H Shinn, Trustee	93	400	200 00
H H Shinn, Trustee	94	112½	56 25

And in accordance with law, and an order of the Board of Directors, made on the First day of August, 1878, so many shares of each parcel of stock as may be necessary will be sold at public auction, at the office of the Company, Room No. 1, 109 California street, on Wednesday, the second day of October, 1878, at the hour of 2 o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale. JAS. W. BAKER, Sec'y.

Office, No. 109 California street, Room 1, San Francisco, California.

POSTPONEMENT.—By an order of the Board of Directors made on the First day of October, 1878, the above sale is postponed until Monday, October 21st, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

Amusements.

BALDWIN'S THEATER.

THOMAS MAGUIRE.....Manager.
F. LYSTER.....Acting Manager.
G. R. CHIPMAN.....Treasurer.

A WOMAN OF THE PEOPLE.

Corner Market and Powell Streets. Open every evening and Saturday matinee. Box office open daily.

BUSH STREET THEATER.

CHAS. E. LOCKE.....Lessee and Manager

OATES COMIC OPERA COMPANY.

Open every evening and Saturday Matinee.

CALIFORNIA THEATER.

BARTON & LAWLOR.....Manager.
BARTON HILL.....Acting Manager.

FATINITZA.

Bush Street, above Kearny. Open every evening. Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance.

$1 FOR 25 CTS.

Seven new and wonderful articles at one-fourth retail price. Examine the list.

No. 1. Musical Pipe.—Made of metal, with bowl resembling a human face. By filling with water, will imitate perfectly the notes of any bird.

No. 2. Miniature Charm.—Suitable for necklace or watch chain. Size of gold dollar, yet has all of Lord's Prayer clearly engraved on it. New and beautiful. A perfect little gem.

No. 3. Eureka Whistle.—Loudest and cleverest whistle made. Very useful for sportsmen to exchange signals at long distances.

No. 4. Japanese Parasol.—Just imported. Prettiest bijou novelty in the market. Finished in beautiful colors. Splendid gift to a lady.

No. 5. Magic Spider.—Funniest thing out. A horrible looking fellow, sure to make people jump out of their boots. Always creates an excitement.

No. 6. Musical Wonder.—A new mechanical instrument, on which any tune may be played, or sound imitated, from the wail of a cat to a Punch and Judy show. Pleases everybody.

No. 7. Golden Water-Pen. Produces clear, golden letters, by simply dipping in water. Lasts for months. Unrivaled for card writing.

The above seven articles are shown in one, and will be sent in neat cabinet, post-paid, for 25 cts. At retail they would cost $1. We make this reduction to obtain new names for our Full Catalogues. Postage stamps taken same as cash. Address,

Eureka Trick and Novelty Co.,
P.O. Box 4514. 39 Ann St., N. Y.

This advertisement will not appear again.

WATER TANKS of any capacity made entirely by machinery. Materials the best in use; construction excelled. Pan Staves, Tubs and Oak Guides for mining purposes a specialty.

WELLS, RUSSELL & CO.,
Mechanics' Mills, Cor. Mission and Fremont Streets.

The "California Legal Record."

THE ONLY WEEKLY containing all the decisions of the Supreme Court of California.

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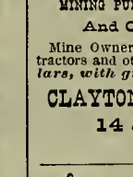

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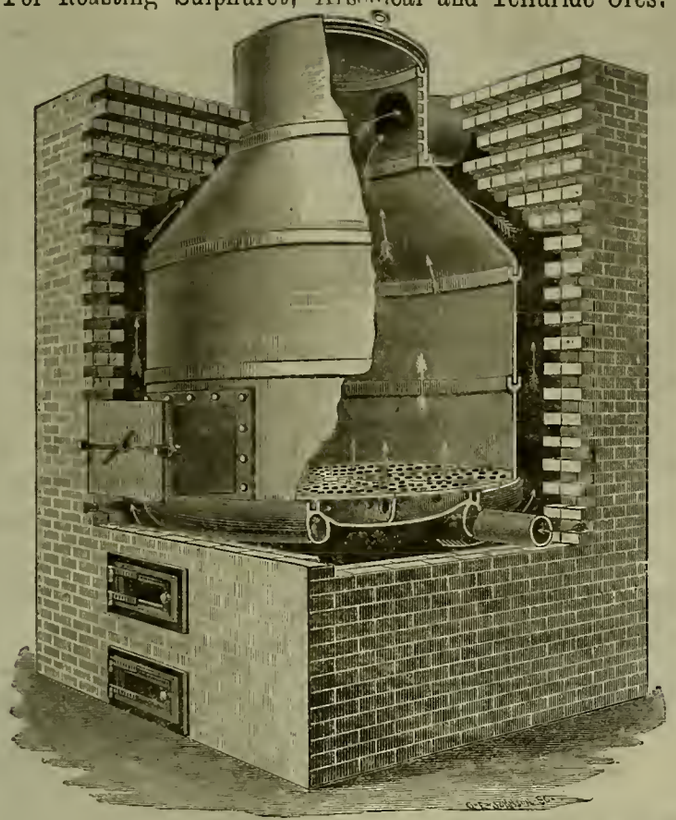


The attention of scientific and practical men is called to Z. A. Willard's new method of treating sulphuret ores.

This process has been tried and tested on a large scale in Boston and in Colorado on every variety of ore, including sulphurets of iron, copper, lead and antimony, and arsenical and telluride ores of high and low grade, and in all cases with the most complete success.

The advantages claimed for the Furnace are: Perfect adaptation to the process. Simplicity and ease of construction. Cheapness—caused by shortness of time required in roasting, small amount of fuel needed, dispensing with skilled labor, and by the low cost and durability of the furnaces. Durability—the low heat used not injuring either iron or brick work. Economy of fuel—the amount used not exceeding one cord of wood to ten tons of ore. Economy of labor—no skilled labor, and very little labor of any kind, its automatic action only requiring one man to six furnaces. Perfect nature of roast—by which all the sulphur is burned away, the base metals oxidized and the precious metals set free. Ability, by reason of the perfect nature of the roast, to use chlorination (Plattner's method) for saving the gold in strictly gold ores. No loss by dust or volatilization.

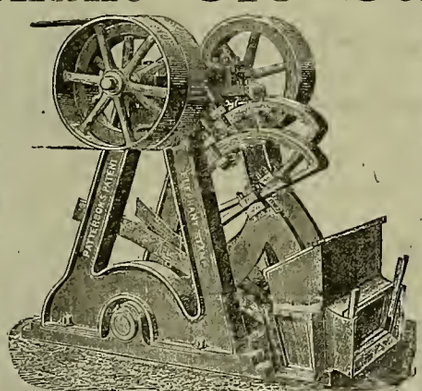
The cheapness and simplicity of this process renders it of vast importance in solving the question of the profitable reduction of low grade refractory ores.

Z. A. WILLARD, Patentee,

Baldwin's Hotel, Market St.,

SAN FRANCISCO.

Elephant Ore Stamp.



We beg to call your attention to this engraving representing the Elephant Ore Stamp. The advantages claimed for this Stamp are as follows:

CAPABILITIES.—The "Elephant" is capable of crushing as much stuff as a 12-Stamp Battery of the present system, having crushed as high as 1½ tons of tough copper ore in one hour, through a No. 4 punched screen. The undersigned, however, will guarantee 20 tons per day of ordinary quartz through the same size screen.

WEAR.—The "Elephant" having only two pairs, Shoe and Dies, the wear in this instance is equal to one-sixth of a 12-Stamp Battery. There being no Cam Tappets, Cam Shafts or Guides, the consequent wear on these parts is done away with; the leather thorough-brace, uniting the lever with the spring, would only require replacing at most, once a year.

POWER.—The "Elephant" only requires a seven horse-power engine to drive it, where a 12-Stamp Battery would require from 18 to 20 horse-power.

PORTABILITY.—The entire Battery, including Mortar, will weigh about six tons, thereby causing an immense saving in the way of freight to such places as Arizona, Mexico, Cariboo and Bodie. As no part of the machine weighs more than 1,800 lbs., the handling of the machine is comparatively easy, and in places where it would be necessary to pack the machine on mules, it could be easily made in pieces not to weigh over three hundred pounds.

The above engraving shows the Machine in exactly the position it would be placed in a mine; the reader will therefore see that all wood work is done away with, and that once the Machine is on the ground it will take but a few days to set it up and have it in full working order.

The "Elephant" can be seen working every day from 2 to 4 P. M. at No. 342 Main St, near Harrison, San Francisco For particulars, apply to

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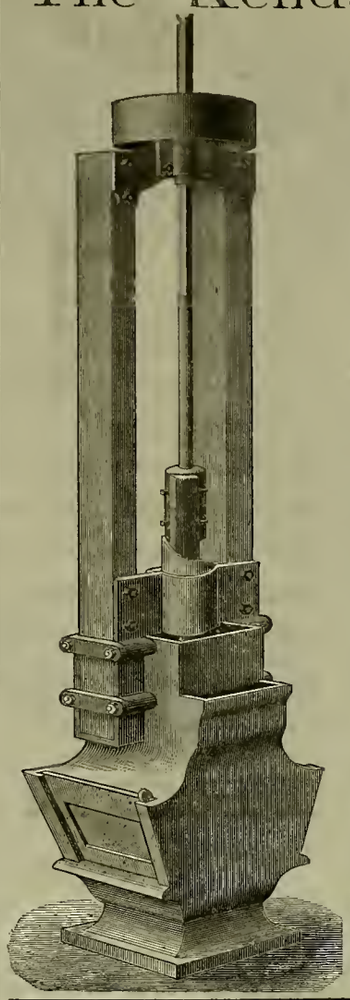
The Kendall Battery.



STEPHEN KENDALL, Patentee.

This Battery embraces the only genuine improvement that has ever been made in the process of reducing ores. The frame is all secured to the mortar, so that no extra framework is required. The stamp is rotated by a horizontal pulley on the top of the frame, and raised by the cam which is set horizontally on the girt timber. The upper end of the stem is made square, and works up through the pulley. When the stamp falls it crushes and grinds the ore fine by the continual rotary motion. The mortar has three discharge openings, and is adapted to either wet or dry crushing. A mill with an 800-pound stamp will crush five tons of average ore per day, shipping weight, 4,000 lbs., and requires about five horse-power. A 1,600 lb. stamp mill is in process of construction, which will give a capacity equal to any five-stamp mill. Several of them are now in successful operation in various parts of the country. For PROSPECTING PURPOSES this mill has no equal, as it can be set up and moved with such facility and operated at so small an expense. Address for further information,

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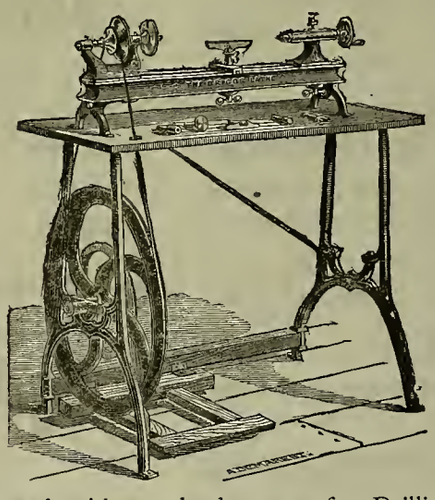

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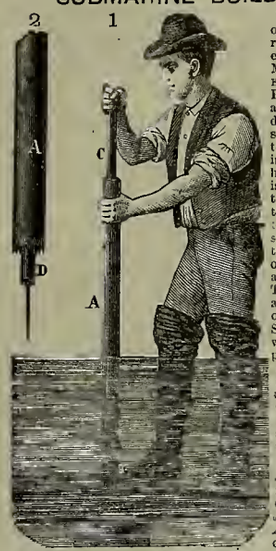

WILLIAM STACK, of Oakland, has recently patented through the MINING AND SCIENTIFIC PRESS Patent Agency, an apparatus for driving nails or spikes under water, an engraving of which is here shown. It is well-known that it is extremely difficult to drive nails or spikes under water, even if it is only submerged a few inches. These difficulties are completely obviated by Mr. Stack's device, which has been put in thorough practical operation in the construction of wharves and lips in the Oakland side of the bay.

Fig. 1 shows the application of the device, and Fig. 2 snows the construction. *A* is a metal tube of suitable length, the foot of which may be serrated as shown, so that the points will engage with the wood when the tube is pushed or driven against it. The rod or driver, *C*, has a recess or cavity, *D*, at the lower end so as to rest on top of the nail or spike shown in Fig. 2. Where the tube, *A*, is pushed against the timber in the desired position, the spike or nail is dropped in at the upper end and slides down against the timber. The rod, C, is then slid down on top of the nail, and by alternately drawing out and forcing the rod into the tube, the rod serves as a driver; or by hammering on the upper end of the rod the nail is driven into the wood. The tube answers both as a guide for the nail and driving rod. The tube can also answer as a guide for a screw-driving device on the end of the rod, by which lag screws may be put in place under water as well as nails. Of course the tube may be set in any position desired, so that nails may be driven at an angle if necessary. The appliance, as simple as it is, will be found very useful in many cases for bridge building or similar purposes. Address,

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The public are also cautioned against using the Hoskin Deflector because of its danger to life and limb, this device having already occasioned several deaths and accidents. The BLOOMFIELD DEFLECTOR is entirely safe, its two and a half years use without accident, as well as its construction, proves it to be a reliable as well as a valuable contrivance.

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VOLUME XXXVII Number 17.

Mines and Work of Almaden.—No. 6.

[Translated for the Press from "Annales des Mines."]

Fifth level; depth, 170.47 meters—Fig. 9. The vein San Diego has in its eastern part a uniform direction north, 110° east for a distance of 50 meters or thereabouts. Its mean thickness is 4.40 meters. Its walls are formed of great hanks of white quartzite, nearly vertical and completely harren.

Its western extremity is encased in schiste; it changes direction rapidly towards tho south, tho hanks of schiste and sandstone have snffered the same dsviation. This part of the vein to the south should have received the name of San Pedro; it is in effect nothing hut a prolongation above of the vein which lower down bears this name, hut on account of its considerable width and the importance which the works in it had for a considerahle time, the special name of Santa Clara has been given to it. The length of this deposit is only 25 meters; its thickness ahout 7.80 meters. The beds of schiste surround those of the sandstone of Santa Clara, and seem to be molded upon them, while the stratification of the schistc does not seem to be in accord with that of the sandstone.

Separated from the San Diego by a sterile interval of ahout 25 to 30 meters to the east, 18 to 20 meters to the west, half of schiste, half of quartzite, the San Francisco vein extends with great regularity in the direction north, 110° east, parallel to that of San Diego, for 100 meters of distance, with an average thickness of 3.90 meters. Towards the point where it is crosscut hy the shaft San Teodoro, it inclines to the south, and then disappears all at once; the ore is throwu out hy a fault for six meters to tne uorth, while the heds of quartzite do not participate in this faultiug. This part of the veiu, to which has always heen given the name of West San Francisco, forms an arc whose concavity, as also that of the encasing beds and of San Diego vein, is turned to the southeast.

Tne most northern vein, that of San Nicholas, only exists to the west of the mine; it is separated from San Francisco hy six meters of schiste, and extends for 30 meters in length, with a mean thickness of 2.90 meters.

Some crosscuts for prospecting, commenced on this level, have been promptly ahandoned after driving 20 to 30 meters in the schiste, without result. Besides, no other hanks of quartzite are seen upon the surface in the immediate vicinity of those which are impregnated with cinnahar. These researches were therefore undertaken more to prove the ahsence of these hanks than in the hopes of finding new deposits.

Sixth level; depth, 191 meters—Fig. 10. From the 5th to the 6th level, the heds pitch to the north, making with the vertical an angle of about 20°. As in the preceding level, the veiu of San Diego has in its eastern part a great regularity. It follows for 80 meters in length the direction N. 110° E., with a mean thickness of 5 meters; its walls are formed of quartzite to the east, then half of schiste to the west. It is inflected afterwards; under the name of Santa Clara, in the direction of uorth of south (*Nord-Sud*), which is continued for a distance of 25 meters, with a great width of 13 meters. The two walls of Santa Clara are formed of schistes; but to the south this deposit hccomes suddenly sterile, and the quartzite which constitute it abuts against the frailesca.

The veiu of San Francisco is separatod from tbe preceding hy 20 meters nearly of sterile rock, a part schistose, hut chiefly formed of quartz, etc. This rock is deflected the same as the Santa Clara, and then loses itself in the schistes. Those latter, resting upon the frailesca, which limits them to the west, advance towards the north and cut the cinnahar-bearing sandstone of San Francisco and of San Nicholas, as well as those which separate the two uorth veins from the one to the south.

The San Francisco vein is at this level of a great regularity; it extends for 110 meters, with a width of about 5 meters; it is deflected but slightly to the south at its western extremity. It is separated from the San Nicholas by only 3 to 6 meters of qnartzite and of schistes. This latter vein gains likewise in regularity, and in extension very much. It attains a length of 65 meters, with a width of 3.25 meters. It is bounded on the north by schistes.

One remarks at this level, at the eastern extremity of the San Francisco vein, a small mass of rock of the family of the melaphyres, very much altered; we have already indicated the relation of this porphyry (variety *d*), with the advent of the cinnabar.

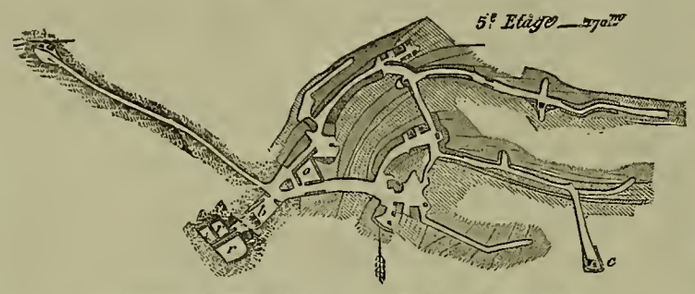

FIG. 9. FIFTH LEVEL OF THE ALMADEN MINE.

Seventh level; depth, 215 meters—Fig. 11. Below the 6th level the deposits become nearly vertical, take a regnlarity more and more great, as is well shown in the plan just referred to of the 7th level.

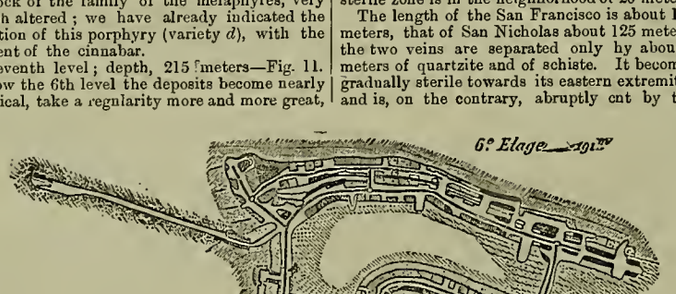

FIG. 10. SIXTH LEVEL OF THE ALMADEN MINE.

Resting to the south upon the frailesca, the schiste forms the two walls of the San Diego vein, which here commences to bear tho name of Pedro y San Diego, the first designating specially the western part, the second the eastern part of the vein. The vein attains here a length of 150 meters; the mean thickness is from 6 to 7 meters. To the east the San Diego is abruptly cnt hy the heds of schistes which turn in such a mannor as to he nearly normal to those of the sandstone. This fact is the more remarkable, as this is the only point in the mine where the vein is abruptly cut by the east; in all the other levels it becomes gradually poorer until it passes into a sandstone nearly sterile. To the west, on the contrary, the vein of the San Pedro diminishes gradually, and finishes by disappearing entirely among the schistes, but without ceasing to be in concordance with their stratifications.

The rocks which separate San Pedro y San Diego from San Francisco are just a narrow strip of schistes, then a series of alternating beds of quartzite and of schiste, in which the quartzite predominates. The width of this sterile zone is in the neighhorhood ot 20 meters.

The length of the San Francisco is about 155 meters, that of San Nicholas about 125 meters; the two veins are separated only hy about 3 meters of quartzite and of schiste. It becomes gradually sterile towards its eastern extremity, and is, on the contrary, abruptly cnt by the schistes to the west.

It is between the 6tb and 7tb levels tbat the great deflection of the vein, San Pedro y San Diego, towards the south begins. San Pedro rises first vertically for 10 meters, then it suddenly widens, inclines from the vertical, and forms the agglomeration designated under the name of Santa Clara. It is evident that a strong lateral pressure, acting from north to south, has deformed the upper levels at an epoch possibly after the advent of the cinnahar, which we naturally suppose to have hcen made hy a fissure nearly vertical.

FIG. 11. SEVENTH LEVEL OF THE ALMADEN MINE.

[To be Continued.]

An inundation in the valley of the Bormeda, in Piedmont, swept away houses and bridges and reduced many families to utter destitution.

Improved Pulley for Wire-Rope Tramways.

In wire ropeways, or tramways, great difficulty has always been found in changing the direction of the rope from a straight line, and various devices have heen attempted to overcome tho difficulty. On ropeways, when buckets are attached to the cable, which have to pass around the main pulleys at the ends, devices have been nsed, which are attached to each separate bucket, adding weight, increasing friction and expense, and liability of hreakage on tramways, where clutches or grips are attached to the cable from the car or dummy above, it has heen necessary to detach the grip or clntch from the cahle altogether when the direction of the rope has been changed from a straight line—no practical method having been fonnd of getting the grips past the horizontal pulleys, necessary to change the direction of tbe cahle. Dr. A. Blatchley, of Kernville, Kern county, has recently patented through the Mining and Scientific Press Patent Agency, a device which is intended to obviate these difficulties, and change the direction of a line of cahle, at right angles if necessary, without having to detach grips, clutches or huckets, or without separate attachments being added to the grips or buckets—the whole object heing accomplished hy the peculiar construction and operation of the pulleys at the ends or corners of the lines.

The arrangement consists in mounting a grooved pulley, so as to revolve on a horizontal plane, and placing on it a supplemental pulley, the edge of which is in a line with the perphery of tbe main pulley. Over this is secured a plate, so constructed as to engage with a catch at a certain point, and stops the revolution of the main pulley, so that the friction of the cable is taken on the small supplemental pulley, which revolves as the main pulley is stopped by the plate engaging with the lug. Back of the plate is cut in the edge of the main pulley a peculiarly shaped slot, into which projects the forked arm of a bell-crank lever, operating a cam, on top of the plate, in such a manner that when a hucket, clutch or other obstacle on the cahle catches in the forked arm of the lever, said lever operates the cam so as to press back the catcb and allow the main pulley to revolve. The bucket or clutch then hangs in the slot as the main pulley revolves, not coming in contact with it, so that it passes hy without interference. After it passes, the main pulley revolves until the plate engages with the lug, when the rope plays in the supplemental pulley, until the next projection or attachment on the cahle operates the device as hefore.

A Query.—"A Constant Reader" writes from Amador City, asking the number of hoard feet in a stick of square timber, the ends of which are respectively 4x4 and 8x8 inches, and the length 22 feet. Multiply 4×4 by 8×8; extract the square root of the product; add the result to the sum of 4×4 and 8×8; multiply the result by one-third the length in feet; divide the product by 12, and the result will he the number of board feet in the stock. Thus: 8×8×4×4=1,024; the square root of 1,024 is 32; 8×8×4×4×32=112; 112×22.3=821.33; 821.33÷12=68.44 feet, hoard measure.

The Pemberton mining company has organized by electing the following officers: J. D. Gray, President; A. C. Hiester, Vice-President; Pacific Bank Treasurer; T. A. McGee, Secretary; J. T. Pemberton, Superintendent; J. D. Gray, A. C. Hiester, August Drucker, Edward S. Solomon, W. B. Murdoch, Trustees. The company own two miles in Fresno county. The quartz from which is free milling, and yields from $28 to $35 in gold per ton, one of the ledges having a vein of pay rock from 18 inches to four feet in width within 25 feet of the surface.

The steamer *Dominion*, Montreal to Liverpool, lost overhoard in heavy weather 514 sheep. The *Victoria*, from Boston, lost 100 cattle.

It is expected that the second dividend of 15% will he paid to the depositors of the Farmers' & Mechanics' Bank early in December.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—Eds.

Carson City, Nevada.—No. 2.

[From our Traveling Correspondent.]

The Virginia and Truckee Railroad

Is justly regarded as one of the grandest successes of modern engineering and railroad building. It was finished in the fall of 1872 from Reno to Virginia City, a distance of 52 miles, at a cost of $100,000 per mile, or a total cost of $5,200,000. The road passes through Truckee meadows, Washoe valley, Eagle valley, where Carson City is situated, down the Carson river a distance of six or seven miles, and then takes to the hills where it does some of the tallest mountain climbing until it lands at Virginia, the great city on the Comstock. Some idea of the amount of business done may be had by a knowledge of the fact that 30 trains pass over the road daily. Among the items of daily freight is about 600 cords of wood necessary for daily consumption in the mills and hoisting works of the Comstock. The company has at Carson a mammoth railroad building of stone and iron, used for a machine shop, roundhouse, foundry and car manufactory. The average number of employes of this road is 350. The company are now making arrangements to extend their road to Mason valley, Aurora and Bodie.

The Little Girl's Band.

One of the most novel and pleasing attractions of this exceedingly pleasant and attractive little city, is a band of musicians composed principally of little girls, or very young ladies, ranging from 10 to 16 years of age—citizens, and some of them natives of Carson. Mr. C. A. Marston, of this city, aided by Mrs. Marston, organized and instructed their youthful pupils in the science of music, arranged their pieces and taught them to play with such perfection that they now render some excellent classic music in a style that would do credit to older heads with more extensive training. It has generally been thought that it required an immense pair of lungs and great physical strength to blow a brass horn successfully, but that delusion is dispelled when you see a little girl blowing a horn that she could almost crawl into, with as much force or at least making as much noise as one of Gilbert's broad-chested Teutons. Their uniform is very pleasing. It consists of a gray sacque and kilt skirt of the same color, trimmed with maroon velvet ribbons or band across the breast, *a la militaire*, cuffs of the same with gold fringe, pockets of same, gold fringe, lower edge of sacque the same with gold fringe. The headdress is a helmet trimmed with gold ornaments and a white feather. The combination is very pleasing without being gaudy. The troupe consists of 11 pieces, under the leadership of Peter Spargo, and is composed of the following persons: C. A. Marston, Mrs. C. A. Marston, Peter Spargo, Mamie St. Clair, Laura Farrell, Ella Farrell, Lena Marston, Ida Marston, Annie Marks, Alice Farrell and Hattie Marks.

Cashmere Goats.

There is, perhaps, no place on the Pacific slope better adapted to the breeding and development of the Cashmere goat than in this valley and the foothills and mountain sides surrounding this basin. The climate is better adapted to that industry than California on account of the prevailing cool weather during a greater portion of the season. This theory is well demonstrated by the success of Sheriff Swift, of Carson City, in the breeding of that animal. Mr. Swift has the best band of imported goats in this State or California. His band consists of about 3,000. All his bucks and many of his ewes are imported, and all, with the exception of a few strays, will shear large fleeces, some as high as nine pounds, measuring—the longest staple—18 inches. Mr. Swift's farm is within one and one-half miles of Carson. His band is worth a visit from any lovers of stock of that description.

W. G. A.

THE OSTRICH INDUSTRY.—Any of our readers who may have thought of starting ostrich ranches are warned that it appears that considerable capital would be required to get the stock. We read that at a public sale of ostriches at Middleburg (in South Africa), twenty pairs of breeding ostriches realized an average of nearly $1,000 per pair. The lowest price given for a single couple was $650, and as much as $1,425 was paid for one pair of birds. It is said that a few years ago ostriches could be procured in South Africa for the catching, and were purchased for a mere trifle for exhibition purposes in England, whereas at the present time a live ostrich does not exist in London. The importance of the birds on the ostrich farms of Cape Colony may thus readily be realized. Even the eggs of the birds, once commonly collected as curiosities, are now hardly obtainable, being reserved for breeding purposes. And while such keen competition exists for the birds themselves, their produce is also eagerly sought for. At a recent sale of ostrich feathers at Port Elizabeth, a parcel of selected "bloods" realized the fancy price of $288 per pound, or about $3 for each separate feather.

Improved Gold Washer's Bowl.

The following is a paper read by Melville Attwood before the California Geological Society: Batea is the name of the gold washers's bowl, or vanning dish, used in the placer and gold mines of Brazil; a small implement which affords the most simple method of separating on a limited scale, the grains of gold from the dirt, sand, pyritic matter, magnetic iron, etc. The form of the batea in common use in Brazil is a circular, shallow wooden dish, or bowl, rudely fashioned with an adze and chisel, varying considerably in depth and size, but nevertheless, in practical hands giving remarkable results.

In 1853 I had a few bateas made of a much better form, the inside being turned smooth to the center in a lathe. I introduced them at that time into the mills under my control at Grass Valley and Agua Fria, where they were used for the purpose of testing or making mechanical assays of the tailings, blanket-washings, and as a concentration to find the percentage of pyritic matter in the vein-stone under treatment.

Some years ago numerous samples of sea beach, or gold sands, were sent to me for examination, and as the batea I had then in use did not separate the gold particles as clean and rapidly as I wished, induced me to make further alterations. After many trials and much trouble I succeeded in getting the form I now use. Those persons accustomed to use the horn spoon, or pan, would be astonished at the ease and rapidity with which the gold in the sands can be washed out with the improved form of batea. As a concentrator for small parcels, or to test the working of a larger one, nothing that I have yet seen in operation can equal it. To test the value of gold quartz, Mr. Phillips, in his "Metallurgy of Gold and Silver," says:

"The most accurate results are obtained by carefully washing a *four*-pound sample in the batea. After having in this way concentrated the gold in about an ounce of sand and pyrites, this residue may be either subjected to assay, or the sulphites dissolved by nitric acid and the gold, extracted by amalgamation with a little mercury, which is subsequently volatilized and the gold weighed. In either case the calculations are made on the *four*-pound sample, and when the residue has been subjected to fusion, very accurate results are obtained."

It is very difficult to give written directions that can be followed for the use of it, but a few lessons from those accustomed to its use will enable any one to become a proficient in a very short time. I will, however, quote the directions given by W. W. Smyth on the use of the old form, and that of Mr. H. Hanks, more recently, in his valuable paper on "Quicksilver," published in the *Alta California:*

"A quantity of the material to be operated on having been mingled and well-stirred by hand with water in the bowl, it is shaken from side to side and circularly, with a variety of movements suited to the form and to the nature of the ore, only to be acquired by long practice. The settlement and the separation of the gold is partly assisted, also, by striking one side of the bowl occasionally, so as to arrest the course of the particles for the moment; and, finally, several different layers or lines of mineral matter may be distinguished from one another, the gold occupying the lower position, then the magnetic iron, then the pyrites, and, lastly, other wastes."

Mr. Hanks says: "The manner of using the batea may be described as follows: Quite a quantity of water will be required. This may be contained in a tank or large tub, or may be a convenient place near the bank of a stream or lake. The pulverized ore—several pounds at a time—is placed in the batea, which is gradually sunk in the water. Several times, it is broken down with the fingers, while the batea floats on the water. When the ore is thoroughly wet and formed into mud, the batea is taken by the rim with both hands and again sunk in the water. A circular motion is then imparted to it (soon learned by practice). The lighter particles will continuously flow over the edge and sink, while the heavier ones collect at the center.

"When only a small portion remains, the batea may be lifted, and the water held in the depression caused to sweep round the center, while one edge is slightly depressed. This motion will gradually remove the heavier particles toward the depressed part. If there is any gold, platinum, galena, cinnabar, or other unusually heavy substance, its gravity will resist the power of the water, while comparatively light particles move slowly forward. The form of the vessel is such that the heaviest matter forms a *point* and can be closely observed. If there is a particle of cinnabar present, it will be found at the point of the prospect, clearly distinct from all other substances. The value of the batea to the prospector cannot be too highly estimated, and it should come into more general use."

Mr. John Roach, the well-known optician, has used the batea, for some time, to assist him in some of his metallurgical investigations, and has generally a few of them on hand. However, he very kindly gave me the following direction, by which, he says, any good turner will be able to make them.

"A disc of 17 inches diameter, being turned conical 12°, will have a depth of 1⅞ inches from center to surface. The thickness may be five-eighths of an inch. The outer edge, perpendicular to axis, will require wood 2½ inches thick for its construction; the best wood, Honduras mahogany."

To millmen, it is almost useful instrument; enabling them, amongst other things, to test what quicksilver is being carried away in the tailings. Silver ore can easily be separated from its gangues. The litbologist it will help greatly to his examination of the basaltic and metamorphic rocks.

The movements of most of the large concentrators can be easily copied, particularly that of the percussion table, but with the difference in favor of the batea, that the shock, either light or hard, can be given and varied as required, by striking the side of the bowl with the band.

A Fair Hint from Colorado.

At their fairs in Colorado they exhibit their cabbages and potatoes, their wagons and agricultural machinery, their rag-carpets and pickles, they race their horses, and do many other things just as other States do, but they differ from some others in that they do not leave one of their most important industries unrepresented. At the fifth annual fair of the Boulder County Industrial Association, one of the finest displays was a collection of ores from the many neighboring mines. A Colorado paper describes it:

Passing in at the main entrance Mr. H. P. Walker's cabinet of free gold ore from the Golden Age was fairly dazzling with nearly, if not quite, 200 specimens, all literally strung full of coarse gold imbedded in white quartz. In the middle was a 50-ounce retort, which was an appropriate center piece for such a display.

Next came some large chunks of ore from the Black Cloud mine with a brilliant play of colors upon the admixture of different minerals. Standing on the ground were some chunks of antimonial silver ore, too large to place on the table, from the Band of Hope mine, on Four Mile creek. They were labeled 400 ounces silver to the ton. The John Jay and Last Chance mines furnished their usual display of large and rich chunks of telluride ore, showing that they are still producing largely. The Celestial, at Ward, furnished a large chunk of free gold ore; and the St. Joe, at Gold Hill, a large chunk of telluride quartz.

The Smuggler made a remarkably fine showing of massive telluride ore, much of it from recent developments. Caribou was also well represented by large chunks of rich ores from the No-name and Caribou lodes.

Again, in another paper:

Capt. E. Rowland made a splendid display of Black Cloud ores, and samples of concentrate from the Black Cloud Co. mill, representing zinc, lead, iron pyrites, and sand separated from the ore.

Mr. Williamson, of Sugar Loaf, exhibited samples from his rich Gray Copper lode, one of the best mines of Colorado.

Then comes the list of awards:

H. P. Walker, of the Golden Age mine, Jamestown, received the first premium for the best show of gold quartz, found in Boulder county, from one lode; also the special premiums offered by Levy Bros. & Strasburger and T. J. Moynahan, amounting in all to value of $40. Mr. Walker also obtained first premiums on best show of gold quartz in Colorado, and also for largest display of gold bullion from one lode in Boulder county, and also the special premium of $10, offered by Col. Phillips. Mr. Walker was also awarded a diploma and $5 for best collection of ore showing native gold, not less than 25 specimens.

Col. Ivers Phillips took the prize for the largest display of gold bullion.

W. H. Lessig took the first premium and diploma for the largest display of tellurium ores. These were from the Smuggler mine.

Harris & Bennett, of Sugar Loaf, were awarded $25 and a special of $5 by G. A. Duncan, for best display of silver ore from one lode in Boulder county.

Capt. E. Rowland, of this town, was awarded the first premium for the largest collection of silver ore, and also for the finest cabinet of ores, precious stones, fossils and petrefactions found in Colorado.

The society offered liberal premiums for rock drilling. For double hand drilling the first prize was $40; second, $20. The entries were W. H. Parentor and John Wormdorff—time, ten minutes—rock, hard granite, and drilled 10⅜ inches. Joseph and Isaiah Yates, worked together, drilling 15½ inches. C. A. Havers and E. A. Vaughn made 11⅞ inches. The Yates boys took the first prize.

Single hand race—time as before. Isaac N. Loper drilled 5½ inches; B. Nelson Burger, 4 7-10 inches; A. E. Johnson, 7 6-10 inches; C. M. Johnson, 10 7-10 inches. The first prize was $30, the second $15. C. M. Johnson of course took the blue ribbon in the contest, doing the best single hand drilling on record. Together the premiums amounted to $105. The inducement was sufficient to call out the best drilling talent of the mountains.

THE Beaconsfield mine, Winnemucca mountain, has a 5-foot ledge, principally carbonate and assaying from $100 to $200 per ton.

DURING the month of September there were 2,935,735 pounds of silver-lead bullion shipped from Utah.

A Model School of Mines.

The Colorado State School of Mines is situated on the line of the Colorado Central railroad 12 miles west of Denver, and within the foothills of the Rocky mountains. It is endowed by the State, and is well equipped with a chemical and assay laboratory, mineral cabinet, and other apparatus requisite for such an institution. The specialty of the school is mining engineering and metallurgy. Its proximity to the most celebrated mines and smelting works of Colorado affords the student every facility to obtain a thorough knowledge of mining operations, and particulary of the treatment of the refractory ores of that State. Students have the privilege of visiting the works at any time, and inspecting all the operations, and thus rendering themselves practically as well as theoretically familiar with the works. It is proposed to have a vacation course next season, in which the students will visit all of the principal mines and works in the State, remaining a long enough time at each for thorough instruction in the details of the various mining and metallurgical processes. This course will be under the immediate charge of the head of the institution, and of the professor of geology. It will be endeavored to obtain special excursions rates on the various railroads over which the students will travel, in order to render the expense of this trip as small as possible. The course will be open to others than those on the roll of students; and any one desirous of taking this vacation course without pursuing the regular course of studies in the school, may do so on application. This offers an excellent opportunity to students in the eastern colleges to spend their vacation in a manner which will be both agreeable and of benefit. The officers of the college are: President, W. A. H. Loveland, president of the Colorado Central R. R.; and secretary, E. L. Berthoud, chief engineer of the same railroad. The faculty are: Milton Moss, professor in charge and Assistant Commissioner of mines; Gregory Board, director of the Golden Smelting works, mineralogy, metallurgy and assaying; E. L. Berthoud, mining engineer, Rev. T. L. Bellam, mathematics; Rev. Arthur Lakes, geology.—*American Manufacturer.*

A New Dry Washer.

Mr. J. H. Small, says the Los Angeles *Express*, has just invented and filed a caveat upon a dry washer for placer diggings. The machine is comprised within a frame-work three feet square and four feet high, and weighs but a few hundred pounds, being compact and easily handled. A hopper on top receives the dirt, which, passing through a small opening, falls upon a cone of Russian iron, and is thence distributed evenly on the outer rim of a stirring pan below. This cone has an oscillatory motion to prevent the dirt from clogging in its descent, and the stirring-pan mentioned is provided with revolving fingers, which keep the dirt constantly in motion and pulverize it. As the pan fills from the outer edge the dirt is crowded inward by the fingers and finally is forced, with a sifting motion, over a rim and through an aperture in the middle. Thence it falls upon a drumhead of canvas below. The drumhead has beneath it a bellows-blower which forces air through the canvas and thus blows out the pulverized dust resting upon it. The action of the machine is such that the coarsest gold is deposited against the inner rim of the stirring-pan. That which passes over the rim and falls upon the drumhead collects against a little interior rim which is placed upon that. The whole machine is operated by a crank and a system of pulleys and piston-rods communicating the various motions. Mr. Small ran a pan of dirt through the washer having previously deposited in it five little pieces of gold varying from the size of a pea to half the size of a pin-head. When the drumhead was taken out and examined, the five pieces were found snugly deposited against the inner rim mentioned. It is thought by experts who have put the machine to a thorough test, that it at last answers the requirements of a dry washer, which have been sought so long in vain heretofore. If this is the case, Mr. Small has a fortune in his invention. He has spent the last three months in unremitting labor upon it, and has expended, besides, several hundred dollars, and we think he deserves any success he may attain. Mr. Small claims, as a leading merit of his invention, that it will operate upon either coarse or fine dirt, and does not even require it to be dry.

NICKEL SMELTING IN NORWAY.—The *Iron Age* translates from *Dingler* as follows: At Kragerce, Norway, magnetic pyrites holding on an average 1.25% of nickel is worked by the following process. The raw ore is smelted with slag from refining in a 13-foot three tuyere shaft furnace, the slag made being thrown over the dump while the raw matte, holding 3.5% of nickel, is roasted in stalls. This roasted matte is smelted in a low furnace with one tuyere, four feet high. The slag, holding one to 1.5% of cobalt, goes to the ore smelting. The matte made contains 30% of nickel and 15% of copper, and is returned to the same furnace, which concentrates it to 60% of nickel, 30% of copper. The sulphur is only 10%. This matte is ground and roasted completely in a small reverberatory furnace, and the oxides are reduced with charcoal powder in graphite crucibles, yielding 68% of nickel and 30% of copper.

MECHANICAL PROGRESS.

Sugar-Making Machinery.

We believe our founderies and machino shops are called upon to furnish sugar-making machiacry for the Sandwich Islands. It may interest somo of the designers of this liae of manufacturo to read of a fine sugar outfit which wae recently made in Scotlaad for Triaidad. Glasgow is the headquarters in Great Britain for this work. Correspondents of *Iron* describe what is called a very fine plant. It includes a horizontal engine, with steam cylinder 21 inches in diametor and 42 inches lougth of stroke; link motion, reversing gear, boiler-feed and lifting pumps, a fly-wheel 18 feet in dismeter and weighiug abont 8 tons, and componad gearing in the proportion of 20 to 1. The mill rollers, three in nnmber, are 28 inches in diameter and 66 inches long. They are borne on headstock, the chief feature in their construction heing tho fact that they are built up of wrought iron instead of being of heavy solid castings, which are always liable to snap when powerful strains are suddenly put upon them. The mill pinions, which are usually placed on the inner side of tho cane rollers, aro, in this mill, keyod upon small iadependent shafts, which aro absolutoly fixed in relation to each othor, aud are connected to the rollers hy means of an arrsngement of tail bars. Snch a modo of arrangement is a great advantago, inasmuch as the adjustment of the rollers so that their axes shall be parallel can readily be effected without in any way disturbing the adjustmont of the pinions; and as these are always runaiag up at their true pitch line they are consequently much less liable to breakage. The pinions are mado of malleahle cast iron. The caae-juice pump, which is 18 inches in diameter, with 18-inch stroke, ie drivon by a disc-plate from the megass-rollor axle. All the parts of this sugar-mill are made so as to be interchangeable with the corresponding parts of mills on no fewer than four other sugar plantations on the island of Trinidad. The mill in weight is fully 80 tons, and is calculated to crush cane enough to yield 1 ton of sugar per hour.

Steel as a Building Material.

We alluded in a former issue to the investigation heing made under the auspices of the London Board of Trade as to the use of steel for structural purposes. The investigating committee has finished its work and reports as follows: Having given the subject our hest consideration, we recommend that the employment of steel in engineering structurcs should be authorized by the Board of Trade under the following conditions, namely: 1. That the steel employed should be cast-steel or steel made hy some process of fusion, subsequontly rolled or hammered, and that it should be of a quality possessing considerable toughness and ductility, and that a certificate to the effect that the steel is of thie description aad quality, should be forwarded to the Board of Trade by the eagineer respousible for the structure. 2. That the greatest load which can be brought upon the hridge or structure, added to the weight of the superstructure, should not produce a greater strain in any part than six and ono-half tons per square inch. In conclusion, we have to remark that in recommending a coefficient of six and one-half tons per square inch for the employment of steel in railway structures generally, we are aware that cases may and prohably will arise when it will be proposed to use steel of special make and still greater tenacity, and when a higher coefficient might be permissible, but we think those cases must he left for consideration when they arise, and that a higher coefficient may be then allowed in those instances where the reasons given appear to the Board of Trade to justify it. It will be obeerved that a coefficient of six and onc-half tons per square inch is assigned to steel, that of iron heing six tons per square iach. This increase of the coefficient will effect important economy in structures, especially in bridges of large spans, and will also tend generally to increase the employment of steel for railway and shipbuilding purposes.

THUM'S FURNACE FOR GALVANIZING IRON.—In galvanizing iron, says the *Iron Age*, the main point to ensure a uniform coating of zinc is the maintenance of a thin hath of metal. Unfortunately the zinc absorhs iron, thickens, and as tho temperature must he rapidly raised, when it does so this absorption goes on increasing until the metal is unfit for further use. This is aggravated by the fact that the metal is melted iu cast or wrought iron vessels heated from below. In order to avoid the disadvantages of iron vessels, and yet retain ample working space ahove the surface of the metal, F. A. Thum, of Lauhach, Germauy, has constructed a furnace resembling somewhat a reverheratory furnace. It has a fireplace and a chimney at each end, the part of the hearth connecting the two being arched over. The rest of the rectangular hearth is perfectly open above, so that the heat-conducting power of the metal is relied upon to keep it at the proper temperature in that part of the hearth. The slabs of fresh zinc are introduced through doors communicating with the hot ends. The staying of the furnace has to he very strong, in order to prevent any accidents to the arching over the ends of the hearth.

Testing Iron and Steel with a Falling Weight.

The reports which come to us in foreign exchaages of tests made at the Paris exposition to determine the strength of different forms of iroa, are very interesting. A paper read at a meeting of mechanics in Paris by an expert, Rickard Akerman, is the source whence we draw the following facts. In testing boiler plates of Bessemor steel, Swedish iroa and English iron, the hall used as a falling weight had a weight of 872 kilogrammes, spherical in its lower ond, and a diamcter of 253 millimeters. The interior diameter of the iron foundation to which the plates were fastened during the tests with 36 rivets in a double row was 537 millimeters. The diameter of the falling weight was thus to the diamctor of the part of the plate exposed to buckling as 10 to 21. All tho plates were niue millimeters thick and one meter in diameter. The Bessemer and Siemens-Martin steel plates withstood from 5 to 9 blows from a hight of 4.5 meters without the least failure; while the Swedish iron plate only withstood 4 to 6 blows of the samo weight from a hight of only 1.5 meter, or a third of the hight in the ingot-plate tests. Further, in these tests, with a falling weight, the huckling before the least sign of fracture averaged 150 to 160 millimeters, while the Swedish plate of puddled iron never permitted before fracture greater buckling than 104 millimeters. Nevertheless, the Swedish iron plate was, as such, of very superior quality, for tests, made with the same falling weight, of best-best Staffordshire and best Yorkshire plates, showed that the former gave way at the first blow from a hight of only one meter, while the Yorkshire plate at the utmost withstood three blows from a hight of 1.5 meter, and showed in that case a huckling of 68 millimcters. When the hight of fall of only 1.5 meters used for the puddled plate was employed for the ingot plate, the latter withstood 25 blows, while, on the other hand, the weight at the first blow passed through even the Swedish plate of puddled iron when the fall-hight of 4.5 meters used for the ingot plate was also employed for it. Tests were also made of the ingot plate with a fall from a hight of up to nine meters, when it withstood before fracture threo blows with the same buckling as in the case of the lower hight, also before fracture.

These experiments, hesides, show how enormous is the influence which the content of phosphorus exercises on the power possessed by iron of resisting blows; for the main difference between the chemical composition of the different puddled plates lay in their contents of phosphorus, for while the Swedish puddled plates contained only 0.016% to 0.021% of phosphorus, the percentage in the Yorkshire plate was 0.094 and in the Staffordshire plate 0.203. In addition to this differnce in the content of phosphorus, there is also in the Staffordshire plate a larger quantity of silicon, or more probably of cinder. No proper difference between Bessemer and Siemens-Martin plates could be discovered in the course of these experiments, which comprehend both complete analyses and tension tests. Yet it almost appears as if the Martin plates have a somewhat greater ductility than Bessemer plate with the same content of carhon.

THE POINT OF GREATEST STRENGTH IN METAL.—Numerous experiments have been conducted by several eminent engineers to prove the tensile strength of iron and steel, both in the shape of bars and plates. Unfortunately, however, many of the tests have heen carried out with rude testing machines, rendering it difficult to obtain a true result of the endurance and strength of the metal under investigation. In addition to this a large proportion of the specimens tested have been of short leagths of metal, varying from 2 ia. to 4 in., and in all such cases a higher tensile strain has been noted than can he depended upon in practice, while the elongation has also heen much overstated, a largo proportion of the extension of the specimens arising from a contraction of area, or what is called "breaking elongation." With an accurate and sensitive testing-machine, the maximum load is always carried in the mild ductile metals when about five-eighths of the elongation has taken place; the remainder, down to the point of hrcakage, is developed with a gradually reducing load. Ordinary iron boiler-plates and hard steels are an exception to this law, and nearly universally break with a maximum load, but with little or no reduction of area.

STEEL IN SHIPS.—A speaker at the British Iron and Steel Institute said: Should it ultimately be proved that sea-water would destroy steel quicker than wrought iron, the use of wrought iron for the skins of ships might he continued; hut, with present knowledge, nothing, in his opinion, existed to prevent the whole framework of every steamer and sailing vessel being constructed of Bessemer or Martin-Siemens steel, as at least one-third the weight might be saved at the same time that greater security was ensured. In the diluted sulphuric-acid hath the evidences were quite clear in favor of mild steel and the purest iron to resist corrosion, but before as much could he said as to the influence of sea or salt water a more extended and careful series of experiments would be required.

SCIENTIFIC PROGRESS.

A New Derivitive from Opium.

T. and H. Smith furaish the *American Journal of Pharmacy* a descriptioa of *meconoiosin*, which they have derived from opium. In the final isolatiou of meconin, the oleaginous-like liquid containing it, upoa being left to itself for some days, sets into a mass of crystals. Those crystals, upou heing drained, and csutiously washed with cold weak spirit, aro to be boiled in a large quantity of water. The filtored liquid gives a crystallization of meconin, and the mother-liquor, when concentrated, and upon being set aside for a time, yields heautiful leaf-like crystalline masses of the body, to which we have given the name of *meconoiosin*.

This remarkable crystslline form, which, in in its impure state, is assumed by meconoiosin, as well as the brown color of the crystals, enahles this body to be readily distinguished from the soft and nearly white meconin, which crystallizes along with, and upon it, in a manner not unlike the incruststion of minute shells upon a rock. If this meconin be now removed, the meconoiosin, by means of a few crystallizations from hot water, with the aid of charcoal, may be obtained in a pure state, free from color.

This substance is especially interesting because that now, in it, a second chemically indifferent body existing in opium is met with. Hitherto meconin alone has been distinguished hy this characteristic. Moreover, the respective chemical constitution of those two opium products reveals an apparent relation, meconin heing represented by the formula $C^{10}H^{10}O^4$ and meconoiosin by the formula of $C^8 H^{10}O^2$. Both bodies are freely soluble in alcohol and ether, but as regards their soluhility in water, the two substances present a striking contrast. Meconin is very slightly soluble in cold water; and in boiling water, unless in the proportion of about 1 in 50, it refuses to dissolve, remaining at the bottom of the liquid, like a heavy oil. Meconoiosin, on the other hand, is soluble in 27 parts of cold water, while in boiling water it is soluble to almost any extent, forming as the heat rises, and before being shaken up, a syrupy solution at the hottom of the liquid.

A MARTYR TO HIS THEORY.—A sad accident occurred lately at the gymnasium at Prague. Prof. Fischer was found poisoned in the physical laboratory. He was only twenty-five years of age, but a person of the greatest promise, by reason of his great abilities and industry and his devotion to chemistry. All the circumstances connected with him exclnde the suspicion of suicide. All that is known of the catastrophe is that, being in the laboratory, he sent a servant to the storekeeper for some sal-ammoniac and some cyanide of potassium. He mixed them and tasted the mixture, saying to the servant, "science has advanced so far as even to be ahle to render harmless so dangerous an agent as cyanide of potassium." But he had scarcely tasted the mixture when he was seized with violent pains. He at once told the servant to fetch a physician, hut before he came Dr. Fischer was beyond human aid. He was known to entertain the persuasion that cyanide of potassium could be rendered harmless, and the problem how to accomplish this was a frequent object of his meditations. A memorandum on this theme was found among his papers. Doubtless he fell a victim to a rash experiment.

A NEW DENTAL COLLEGE—The new building erected for the use of the Dental School and Medical Laboratory of the University of Pennsylvania was recently opened and dedicated. It cost nearly $60,000 and was the gift of a number of individuals. In an opening address Dr. Mitchell reviewed the progress of science in the last fifty years, and in speaking of the estahlishment of lectures on dental surgery at the University said that two chairs have been created by the trustees—one of Mechanical Dentistry and Metallurgy and the other of Operative Dentistry, Dental Histology and Dental Pathology. The students will share with the medical students the instructions of the teachers in the branches of physiology, pharmacy and anatomy.

PLATINUM PLATINO.—All the attempts made until now to coat metals with platinum with the acid of gelatine action have, says the *Iron Age*, proved unsuccessful, hecause the film deposited on them was generally dark gray in color and was apt to come off in flakes, so that it was impossible to employ the mcthod for the protection of copper or vessels of other metal against the action of acids. Boettger has succeeded in overcoming these difficulties, using as a galvanizing liquor a hot solution of freshly precipitated chloride of platinum and ammonia in a solution of citrate of soda. Two strong Bunsen elements will euffice.

A PIGEON LIVING WITHOUT A BRAIN.—Dr. McQuillen recently described before the American Philosophical Society a case of the extirpation of nearly the whole of the cerehrum of a pigeon, operated upon by himself. He desired to place on record the fact that the animal not only survived the operation 24 days, but that it gradually regained its usual powers and habits of flight, and its ability to feed itself and drink. Only one other such case is on record.

Mental Logarithms.

Some years ago, ahout 1863, Mr. Oliver Byrne, formerly Professor of Mathematics in the College of Civil Engineers at Putney, discovered aa entirely new and ingenious method of arithmetical calculatioa of great practical importance to eagineers and others, aad which was claimed to enahle aayone acquainted with the ordinary rules of common arithmetic to extract the roots of cubics, equatioas of the fifth degree, aad higher equations; to determiae aagular msgaitude and trigoaometrical lines, to solve plaae triangles without the use of tables, aad generally, to deal with almost innumerahle problems which had previously heen considered to reqnire great mathematical skill, and an intimate acqusintance with the higher hraaches of the science. But, owing to the discoverer having adopted a peculiar and nnfsmiliar system of notation in explsining the art, many have regarded the whole suhject as unintelligihle, if not useless. A complete remedy for this has now beon found by Mr. Edward David Heara, M.A., of Columbia College, New York, whoso name is already known to mathemsticians as the author of an extension of Horner's method for the synthetic division of algehraic quantities with detached co-efficients, and of an elucidation of Suffield's method of arithmetical synthetic division. Mr. Hearn contributes to the October number of *Scientific Review*, an interesting paper on "Mental Logarithms," in which he demonstrates thst all the developments of which Mr. Byrne's art is capahle, are not only practicahle without departure from the ordinary Arahic notation, with which every schoolboy is familiar, but that the common notation really increasca the speed at which the calculations on the new system can be performed.

COMPOSITION OF MR. DARWIN'S DROSERA.—*Drosera rotundifolia*, Lin., has been analyzed hy G. Lugan. The fresh plant was treated by dietheralysis, the process recommended by Legrip (*American Journal of Pharmacy*, 1876, p. 235). The aqueous liquid obtained thereby contained glucose, various salts and a crystallizable organic acid, which appears to be peculiar to this plant, and was also obtained from the ethereal liquid by evaporating it and treating the residue with chloroform, which leaves it nndissolved, together with wax and yellow coloring matter. On evaporating the chloroform, a greenish-brown resin was left, which had a strong and characteristic odor, was exccedingly acrid and produced a burning sensation when applied to the skin. Contrary to the observation of Reiss and Will, the author found the viscous exudation of the glandular hairs to bo destitute of acid reaction, and was unable to obtain formic acid, which was stated to he the principle hy which the leaves convert albuminoid mattor into peptones.

THE LIEBIG MEMORIAL.—In response to an invitation issued by the Executive Committee at Munich, various models of a proposed statue to the memory of Liebig have heen sent in by sculptors from different parts of Germany. The jury appointed to select from them the first and second best models met there recently, and awarded the prizes of 2,000 and 1,500 marks offered by the committee to Herr Wagmuller, of Munich, and Herr Begas, of Berlin, respectively. A sum of 120,000 marks is available for the completion of the work, and the committee have given notice that in accepting any particular model, they reserve to themselves the right of erecting in Giessen a copy of the original work abont to be placed in Munich.

LIBERALITY TO SCIENCE.—*Nature* says that M. Bischofsheim, the well-known Parisian banker, has sent a sum of 1,000fr. to the French Bureau Central Meteorologique to help in the construction of the intended Mount Ventoux observatory. We may remind our readers that he, at the suggestion of his friend, M. Leverrier, helped in the same manner the construction of the Puy-de-Dome and Pic-du-Midi establishment. M. Bischofsheim has also agreed to pay M. Eichens £1,000 to complete within a year the construction of the great refractor hegun in Leverrier's time, in 1870.

PECULIAR ACTION OF PETROLEUM.—A very curious effect (says *La Nature*) is produced on oils of petroleum, even the lightest, by addition of pulverized soap-wort (an herhaceous plant of the family of *Caryophileæ*). The powder being digested in water and mixed with the oil, the latter forms a very thick mucilage, so that the vessel in which the experiment is made may be inverted without its contents escaping. What is still more singular, if a few drops of phenic acid be added, and the mucilage agitated, it hecomes in a few minutes perfectly limpid.

A RUSSIAN TECHNICAL LABORATORY.—The Russian Ministry of Roads and Communications has established at the St. Petershurg Engineering School a great technical laboratory, provided with apparatus for testing all kinds of materials for construction, such as stone, cement, metals, wood, etc. Any one can have materials tested there for a small sum.

PERUVIAN COAL.—The *Chemiker Zeitung* informs ue that a rich deposit of coal, sufficient for the supply of all South America for a long period, has been discovered at Chala-Alta, in Peru.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending Oct. 3.		Week Ending Oct. 10.		Week Ending Oct. 17.		Week Ending Oct. 24.	
Alpha	24½	18	19	15	16½	12½	15½	13
Alta	17½	15¾	18	14½	16	11	16	12½
Andes	1.65	80c	1.40	1	1	50c	90c	75c
Alpa	50c		1	65c	90c		75c	
Argenta	4½	3½	5½	5	5½	5	8½	6
Atlantic					90c	80c	90c	8 c
Aurora Tunnel	3	2½	3	2½	3	1½	1½	90c
Baltimore Con	2.05	2	3.50	2	3	2½	3	2½
Belcher	13¾	10½	12	6¾	10	7½	9½	7½
Belmont	4½	3¾	4	3	4	2½	3½	2½
Best & Belcher	38	31	32½	24	27½	20	27	21½
Bullion	26	16½	16½	14½	15½	9½	12½	11½
Bechtel	1.35	1.75	1½	1.20	2½	1.40	1.40	1.20
Belle Isle	60c	45c	70c	40c	45c	40c	45c	30c
Bodie	23½	20	23½	20	21	16½	19½	18
Benton	9½	7¾	9	7¾	8¾	6	9	6¾
Bulwer	16	12½	20	14½	20	17	18	14½
Boyle								
Black Hawk	75c	60c	75c	50c	1½	1	2.10	1.05
Belvidere	2	1.60	2	1½	1½	½	2	1½
Booker	1	75c	1	90c	1.40	90c	1	1
Caledonia	6¾	5½	6	4½	5	3	5¼	4½
California	15	13½	14½	13	13½	11	13	11½
Challenge	3	2½	2.50	2	2.20	1½	2	1.60
Chollar-Potosi	70	58	61	48	60	47	64	55
Commune								
Confidence	14	11½	13	10	12.57½	9½	11½	9½
Con Imperial	1.95	1½	1.65	1.25	1.40	1.05	1.40	1.20
Con Virginia	16½	15	15	13¾	14½	11½	13¾	11½
Crown Point	12½	10½	11	6½	10	7½	11½	9½
Con Washoe	2½	2	2.15	2			2.10	2½
Champion	1½	1	2	1.25	1.80	1½	50c	
Concordia	20c							
Dayton	50c	30c	50c	40c				
DeFrees	30c	25c	30c	25c	25c	20c	20c	10c
Dancy								
Day	60c	45c	55c	40c	50c	40c	80c	30c
Eureka Con	46	44	46	44	45	44	45	36
Exchequer	11¾	7¾	8½	6½	6¾	4½	6¾	5¼
Endowment	1½	1	1½	1	1.30	1	90c	60c
Gen Thomas								
Grand Prize	6	5	5½	5	5.55	4½	7½	5½
Gila	50c	40c	55c	40c	45c	40c	45c	30c
Golden Chariot	50c	35c			15c		1½	35c
Golden Terra	3½		4					
Goodshaw	1	40c	1	80c	1	75c	90c	80c
Gould & Curry	29½	20	22½	17½	20½	13	18	14½
Hale & Norcross	33	27	30	21½	30½	21	25½	20½
Hillside	4½		5	4½	4½	4	4	3½
Highbridge	2.05	1.80	2.25	1.80	1.90	1½	2	1.70
Homestake	9½	9					10	9
Hussey	50c	25c	60c	30c	50c	30c	85c	30c
Independent	3½	3	3½	3½	3½	3.10	3½	1.95
Julia	7½	6¼	7¼	5¾	7¼	6½	7	6¼
Justice	12	10	11½	9	10	8	9½	8
Jackson	15	12	14	11	10½	9	10	8
Joe Scates								
K K Con								
Kentuck	11	8	9½	6¾	8½	4½	8	6
Kossuth	45c	30c	35c	30c	30c	25c	35c	20c
Keystone	7	6½						
Lady Bryan	5	1.20	3½	3	3½	1½	3½	1½
Lady Wash	4	3	3½	2½	2½	2	2½	2
Leopard	1½	1.20	1.30	1	1.10	70c	1.40	75c
Leviathan	1.70	1.40	1.50	1	1	65c	1	80c
Leeds	2½		1.75	1.50	2	1.40	1.90	1½
Lee	60c	40c	75c					
May Belle			1		5c		50c	
Modoc	40c	30c	50c	15c	20c	10c	60c	10c
Manhattan	6¾	6	6	5½	5½	3	4	3½
Martin White	8	7	8¾	8	8		10	9½
McClinton	90c	75c	80c	20c	75c	50c	75c	50c
Meadow Valley	50c	40c	35c	20c	25c		40c	30c
Mexican	93	78½	82½	67	77½	45	65	56
Mides	1½	1	2	87½c				
Morning Star	8	6½	6	4½	5	3	3½	3
North Con Virginia	11	7½	9½	8	8¾	6½	8	7
New York	2.40	2	2½	1½	2.20	1.60	2	1½
Northern Belle	11	10½	10½	10	10	9½	11	9½
New Coso					40c			
Navajo	1.60	1.45	1.50	1.10	1½	80c	80c	50c
Occidental	1½	1	1½	1	1	1	1	75c
Ophir	87	66	65	53	62	40	55½	45
Oriental	2.60	1.30	2	1½	1½	95c	1	75c
Overman	26½	22	27	21	26½	20	27½	23
Panther								
Phenix	5½	4½	6	5			4½	
Phil Sheridan	3½	2½	2½	2	2	70c	1½	1
Prospect	85c	75c	60c		40c		20c	
Raymond & Ely	9	6	6½	5½	6	5	6	5
Richer	2.10	1½	2	2	2½	1	1½	
Rock Island								
Rye Patch								
Rough & Ready	3½	2.35	3½	3	4	3½	2½	2½
Savage	29	22½	23½	18	24½	17	25	19½
Seg Belcher	44	37	38	30	39	33	35	
Sierra Nevada	261	215	241	190	210	135	195	161
Silver Hill	4	3½	3.75	2.90	3.30	2½	2.85	2½
Silver King	20	12	18	16½	16½	16	17	15
Silver Prize	10c		10c	5c	10c		10c	
Succor	2½	1.80	2	1.80	1.85	75c	1.40	1
Summit	2	1.65	2	1½	2	1.80	1.90	1½
Scorpion	13	10	9½	6½	7½	5½	6	2½
Solid Silver	3	2	2.10	1.90	2½	1.90	2½	2
South Bodie	85c	70c	90c	75c	90c	60c	80c	60c
South Standard	75c	50c	55c	50c	65c	50c	60c	50c
Star	90c	75c	75c	60c	75c	60c	75c	50c
St. Louis	1	70c	1	80c	1	80c	80c	50c
Syndicate	2		2	2	2		2½	
Tioga Con	3.90	2.90	2½	2½	3½	2½	2½	2
Tiptop	3½	2	1.75	1.50	1½	1½	1½	1.40
Trojan	50c	40c	45c	35c	40c	35c	30c	25c
Union Con	193	149	187	160	184	129	162	140
Utah	56	41	43	35	39	22	32	27
Vermont Con	12	10	9½	9	8	6½	6½	5½
Ward	1.60	1.40	1.75	1.25	1.80	1½	1.60	1.40
Wells-Fargo	80c	50c	40c	20c	70c	20c	70c	45c
Woodville	90c	60c	70c	60c	65c	45c	60c	50c
White Cloud								
Yellow Jacket	38	28	34½	28	33	21	27½	21

Sales at S. F. Stock Exchange.

Friday A. M., Oct. 18.

1195	Alta	16@15½	
425	Alpha	14½@15	
285	Best & Belcher	27@26½	
1565	Bullion	12@12½	
530	Belcher	9@9¾	
500	Baltimore Con	2	
640	Con Virginia	13½@13	
215	California	13	
180	Chollar	62@61½	
1630	Crown Point	10@10½	
3085	Con Imperial	1.35@1.40	
1125	Caledonia	4½@5½	
195	Confidence	11½	
1010	Exchequer	12½	
820	Gould & Curry	17½@18	
1350	Hale & Nor	25½@24	
890	Justice	9@9½	
450	Julia	6½@7	
120	Kentuck	7@7½	
930	Lady Bryan	1½@2	
1065	Mexican	63@65	
830	Overman	23@25	
935	Ophir	50@55½	
75	Succor	1½@1½	
710	Sierra Nevada	155@158	
885	Savage	21½@22	
530	Silver Hill	2½@2.85	
1195	Union Con	158½@162	
220	Utah	30@32	
895	Yellow Jacket	27½@28	

AFTERNOON SESSION.

500	Atlantic	85@90c	
500	Andes	75@80c	
2590	Argenta	7@6	
40	Aurora T	90c	
50	Alpa	75c	
430	Bechtel	1½@1.40	
345	Bodie	19@18½	
245	Belmont	3½@3	
300	Bulwer	18½@19	
150	Belle Isle	45c	
500	Booker	1½@2	
350	Black Hawk	1½@2.10	
220	Belvidere	1½@1.60	
710	Benton	8½@9	
700	Columbia	1.10@1	
400	Champion	50c	
500	Chieftain	10c	
530	C Pacific	2@1.90	
750	Challenge	1½@1.60	
100	Con Washoe	2.30	
800	Dudley	1.45	
750	DeFrees	20c	
350	Day	30c	
25	Belmonte	5	
400	Endowment	55c	
585	Eureka Con	43@40	
500	E Grand Prize	20c	
100	Flowery	1	
25	Fairfax	4½	
1725	Grand Prize	6@5½	
350	Goodshaw	80@80c	
500	Golden Chariot	50c	
1700	Homestake	10@9	
570	Hil side	3½@4	
200	Hussey	35@30c	
570	Independence	3½@3	
50	Jackson	3½	
600	Kossuth	25@20c	
600	Leviathan	90@80c	
195	Lady Wash	2@2.70	
355	Leopard	75c	
570	Martin White	9½@10	
195	Manhattan	3½@4	
300	McClinton	70@75c	
425	Mono	4½@4	
1770	Modoc	15@10c	
200	May Belle	50c	
100	Mt Hood	30c	
200	Margarita	1½	
50	Morning Star	3½	
50	North Con Vir	8	
100	N Ophir	50c	
50	N Sierra Nevada	30	
100	N Bonanza	80c	
1010	New York	1½@2	
145	Northern Belle	10½@10	
50	Occidental	1	
2375	Oriental	1½@1.45	
2915	Phil Sheridan	1½@1	
300	Paradise	2	
500	Queen	60c	
30	Raymond & Ely	5½	
300	Red Cloud	1½	
200	Rough & Ready	2½	
150	Rustler	1	
1525	Richer	1½	
50	S Xavier	1	
435	S Standard	60@55c	
500	Silver Prize	10c	
150	Star	70@75c	
700	S Bodie	80@70c	
370	Scorpion	6	
100	Solid Silver	2.15@2.20	
1100	St Louis	80c	
450	Trojan	25c	
850	Tiptop	1½	
1015	Tioga Con	2½@2	
100	Tuscarora	10c	
60	Vermont	6½@6	
100	Woodville	80c	
175	Ward	1½@1.60	
200	Wells Fargo	50c	

Saturday A. M., Oct. 19.

230	Alpha	14½@14½	
1395	Alta	14½@15	
250	Argenta	7½@7¼	
500	Alhion	3	
1770	Bullion	11½@11½	
640	Best & Belcher	23½@23½	
555	Belcher	8½@8½	
650	Belmont	3½@3½	
270	Bodie	18½@19	
200	Baltimore Con	2½@3	
620	Bulwer	17@17½	
50	Bechtel	1.40	
1135	Con Virginia	12½@13	
470	California	12½@12½	
65	Confidence	11@11½	
380	Chollar	59@57	
225	Crown Point	9½@9½	
850	Caledonia	5@5½	
3235	Con Imperial	1½@1.30	
140	Challenge	2	
260	Day	30c	
730	Exchequer	6@5½	
200	Endowment	90c	
470	Eureka Con	41½@40½	
1580	Gould & Curry	16½@16¾	
2535	Grand Prize	6@6½	
250	Gila	40c	
300	Hussey	35@30c	
700	H & Norcross	23½@24	
100	Hillside	4	
200	Highbridge	2	
250	Independence	3.15	
515	Justice	9@8½	
705	Julia	7	
95	Jackson	9@9½	
60	Kentuck	6	
1430	L Bryan	2@1.95	
1615	Mexican	61@60	
130	Manhattan	4	
400	Navajo	70c	
100	New York	1.80	
155	Northern Belle	9½@10	
1485	Ophir	49½@50	
1645	Overman	24½@26	
200	Occidental	75c	
1270	Phil Sheridan	1½@1.30	
100	Paradise	1½	
500	Red Cloud	2½@2.70	
165	Raymond & E	5½@5½	
995	Savage	20½@20½	
390	Succor	1.30@1½	
340	Sierra Nevada	173@174½	
510	Silver Hill	2½@2.70	
400	Senator	50c	
200	Silver Prize	10c	
140	Star	75c	
100	Tuscarora	10c	
460	Tioga Con	2	
590	Union Con	155@153	
185	Utah	30@31½	
1000	Yellow Jacket	24@23½	

Monday A. M., Oct. 21.

740	Alta	13@12½	
50	Alpha	13½	
915	Best & Belcher	22@21½	
465	Belcher	8@8½	
630	Bullion	11½@11½	
205	California	12½	
1240	Con Virginia	12½	
120	Chollar	55@54	
775	Crown Point	9½@9¾	
1300	Con Imperial	1½@1.2	
210	Confidence	9¼@10	
1075	Caledonia	5½	
475	Exchequer	6½	
1195	Gould & Curry	15½@14½	
1395	Hale & Nor	21½@20	
150	Justice	8½@8	
1205	Julia	6½	
210	Kcutuck	6	
600	Lady Bryan	2@2.1	
2187	Mexican	57½	
905	Ophir	47@47½	
20	Overman	27@27	
1965	Savage	19½@20½	
730	Sierra Nevada	168@171½	
40	Seg Belcher	3½	
230	Succor	1.65@1.60	
100	Utah	2@30	
770	Union Con	151@148½	
2945	Yellow Jacket	22@21½	

AFTERNOON SESSION.

300	Atlantic	85c	
400	Andes	80@85c	
2395	Argenta	7½@8	
50	Aurora T	1	
215	Bodie	19@19½	
485	Bulwer	16½@16	
50	Bechtel	1.35@1.30	
650	Black Hawk	2	
920	Booker	1½@1.10	
250	Belle Isle	30c	
585	Benton	7½@8½	
1830	Baltimore Con	3½@2½	
230	Con Washoe	2½	
300	Challenge	1½@1.60	
700	C Pacific	2½	
1400	Columbia	1.05	
555	Day	50c	
850	DeFrees	15@20c	
50	Dehorate	5@10c	
210	Eureka Con	39½@39½	
980	Endowment	80@85c	
175	Fairfax	4½	
1970	Grand Prize	6½@6¾	
150	Gila	40c	
300	Goodshaw	85c	
200	Golden Chariot	1½	
930	Hussey	30c@35c	
515	Hillside	4	
555	Highbridge	2@1½	
1250	Independence	3@2.80	
50	Ida	75c	
200	Jefferson	2	
20	Jackson	9	
385	Kossuth	35@30c	
200	Lady Wash	2½	
335	Leopard	1.60@1.70	
620	Modoc	50@55c	
320	Manhattan	3½@4	
1060	Mono	4.15@4	
565	Martin White	9½@10	
200	Meadow Valley	40c	
100	McClinton	65c	
300	Margarita	1½	
235	Northern Belle	10½@10	
500	Navajo	75c	
75	N Con Virginia	7	
150	N Sierra Nevada	30@35c	
200	New York	1½	
320	N Bonanza	75@70c	
1800	Oriental	1½@1.20	
1620	Phil Sheridan	1½@1.10	
600	Paradise	1½@90c	
1000	Phenix	3½	
105	Raymond & Ely	5½	
150	Richer	1½	
470	Riquiza	2.20	
800	Santa Mina	90c	
220	Solid Silver	2.10	
25	St Louis	90c	
95	Scorpion	6@5½	
530	Silver Hill	2½@2.70	
150	Senator	75@50c	
400	S Bodie	70@60c	
50	Summit	1.90	
50	Star	75c	
410	Tiptop	1½@1.40	
500	Tuscarora	5c	
850	Tioga Con	2½@2½	
1540	Trojan	25c	
145	Vermont Con	5½@6	
200	Woodville	50c	
1345	Bullion	11½@11½	
400	Belmore Con	3	
1630	California	12½@11½	
1680	Con Virginia	12@11½	
1270	Con Imperial	1.20	
670	Caledonia	5½@5	
860	Crown Point	9½@9	
100	Confidence	10@9¾	
330	Exchequer	5½@5¾	
380	Gould & Curry	15@15¾	
605	Hale & Nor	20½@20	
835	Justice	8½@8	
1100	Julia	6½@6	
695	Lady Bryan	2.30@2	
2.65	Mexican	56@57	
105	New York	1.90	
1725	Ophir	46@43½	
1000	Overman	29½@29½	
1465	Phil Sheridan	1@1.20	
3 0	Sierra Nevada	165@164	
360	Silver Hill	2.65@2½	
780	Savage	20@19½	
150	Senator	50c	
830	Union Con	149@150	
10	Utah	27½	
915	Yellow Jacket	21@22½	

AFTERNOON SESSION.

500	Atlantic	85@90c	
1395	Andes	80c	
439	Argenta	8½@8¾	
245	Aurora T	1½@1.20	
265	Benton	6½@6¾	
545	Belmont	3½	
450	Bechtel	1	
1100	Black Hawk	2	
270	Bulwer	15½@14½	
170	Bodie	19	
1380	Booker	1½@1.10	
290	Belle Isle	40@35c	
225	Belvidere	1½	
920	C Pacific	2½@2	
200	Columbia	1½@1.15	
100	Con Donado	1	
750	Con Washoe	2½	
950	DeFrees	20c	
200	Day	65c	
725	Eureka Con	36@34½	
1350	Endowment	75@70c	
45	Fairfax	4½@4¾	
275	Gila	30@40c	
1235	Grand Prize	6½@6¾	
1000	Golden Chariot	35c	
1135	Goodshaw	90@85c	
50	Hillside	3½	
850	Highbridge	1.80@1.70	
1195	Hussey	30@35c	
100	Hamburg	2	
1255	Independence	2.80@2.85	
130	Jackson	8	
10	Jefferson	2	
50	Leopard	80c	
950	Leviathan	95c@1	
640	Leeds	1½@1½	
100	Lady Wash	2½	
90	M White	10	
595	Mono	4½@4	
100	Manhattan	3½	
340	Modoc	55@60c	
10	McClinton	6c	
20	May Belle	35c	
510	Margarita	1.10@1	
290	Northern Belle	11@10½	
550	Navajo	70@50c	
75	N Bonanza	75c	
40	North Con Virginia	7	
100	N Ophir	40c	
2035	Occidental	95c@1	
300	Oriental	3	
230	Orig Gold Hill	60c	
250	Paradise	1½	
410	Raymond & Ely	5½@5¾	
650	Richer	1½	
200	Rustler	1	
100	Rough & Ready	2½	
350	St Louis	50c	
1000	Silver Prize	10c	
2.0	Silver King	60c	
230	Summit	1.90	
375	S Bodie	70@65c	
250	S Standard	55@50c	
300	S Bulwer	1½	
15	Silver King	17	
140	Scorpion	6@5¾	
190	Tiptop	1.40@1½	
400	Trojan	25@30c	
190	Tioga Con	2½@2	
95	Vermont Con	6@5¾	
565	Ward	1½@1.55	

Wednesday A. M., Oct. 23.

405	Alta	13½@13¾	
95	Alpha	15	
980	Best & Belcher	24½@25½	
270	Baltimore Con	2.90@3	
1200	Bullion	11½@12	
520	Belcher	8½	
860	Caledonia	5@5½	
655	Con Imperial	1.30@1½	
345	California	12½@11½	
1415	Con Virginia	11½@12	
185	Confidence	10½@10¾	
485	Chollar	54@52	
1265	Crown Point	10½@10½	
1295	Exchequer	5½@5¾	
2195	Gould & Curry	17½@18	
1630	Hale & Nor	25½@24½	
1415	Justice	8½@8¾	
330	Julia	6½@6¾	
660	Kentuck	7@7½	
775	L Bryan	2@3.10	
20 0	Mexican	56@58½	
1155	Ophir	45½@46½	
2240	Savage	26@25	
505	Sierra Nevada	165@161	
5	Succor	1½	
430	Silver Hill	2½@3	
610	Union Con	145@144	
130	Utah	23@28	
650	Yellow Jacket	23@23½	

AFTERNOON SESSION.

170	Andes	75c	
280	Argenta	8½@8¾	
100	Aurora T	1.10	
315	Benton	7	
760	Bechtel	1.20@1½	
430	Bodie	19@18½	
630	Booker	1½@1.15	
350	Bullwer	14½@14½	
450	Black Hawk	1.05@1	
375	Con Washoe	2½	
280	Challenge	1.80	
100	Con Donado	1	
1100	Columbia	1.15@1.10	
900	C Pacific	2½@2¾	
200	Columbia	1.05	
75	Dudley	1.40	
150	DeFrees	15@10c	
200	Day	75@80c	
470	Eureka Con	34½	
2560	Endowment	75@60c	
1545	Fairfax	4½@4.20	
200	Gila	35@40c	
1000	Goldchar	80@85c	
230	Hussey	30c	
125	Hamburg	1@2	
175	Hillside	4	
100	Highbridge	1.60	
1150	Independence	1.95@2½	
75	Jackson	10@9	
180	Kossuth	25@30c	
235	Leopard	1.40	
540	Leeds	1½@1½	
200	Lady Wash	2½	
450	Leviathan	85c	
10	Martin White	10	
100	Meadow Valley	30c	

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in Mining and Scientific Press and other S. F. Journa ls

ASSESSMENTS—STOCKS ON THE LISTS OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business
Andes S M Co	Nevada	11	25	Oct 1	Nov 8	Nov 30	M Landers	309 Montgomery st
Argenta M Co	Nevada	3	25	Sept 7	Oct 11	Nov 1	R H Brown	327 Pine st
Belcher S M Co	Nevada	16	1 00	Oct 8	Nov 12	Dec 3	J Crockett	203 Bush st
Crown Point G & S M Co	Nevada	35	1 00	Sept 13	Oct 23	Nov 13	James Newlands	203 Bush st
Chollar Potosi M Co	Nevada	15	5 00	Sept 5	Oct 8	Oct 29	W E Dean	203 Bush st
Con Imperial M Co	Nevada	7	20	Sept 12	Oct 17	Nov 7	W E Dean	203 Bush st
Caledonia S M Co	Nevada	24	50	Sept 16	Oct 21	Nov 11	R Wegener	414 California st
Day S M Co	Nevada	2	25	Sept 19	Oct 22	Nov 18	J W Few	310 Pine st
Europa M Co	Nevada	7	06	Sept 26	Oct 28	Nov 25	J L Fields	240 Montgomery st
Gila Con M Co	Arizona	3	03	Oct 17	Nov 18	Dec 10	W J Pettigrew	419 California st
Gen Lee S M Co	Arizona	3	25	Oct 19	Dec 3	Dec 31	T E Atkinson	310 Pine st
Golden Chariot M Co	Idaho	23	25	Oct 9	Nov 11	Nov 23	J T McGeoghehan	318 Pine st
Hussey Con G & S M Co	Nevada	6	25	Oct 1	Nov 4	Nov 27	R H Brown	327 Pine st
Julia Con M Co	Nevada	6	1 00	Sept 6	Oct 11	Oct 30	A Noel	419 California st
K K Con M Co	Nevada		1 00	Sept 13	Oct 16	Nov7	B B Minor	309 Montgomery st
Leopard M Co	Nevada	8	50	Oct 15	Nov 19	Dec 11	R H Brown	327 Pine st
McCrackin Con M Co	Arizona	2	50	Oct 22	Dec 6	Jan 6	H Aug Whitiug	211 Sansome st
Manhattan S M Co	Nevada	1	1 00	Oct 12	Nov 15	Dec 5	J Crockett	203 Bush st
Nevada S M Co	Nevada	56	3 00	Sept 27	Oct 30	Nov 17	Dec 18	W W Stetson	309 Montgomery st
Overman S M Co	Nevada	42	3 00	Sept 5	Oct 10	Oct 30	G D Edwards	414 California st
Ophir S M Co	Nevada	33	1 00	Sept 10	Oct 15	Nov 4	C L McCoy	203 Bush st
Panther M Co	Nevada	9	10	Sept 12	Oct 17	Nov 7	J W Pew	310 Pine st
Real del Monte M Co	Nevada	4	1 00	Oct 15	Nov 25	Jan 6	C V D Hubbard	312 California st
Raymond & Ely M Co	Nevada	9		Sept 21	Nov 23	Dec 17	J W Few	310 Pine st
Savage M Co	Nevada	35	1 00	Sept 6	Oct 8	Oct 28	E E Holmes	309 Montgomery st
Succor M & M Co	Nevada	20	50	Oct 12	Nov 15	Dec 3	W H Watson	3.2 Montgomery st
Tioga Con M Co	California	3	20	Oct 10	Nov 13	Dec 3	W H Lent	327 Pine st
Utah S M Co	Nevada	22	1 00	Oct 15	Nov 20	Dec 9	G C Pratt	309 Montgomery st
Wells Fargo M Co	Nevada	11	50	Sept 11	Oct 14	Oct 31	W M Helman	309 California st
Yellow Jacket S M Co	Nevada	30	1 00	Sept 12	Oct 15	Nov 14	James Newlands	203 Bush st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Arizona-Utah G & S M Co	Arizona		03	Sept 10	Nov 9	Dec 14	O H Spencer	408 California st
Armand G & S M Co	California	1	25	Sept 24	Nov 4	Dec 2	J L Fields	240 Montgomery st
Carmelo Bay C M Co	California	1	10	Sept 24	Nov 2	Nov 21	A W Crane	636 Washington st
Colorado G & S M Co	Nevada	1	25	Oct 18	Nov 22	Dec 12	C E Wetmore	419 California st
Eagle S M & M Co	Nevada	10	15	Sept 7	Oct 15	Nov 5	R H Brown	327 Pine st
East Grand Prize M Co	Nevada	1	05	Sept 7	Oct 11	Oct 30	J W Pew	310 Pine st
Golden Gate Con H M Co	California	3	50	Sept 16	Oct 18	Nov 8	J T McGeogheh

Pacific Board—Latest Sales.

Wed'sday A.M., Oct. 23.			
40	Alpha		.14¢
20	Alta		.13¢
300	Best & Belcher	.24¢@24¢	
250	Bullion	.11¢@11¢	
505	Belcher	.8¢@9	
165	California	.11¢@12	
700	Crown Point	.10¢@10¢	
530	Con Imperial		.1¢
170	Con Virginia		.12
55	Chollar	.62½@63¢	
20	Exchequer		.5¢
230	Gould & Curry	.17½@17¢	
120	Hale & Nor	.24¢@24	
375	Justice	.8¢@9	
30	Kentuck		.8¢
370	Mexican	.58¢@57¢	
160	Ophir	.47¢@46¢	
130	Overman		.27¢
305	Savage	.24¢@24¢	
30	Sierra Nevada	.162¢@163	
60	Union Con	.143¢@144	
155	Yellow Jacket	.23¢@23	
	AFTERNOON SESSION.		
615	Atlantic	.87¢@90¢	
150	Andes		.80¢
200	Belcher		.9¢@9¢
180	Bullion	.12¢@12¢	
10	Con Virginia		.12¢
30	Chollar		.¢
120	Con Imperial		.1.30
100	Con Dorado		.1
265	Crown Point	.10¢@11¢	
80	Exchequer		.5¢@6
10	Grand Prize		.7¢
210	Gould & Curry	.17¢@17¢	
20	Hale & Nor		.24¢
100	Justice		.8¢
100	Leopard		.1
450	Mackey		.2¢@2¢
40	Mexican	.57¢@57¢	
300	N Sierra Nevada		.15¢
20	Ophir		.46¢
80	Overman		.27¢@27¢
60	Phil Sheridan		.1.15
140	Savage		.24¢@25
55	Silver Hill		.2¢@2¢
500	S Utah		.15¢
450	Solid Silver		.2
40	Mexican	.57¢@57¢	
300	N Sierra Nevada		.15¢
20	Ophir		.46¢
20	Hale & Nor		.24¢
100	Justice		.8¢
100	Leopard		.1
450	Mackey		.2¢@2¢
40	Mexican		.57¢@57¢
80	Exchequer		.5¢@6
10	Grand Prize		.7¢
210	Gould & Curry	.17¢@17¢	
20	Hale & Nor		.24¢
100	Justice		.8¢
140	Savage		.24¢@25
55	Silver Hill		.2¢@2¢
500	S Utah		.15¢
450	Solid Silver		.2
300	N Sierra Nevada		.15¢
20	Ophir		.46¢
20	Hale & Nor		.24¢
60	Phil Sheridan		.1.15
100	Leopard		.1
140	Savage		.24¢@25
30	Sierra Nevada		.162¢@163
60	Union Con		.143¢@144
155	Yellow Jacket		.23¢@23
	AFTERNOON SESSION.		
615	Atlantic		.87¢@90¢
150	Andes		.80¢

California Board—Latest Sales.

Wed'sday A.M., Oct. 23.		
550	Atlantic	.85¢@90¢
150	Atlanta	.35¢
150	Alexander	.8½@8¾
200	Alpine	.5 c
450	Brilliant	.1@1.05
70	Belcher	.8¢@9¢
70	Best & Belcher	.23¢@23¾
80	Bullion	.12½@12¾
50	Caledonia	.5¾
70	California	.11¢@11¾
600	Con Imperial	.1¼@1.20
40	Con Virginia	.12½@12¾
240	Crown Point	.9¾@10¼
20	Chollar	.59
60	Exchequer	.5½@5¾
150	Fairfax	.4¾@4¾
120	Gould & Curry	.16¾@17¼
100	Goodshaw	.84¢@85
30	Hale & Norcross	.23¾@23¾
80	Julia	.6¼@6¾
20	Justice	.9¼
500	Lee	.35¢
125	J. Bryan	.2¼
50	Mexican	.56½@57¼
300	Mackey	.1¾
400	Mansfield	.31¢
200	Monumental	.7¢
800	Mint	.25¢
600	N Sierra Nevada	.18¢@11¢
50	Ophir	.47¢@46¾
120	Phil Sheridan	.1.10
250	Pacific	.12¼¢
200	Prospect	.37¼¢
80	Savage	.26¼@24¾
200	Spaulding	.2¢
30	Sierra Nevada	.165¢@170
300	Silver Jacket	.1.55
150	Trojan	.25¢
300	Twin Peaks	.8¢
150	Treasou	.5
20	Union	.149
400	Union Flag	.15¢
120	Wells Fargo	.55¢
20	Yellow Jacket	.22¾
	AFTERNOON SESSION.	
200	Almaden Q	.71
350	Atlanta	.35¢
20	Anies	.80¢
300	Atlantic	.90¢
110	Alexander	.8¾
30	Alpha	.14¢@14¢
30	Best & Belcher	.24¢@23¾
40	Belcher	.8¢@8¾
40	Bullion	.12¼@12¾
60	Crown Point	.10¢
50	Caledonia	.5¾
50	California	.11¾@12
50	Con Virginia	.12¼@12¾
100	Con Imperial	.1¼@1.30
1100	Coso Con	.35¢@50¢
165	Exchequer	.5¼@6¢
100	Endowment	.75¢
40	Gould & Curry	.16¾@16¾
100	Goodshaw	.85¢
40	Hale & Nor	.23¾@23¾
90	Julia	.6¾@6¾
90	Justice	.9¢@8¾
1900	Lee	.40¢@50¢
30	Mexican	.57¼@57¾
50	Monumental	.7¢@11¢
1600	N Sierra Nevada	.11¢
30	Ophir	.45¼
120	Phil Sheridan	.1.15
150	Silver Prize	.10¢
200	Santiago	.1¼
450	Solid Silver	.2
40	Sierra Nevada	.162¢@163¾
150	Spaulding	.2
900	Twin Peaks	.8¢
2050	Trenton	.6¼@7
30	Union Con	.145¢@146
30	Yellow Jacket	.22¼@22¾

Mining Share Market.

A few weeks ago it was the regular habit of the stock market to have dcclinc towards the end of each week, from a rise at the begiuning. This scemed to be based upon sucb reasonable grounds—a desire among business men to wind up accounts towards the end of each little period—that it is rather snrprising to see a directly opposite tendency now. As the week draws to a close now the market becomes more lively.

The crosscutting so long promised seems almost as far off as ever, and it is tiresome to see tbo patience with which some papers repeat, and repeat again their prophecies. The market has hung for a long time on Sierra Nevada and Union Con. Bad news came from these mines, and showing a disposition to rise all along the line, when strikes were reported, or when conciliatory movements between Skae and Flood have been rnmored, as was the casc tbis week. It is now urged, as should have been done long ago by those wbose dnty it is to "point" the market, that more attention should he turned to the south and middle Comstock. All stockdom could not live on a few hundred feet of the lode, even if other places had no promise whatever.

Nevertheless, the dependence of all the stocks upon the condition of a very few mines continues, as is proved by tho following from tho Gold Hill *News:* "The stock market for the past week has been wavcring and unsteady. For this there have been two causcs; one of which was the doubt engendered as to whether the Ophir and Sierra Nevada would bc able to successfully handle their own and the Union Con. water, and the other a restless, nneasy feeling created by the disputed title to a portion of the new bonanza, both the Sierra Nevada and the Union Con. laying claim to it." The advice given is to have an eye nn Savage nr Gould & Curry, or some other on the Comstock. Our advice would bo: Havo an eye to eastern Nevada, Arizona, Idaho, Oregon and southern California, and the Comstock holders keep their shares.

MAP OF BODIE.—We have received from the publisher, L. J. Lewis, 424 Montgomery street, a lithographic map of Bodie mining district, oompiled from authentic surveys. It shows all the prominent points, locations of the various mines, etc. A tahle of routes and distances is also given: "From San Francisco to Carson, hy rail, 325 miles; from Carson to Bodie, by stage, 119 miles; total, 444 miles. From San Francisco to Milton, by rail, 119 miles; from Milton to Bodie, by stage, 150 miles; total, 269 miles. From Aurora to Bodie it is 19 miles, and from Bridgeport to Bodie it is 20 miles. The altitude of the town is 8,700 feet above sea level, and that of Bodie Bluff, 9,400 feet. There are three quartz mills in Bodie, having 46 stamps."

Mining Summary.

The following is mostly condensed from journals published in the Interior, in proximity to the mines mentioned.

CALIFORNIA.

AMADOR.

BETTER AND BETTER.—*Ledger*, Oct. 10: Favorahle reports coutinuo concerning the Downs mino. Another clean-up was made last Monday. The rnu amonnted to 68 tons of rock, and ths yield reached the gratifying sum nf $3,100, over $45 per ton; the best run yet made. For mining, hauling and milling the expanses reach about $10 por ton. Tho ore for the last run was taken from tho shaft, but that in the tunnel looks even richer, and will, at a low estimate, surrender $60 per ton. The eugins for the hoisting works is on the ground and will bs put in positiou Monday. The hoiler will also be on haud in a few days. S. Breece, of Sutter Crock, has charge of tho erection of the hoisting works.

CENTENNIAL.—The 20-stamp mill is expected to be started up within the next two weeks. Sinking has attained 330 feet deep, with a four-foot ledge in the hottom of the shaft. Thcrs is ore enough on the dump to keep the mill running 60 or 70 days. There ars 13 men at present in the employ of the company. When the mill gets started ths company will give steady work to ahont 30 hands.

OTHER MINES.—Along ths Consnmnes river prospecting is proceeding hriskly. R. Sumner & Co.'s gravel hank is turning out well. Thsy have expended in the neighborhood of $2,000 in fixing up for hydraulicing. For the last two months they have been making inroads npon the auriferous bank, and are sanguins that a splendid clean-up awaits them. . Several other gravel claims are paying well. Some rich pockets or crevices in the river bed are being found. One of these crevices lately panned out $3,000. The Empire mine at Enterprise, has commenced operations. Both mine and mill are running by steam. Rumor has it that other mines thereabouts will start hefore long.

ITEMS.—The marble from H. L. Joy's newly discovered quarry near Slahtown proves capahle of recciving fine polish. The Montirichard company are sinking their shaft an additional 100 feet. The Moore hoisting works are making rapid headway. The contract for the supply of lumher for the mill, to the extent of 42,000 feet, has heen let to Mace and Whitmore, and part of the material is already on the gronnd.

BUTTE.

REVIVAL IN MINING.—*Record*, Oct. 19: There is much talk of reviving mining operations on the Dogtown ridge. The introduction of water, which will soon take place on the bank deposits of gravel along Butte creek, will revive the old-time glory and splendor of Butte creek. Some of the former claims on the ridge between the West Branch of the Feather river and Butte creek are being re-opened and prospected, among them the old Barret claim and others, that were found rich in mineral deposits years ago. The fact is, these claims were all successfully worked until the discovery of mines in Nevada, Idaho and Montana, and were ahandoned by men and capital for new ventures in fields east of the Sierras. If there is no positive reaction now, in favor of the mines of this section, attention is being attracted to them, and it will not be long until the whole section watered by Butte creek and the West Branch will he as successfully worked as in former years. The gravel mines on the hill above Oroville are again attracting attention, from the fact that William Gilston is taking out large sums daily, from a claim that he has opened.

NOT YET WORKED OUT.—Oroville *Mercury*, Oct. 18: It has been a nnmber of years since the lava beds below town have been mined, but they have not yet been worked out. We learn that there arc six engines and about 2,000 Chinamen at work taking out gold. One claim working 25 men takes ont $400 each week; and another, owned by Fong Lee, and worked by 20 men, takes out $600 each week. There is not less than $25,000 taken out each month and sent to the mint below. The mines support qnite a village and makes a pretty good market for wood, poles, hogs, chickens, hay and grain.

EL DORADO.

KELSEY.—Placerville *Democrat*, Oct. 19: The Gold Deposit tunnel was driven ahead ten feet last week, and is still looking as favorahle as heretofore. The air shaft was sunk several feet, and now the workmen in the tunnel and shaft can hear each other quite plainly althongh they are yet thirty feet apart. The water in the main shaft will probahly be got out hy tomorrow night; then the work will be carried on night and day. Everything is life and activity in and about the mine, and general good feeling prevails. A report of a rich strike some six miles east of St. Lawrenceburg, needs confirmation. The rock from the soap mine of Alderman & Co., has been tested by a number of parties, and they all agree that it is one of the hest dotersive agents known.

MONO.

GENERAL REVIEW.—Bodie *Standard*, Oct. 16: Strikes and rumors of strikes have been the order of the week past, and our mining men are proportionately encouraged by the ontlook. Wherever a mine is located the owners are eagerly at work making preparations for the advent of the much-dreaded and long-expected winter months, so as to be ready to work under cover, regardless of the sleet and snow, which may bowl and hlow outside. Our superintendents, without exception, deserve praise for the energetic manner with which they have pushed work forward on their various mines, and, had it not been for the failure on the part of lumber dealers to fill contracts made, would now have heen in complete condition to defy the weather. The snow of Monday was rather a blessing than otherwise, as it served to lay the dust and pack the roads leading thitherward, thus rendering navigation more speedy and reliable. During ths week tho Mono, Booker, Goodshaw, and other mines, whose names escaps us at this writing, have received their engines and erected gallows-frames, etc., and are now either working by steam or soon will be.

BULWER.—The Ralston ledge in the south drift is 15 inches wide. The ledge in the winze is 18 inches wide, and is looking well. The Stonewall stopes are yielding the usual amount of rich ore.

MCCLINTON.—The ledgs in the bottom of the incline is still looking well, and is three feet wide of good milling ors.

IDA.—The ledge in the bottom of ths incline is two feet wide, and a marked improvement has been noticsahle in the last few days in the character of the ore. Assays have been made, resulting in returns of from $10 to $279 per ton.

QUEEN BEE.—The shaft is being enlarged and timhered rapidly. Work on the gallows frame and new hoisting works will bs commenced Wednesday forenoon. The new engine and machinery is on the way between hsre and Carson.

CHAMPION.—A station has been cut out at 250 fest, and crosscuts ars being run east and west, and at the same time work is continued in the shaft. In the west crosscut a fins four-foot ledge has been cut. Everything about the mine is in perfect order, and wood and timbers are being laid in for winter.

BODIE CHIEF.—A very fine ledge of pay ore has been followed for the past 10 days in the new shaft. The mine never looked as well as now, and is one of the best on Bodie bluff.

UNIVERSITY.—The shaft is down 115 feet, with a three-foot ledge of good ore in the hottom. Cribbing is about to be commenced, and drifts will be run on the vein. Ore will thereafter be taken ont steadily.

SANTA MINA.—Sinking the new shaft. The work is being pnshed forward rapidly. A fine ledge of two feet six inches is now in the bottom of the shaft. Indications of fiue ore bodies.

STAR OF BODIE.—In the Star of Bodie a fine ledge was struck in the claim a few days since. Width, two feet at a depth of 30 feet, and widening rapidly. This is the first large ledge discovered on Silver hill. The mine will be worked all winter, and will he incorporated at once.

HUMBOLDT.—The shaft is now down 150 feet, and crosscuts are being run east and west from the hottom. Water has heen struck in considerable qnantities in the west crosscut, and appearances indicate the approach of a ledge. The mine is looking well.

HIBERNIA.—Located on Silver hill, immediately west from the Relief Con. and east from the South Bodie, is situated the Hibernia mine. The work of development has been done hy a shaft, sunk 300 feet from the northerly bonndary in the center of the claim, and has now attained a depth of 50 feet. Forty-seven feet from the surface a foot-wall, which extends thr ugh the hill from one end to the otber as far as explored, was encountered aud the work done has resulted in disclosing a vein of gold-bearing quartz four feet in width. Experiments with the horn have revealed gold in quantities sufficient to make the ore mill from $100 to $500 per ton. Work will be commenced on this mine as soon as the necessary arrangements are completed and but a few weeks will be required to show up a large and valuable pay vein. Captain White has the reputation of being a correct and energetic hnsiness man, and, aided by the reports in his possession, from competent mining experts, cannot fail to make a success of his intended enterprise.

BEACONSFIELD.—This promising mine is situated on Bodie blnff, adjoining the Rough and Ready on the east and the original Summit on the west, and is an extension of the McClinton mine. G. E. Smith, of this place, is now bclow engaged in preparations for incorporating the mine. The work already done consists of a perpendicnlar shaft 62 feet deep, which, in its descent, shows stringers of quartz, widening out as depth is attained.

NEVADA.

DERBEC.—*Herald*, Oct. 19: About 40 tons of gravel is taken out per day at present, and the quantity is increasing as the mine becomes opened. Tho gravel yields from $6.50 to $13.50 per ton, and the general appearance of the mine does not change, but continnes to present the rich breasts, which more than met expectations at its opening.

ITEMS.—The Scadden Flat have purchased the hoisting works, huildiug and the engine bed blocks, of the Eureka company. They found both in good condition, and obtained a good bargain in tho purchase.

Very rich gravel bas been found in the Schultz mine on the Greenhorn, two miles from Banner mountain.

Work is being pushed in the Lincoln mine, on Little Deer creek; the ledge shows well.

The ledge in the Hudson incline, now down 113 feet, is six feet wide and increasing in richness. The ledge contains gold, silver snd rich sulphnrets.

The Eureka Lake compauy ars engaged in digging au sxtension to their upper ditch, so as to carry more wster to the Woolsey Flat mines.

ORIENTAL MINE.—Nevada City *Transcript*, Oct. 15: Mr. Blanding, who was for three years Superintendeut of the Ophir, on the Comstock, snd at present owns two mills in San Francisco, says tbs value of the mine consists in the fact that it presents four distinct sources of profit, viz: First, rock heavily charged with extraordinarily coarsc free gold; secoud, the fabulously rich arsenical pyrites, going into the thousands and tens of thousands of dollars in valus; third, the averags ore proper, yielding from $15 to $20 per ton; fourth, the ordinary sulphurets, amounting to about seven per cent., and yielding from $60 to $90 per ton. The ledge runs east and west, dipping to the northeast, and has an avsrage width of between 3½ and 4 fect.

SAVAGE PLACER MINE.—Virginia City *Enterprise*, Oct. 18: Stockholders of the Savage placer mining company, Sierra county, California, the majority of whom are residents of the Comstock, will be glad to learn thst all is going on in good shape at the mine. S. V. Mooney, of the Consolidated Virginia assay office, who returned from a visit to the mine two or three days sgo, says all is in shape there for a good winter's work. Two substantial and comfortable buildings have been srected, one as a boarding and lodging-honse for the workmen and the other for storing supplies. The storshouse is filled with provisions and mining supplies, a contract for running the tunnel has heen let and the contractors are hard at work and making good headway. The men who have the contract ars miners from the famous gold quartz mine at the Dowuisville Buttes, and thoroughly understand their husiness. It is expected that the tunnel will reach the ancient river channel for which it is being run some tims this winter and certainly next spring. The tunnel will tap the blue lead at a point opposite the head of Jim Crow canyon, which canyon, as all old Downieville miners know, was one of the richest in Sierra county. The example set by the Savage placer might well be followed by other companies, to be formed here and elsewhere, to prospect famous localities in California. They find that an occassional assessment of three cents per share produces all the money reqnired for keeping prospecting operations in full hlast. Previous to starting the tunnel they sunk a shaft on their gronnd and ascertained the whereahouts of the channel, (striking the edge of it, as was known hy the deposit of ancient drift-wood encountered) and, though it was necessary to purchase and set up an engine for this work, no assessment has ever exceeded three cents on the 100,000 shares.

PLACER.

A GOOD MINE.—*Herald*, Oct. 19: Considerable attention is now paid hy knowing ones, to developments made recently in the Rock Creek mine, owned by Messrs. Molin & Heenan. These gentlemen started in on a ledge running parallel with the old Calf Pasture ledge, on Rock creek, and worked steadily during last season with very flattering prospects for a permanent mine. Their machinery, which then consisted of a modern slip whim, driven hy horse power, being too slow for the profitable prosecntion of the work after the rainy sesson set in, they concluded to prepare for enlarged facilities for working their mine to better advantage. Accordiugly they erected a good snbstantial 22-foot water wheel for pumping and hoisting purposes, they cnt, hewed and hauled the timbers necessary for such an enterprise, dug their excavations, hauled their lumber from the mill, and with the exception of tbe assistance of one carpenter, done all their own work until ready to mine. Since commencing to take out quartz they employ several men, and their rock has averaged $30 per ton. They have crushed all quartz taken out from the top down to a depth of 90 feet, their ledge averaging two feet in thickness. This company has paid for its improvements, sinking the shaft and timbering to the depth of 95 feet, and running levels for a thorough opening, out of the proceeds of the mine. We understand that the extension of this mine was recently located by a party from Auburn and vicinity.

ITEMS.—A stone quarry recently opened in the vicinity of Lincoln is producing a fine quality of granite. A party of prospectors have discovered a new mining location on the Middle Fork of the American river, six miles from Soda springs. They commenced work upon it last August and have been at work ever since, but have now ceased for the winter.

SHASTA.

COPPER CITY.—Reading *Independent*, Oct. 17: The mining outlook continues very prosperous for this district, and every foot they go deeper on the ledges shows more positive proof that they are well defined and true lissure veins. The Extra company continue to make their regular shipments of hullion, and Mr. Crane is making the necessary arrangements to keep the mill running all winter regardless of the heavy rains which we are snre to have.

MR. SALEE has connected the tunnel in the Potter mine with the shaft, and has a chute in, so that he can run the ore out in a car instead of hoisting the ore to the snrface by windlass, and the ore of the mine can now he laid on the dnmp at as little cost as any mine in the State, as the ledge is about eight feet wide and of such a character that no blasting is required to remove the ore.

Continued on page 268.

The Mines and the Courts.

Ores Unlawfully Extracted.

The Supreme Court of Nevada has decided, in the case of Waters vs. Stevenson, action to recover damages for the conversion of ore, that plaintiff in an action to recover damages for ores unlawfully extracted from his mines, is only entitled to recover full compensation, to-wit: The value of the ore in place, as it lay in the mine befors beiug converted. The defendant admitted in his answer, and at the trial, that he converted to his own use a certain number of tons of metalliferous ore containing gold and silver; but he denied that he did it willfully or intentionally, and alleged that his entry upon ths mining claim was the result of inadvertence and mistake, under the *bona fide* belief that he was mining within the boundaries of his own adjoining mine. The verdict of the jury was in favor of the defendant's alleged *bona fides*. The District Court held, and so instructed the jury, that if the defendant, hy mistake, and not willfully or wrongfully extracted ores from the mine, plaintiff should recover their gross yield, less the necessary expense of assorting, transporting, hoisting, hauling, milling, and all other expense after tbe ore was picked down in the mine. The defendant requested the Court to instruct the jury to include in his expense the amount per ton which the lessee, by his agreement, was ohliged to pay plaintiff for the privilege of extracting ores, bnt this instruction was refused. The Supreme Court says that the Court erred in refusing to allow defendant to prove the necessary cost of mining the ores in question, and for this error the jndgmsnt was reversed.

Trespass in El Dorado County.

Samuel Snow vs. Michael Kimmer *et al.* Action first commenced on January 22d, 1877, in which plaiutiff claimed that, being owner in fee of a certain 160 acres of agricultural land in El Dorado county, by purchase from the United States, in 1871, the defendants who wsre working a mining claim, called the "Northern Light mining claim," on an adjoining section, had run their tunnel iuto and under one of his forties, towards and near to a spring of water, which he had procured by making a tunnel of 60 feet at much expense, and decreasing its flow, and endangering its continuance, and he claimed damages $300.

Defendants claim a prior mining right on the land dating back over 10 years, as a continuation of their mining claim, and that the plaintiff desiring to pre-empt the certain 40 acres, with other lands, made a verbal agreement with them that if they would not oppose him in ths pre-emption, he would, upon securing a patent thereto, at once convey to them all the gravel on the bedrock of the claim; and they, acting in good faith, did not oppose his pre-emption, and have since run their tunnel as heretofore, and with his full knowledge and consent till May, 1876, for 498 feet through the bedrock st an expense of over $3,000. Had been in such adverse possession for over five years, and now pray for judgment that plaintiff be *required* to convey to them that part of the claim within the 40 acres in question.

The plaintiff demurred but was overruled, and judgment was given for defendant. On appeal the judgment was affirmed. But the Supreme Court reverses the judgment and remands the cause.

Other Cases.

J. W. Tripp, a stockholder in the Joe Scates M. Co., sues the company to obtain examination of hooks and papers, and for an accounting.

J. C. Lennon served the South Comstock M. Co. for five months in the capacity of superintendent. His claim of $969, for services, he assigned to M. Seligman, who has recovered $862.

In the Twenty-third District Court, Henry C. Swain has commenced procesdings for an injunction against the officers of the Joe Scates Con. M. Co., to restrain the voting of csrtain alleged illegal transfer of stock at a meeting of stockholders. It is said that the co-defendants are trustees of ths company, but have never mst to form a quorum, notwithstanding that at their insufficient meetings they voted shares to J. W. Tripp, which made him to appsar the owner of 31,069, when in fact he is not entitled to more than 10,000. Tripp was President of the company and used his influence, as it is allsged, with the Secretary, to have improper entries made in the books.

Lower California.—The San Diego *Union* says: We were shown yesterday by D. O. McCarthy, who returned from a trip to Lower California last week, eome rich specimens of valuable minerals from one of the most remarkable deposits on the Pacific coast. These specimens comprise sulphur, alum, borax, horacite and cinnahar, all being found in the same district. The sulphur deposit is almost pure, the epecimen ehown us being over 95% pure sulpbur. The other minerals are also nearly pure, except the cinnabar, which is very rich. This district is on the Colorado Desert, in the Cocopab range of mountains, Lower California, and the deposits are within eight miles of tide water in "Hardy's Colorado," a branch of the Colorado river. A good natural road now exists between the river and the mines, and it can easily he made first-class. There is ahundant fuel on the ground. There can be no question but that these deposits are very valuable. The mines are owned hy Mr. McCarthy and other Sau Diego parties, who are preparing to put them in working shape.

Lixiviation versus Amalgamation.

W. T. Rickard, F. C. S., writes to the *Arizona Citizen*, enumerating the advantages of the lixiviation of silver ores over that possessed by amalgamation as carried on in Nevada, as follows:

1. The works cost little more than one-half the latter, and the machinery being much lighter, a considerahle saving is effected in freight.
2. The reduction of the silver is accomplished at one-third less expense.
3. There is no loss of mercury.
4. A much larger nercentage of silver is obtained from the ore.
5. Less than one-third the motive power is required and consequent.
6. Great saving in fuel where steam is employed.
7. Great saving in wear and tear of machinery, and less liahility to have recourse to the foundry and machins shops, involving heavy loss through delays and interruptions of work.
8. The silver produced is invariably of the finest quality.
9. When copper is present, as is the case with most of the ores of southern Arizona, it is obtained in a pure state as a by-product; in some cases in sufficient quantities to cover all the costs of reduction of the silver. On the other hand, in the amalgamation process, the copper is entirely lost or makes its appearance in the silver bullion, whose value it materially depreciates. It also has a most destructive effect on the iron amalgamating pans.

Another communication from Mr. Rickard ie now in order, explaining why the lixiviation process has proved a failure, or at any rate not a succees, in Utah, Nevada and California.

Refrigerator Shipments.—The *Iron Age* of New York city says: Our tonnage, which wae bnt 8,000 tons in 1876, is now 28,000 tons. This covers oystere, butter, fruit, eggs, canned goods, and a thousand and one other perishable articlee of food, the export trade of which is increasing enormonsly from year to year. If this thing keeps on it will not be long before America ie tbe butcher shop and grocery etore, as well the granary and manufactory of the world.

The Hairy Woodpecker.

The engraving on this page shows a pair of "hairy woodpeckers" (*Picus villosus*) common on this coast and widely distributed throughout the whole country. The birds are lively, noisy and fearless of men. In the South it may be seen at all seasons in orchards, among the trees of cities, along the borders of plantations, on the fences, on isolated fields, and in the densest forests. It is even found in the salt marshes at the mouth of the Mississippi, where a struggling cotton tree or willow affords an opportunity for the exercise of its skill in boring. In the Northern States it disappears at ths approach of winter and returns with the apple blossoms. In most parts of the Southern States it is quite familiar in winter, and comes boldly to the barnyard to glean its food.

In his report on the birds of the Northwest Dr. Coues notes two varieties of the hairy woodpecker; one *Picus villosus*, the other *P. Harrisii* and states that on this coast we have the latter, except in the upper region of the coast, where ths trend of the Rocky mountain range toward the northwest brings in the Eastern variety in Alaska. The habitat of the *P. Harrisii* extends westward from ths Rocky mountains to the Pacific. Specimens found in New Mexico and southern California ars slightly smaller than those of Washington Territory, but not notice ably so. The chief distinction between the two varieties of the hairy woodpecker is in the color of the wing-coverts. The wing-coverte of the *P. villosus* are profusely white spotted; those of the *P. Harrisii* being scarcely or not epotte with white.

THE HAIRY WOODPECKER.—(Picus Villosus)

Certified assay from the Alpha mine, Lake district, Mono, givee $301.08 eilver and $27.62 gold.

The West Indian insurrection is reported qnelled. Labor contracts caused the trouble.

The Mexican "Zona Liboa" is not abolished as was a short while ago reported.

A Bodie miner, grading for a cabin, has etruck a fine ledge of gold-hearing quartz.

Nearly 4,000,000 salmon egge were ehipped East on the 7th inst.

The Engineer.

Models for River Improvement.

According to a description which we read in the *American Manufacturer*, there is a most interesting display of models for the improvsment of ths Ohio river at the Pittsburg exposition. A wooden flums or canal has been built by ths exposition authorities, and supplied with a large stream of water from a steam pump. This canal, intended to represent the Ohio river, is used by the inventors and exhibitors of the working models to demonstrate the method of opsrating their various designs.

Mr. Brunot exhibits two styles of movable dam, one suitable for the upper lock of a canal, or other location in which there is considerable difference in the level of water above and helow the dam, the other for the lower lock of a canal, or for the bed of a stream where tbere need be no diffsrence in level. Each dam consists of a floating water-tight box or caisson, which is raised to closs the dam by its own buoyancy when emptied of water and filled with air, and sunk to open the water way when filled with water. A chamber of masonry or other material underneath the dam receives it when sunk. The only difference between the two dams is in the method of the emptying of water to raise the dam. In the first the water is allowed to escape to the lower level through a valve; in the second, there being no lower level, the water is pumped out.

Lieutenant Mahan exhibits a model of the Chanoine wicket dam. The principle of the Chanoins system is that a nnmber of wooden wickets, four or more feet in width, and as many feet in hight as may be necessary, according to the depth of dam, are placed side by side across the channel to be dammed. Each wicket is hinged to a movable cast-iron hrace or trestls, which braces are hinged to the foundation at the bottom of the dam. The braces are so adjusted that by tripping them the wickets can be made to lie flat on the bottom of the stresm. They can bs raised by a hooked rod either from a boat designed for the purpose or from a movable trestle bridge.

Mr. Discher exhibits a movable dam which has some resemblance to an ordinary hinged canal lock gate. The gate, however, is a hollow watsr-tight box, floating when filled with air, and movahls, and rendered stationary when brought into position for closing the dam by being filled with water.

Mr. Parsons, Mr. Wood, Mr. Smith and Mr. Duhois exhihit movahle dams which are all somewhat similar in principle. In these the up-stream and down-stream faces of the dams are built of boards or other material, and are hinged together at the top, forming together. when raised to close the dam a very flat letter A. The bottom of the up-stream face slides along a foundation prepared to suit, to open the water way, till the A hecomes entirely flatteued out, and the two faces lie in a horizontal plane at the hottom of the stream. The plans differ in the method of moving the sliding face. Mr. Wood and Mr. Smith use different kinds of mechanical gearing, while Mr. Parsons uses a hydraulic cylinder, and Mr. Dubois utilizes the buoyancy of the two faces of the dams to raise thsm.

Mr. Thompson's movable dam is a curious device. It consists in a revolving semi-cyliuder, whose axis is at right angles to the line of the stream. It revolves in a semi-cylindrical chamber at the bottom of the stream. When the dam is raised the semi-cylinder is revolved till ths cylindrical portion rises out of its chamber, thus forming a dam; to lower it, it is revolved till the flat portion is uppermost and on a level with ths bottom of the stream.

A Railway up Mt. Vesuvius.—At last there is a prospect of the railway up Mt. Vesuvius hecoming a reality within a not very remote futnre. The carriages on the railway will bs drawn, not by a locomotive engine, hut by a wire rope. The line will be double. The rails will be laid on an iron framework supportsd by pillars, also of iron. The pillars will bs six meters (a little over six and one-half yards) apart. According to the rsport upon the plans, it appears that the length of the railway up the mountain will be almost 919 yards. The station near the summit will be nearly 460 yards higher than that at the foot of the mountain, which gives the very steep gradients of ons in two. Ths traffic will be carried on by eight carriages, each having room for four persons; thess will be so distrihnted that while four are engaged in making the ascent the remaining four will be descending the mountain. The carriagee will be kept nearly 230 yards apart from one another. To guard against accidents, each carriage will be fitted with two newly-patented automatic brakes, which, should the rope happen to break, will instantly etop the carriage. The wire rope will be previously tested by a strain equal to 64 times the weight of the carriages; and the whole machinery will be set in motion by two eteam-engines of 12 horse-power each.

Railroad Enterprise in Australia.—English mechanical papers are awake to the fact that Australia has ordered nearly 1,000 miles of new railway. The *Colliery Guardian* says: Thie is the boldest stroke yet attempted by any Australian minister in the interesting work of railway construction; and, as snch, it appears to us to be especially entitled to notice. We

may remark that the consolidated revenus of Victoria, for the year ending Juns 30th, 1878, amounted to £4,488,803, showing a decrease of £24,934, as compared with the year ending Juns 30th, 1877. Yet, so confident is Mr. Woods, the Victorian Minister of Railways, of the elasticity of Victorian resources, and of ths stimulns which railways are to give to their development, that he has mapped out for construction a network of about 900 miles of new line. Most of Mr. Woods' predecessors in office have been content to propose 200 or 300 miles of new line at a time, but Mr. Woods has shown himself more energetic, and, if not mors sagacious, at any rate more ambitious and more enterprising. It should ho remarked that the income derived in 1877–8 from the Victorian Government railways presented an iucrease of £124,188, as compared with 1876–7, the increase being obtained with 164 additional miles of line in operation. At this rate, the railways of Victoria are rapidly increasing in produetihility and, as ths capital required for ths coustruction of a Victorian Government lins can now he raised npon the security of Victorian Government debentures at the relatively cheap rate of 4½% per annum, the development of uew sections is a comparatively easy task.

A Chance for American Bridge Builders. Great activity ie just now being shown in the Austro-Hungarian empire in the prosecution of all kinds of puhlic works, and especially of thoso in any way relating to the extension of the railway system of the country. Among others there is talk of the construction of an iron hridge over the Drave at Eszeg, to replace the present ferry, at a cost of 800,000 fls., which would be carried ont partly hy the government and partly hy the Alfoeld and Flnme Railway Company, which is domiciled at Pesth. It is also proposod to replace hy iron hridges all the wooden bridgee on the line worked hy the Alfoeld and Flume Railway Company and the Kaschau and Oderhurg Railway Company, etc., and the construction of thc proposed lines of railway on the military horders of Croatia and Slavonia is to he offered for puhlic anction—in fact, according to *Herapath*, one line has already been adjudged.

The Grand Canal of China.—This canal is likely to share the fate of the great wall. This water-way was constructed hy Kuhlai-Khan and his snccessors of the Yuen race, and ie 600 miles in length. There are 10,000 flat-bottomed hoats on this canal, and these are used in the transportation of grain. The *Echo* states that this great water-way is an enormous "white elephant," as it costs an enormous amount every year for repairs, the appropriation there, as elsewhere, not being entirely devoted to the purpose for which they are meant. Junks are delayed every month while channels are cut for their passage. This year, for the first time since the construction of the canal, the grain from Nanking, with the consent of the government, has heen forwarded by sea, and this fact has impelled the Peking authorities to consider the expediency of abandoning the canal as a commercial highway.

French Enterprise.—The *Railway Age* says: The French government is laying nut a very broad and gigantic scheme of railway construction, adapted to the wants of various sections. With the vast sum of $100,000,000, which it proposes to borrow every year for ten years, the ordinary lines of four feet nine inch gauge are to he increased and pushed into districts which are at present without them; next a meter gauge is to be introduced for ten productive districts; and finally steam tramways, with a gauge of two feet, six inches, are to he laid on most of the ordinary highways. The epeed on these lines is to be ahout nine and one-half milee an honr, and on the meter gauge about thirteen; the estimated cost is $12,800 per mile on tramways and $20,480 on the meter.

St. Gothard.—The work of tunneling the St. Gothard railway is being pnshed on with considerahle rapidity. A telegram from Geneva statee that on the Goeschenen side alone 1,000 men are employed inside the tunnel and 400 outside. Three hnndred wagon loads of earth are excavated every day, and in the daily blastings 600 pounds of dynamite are used. Equal energy is heing shown on the Italian eide.

Mine Working in Lapland.—Two Norwegian engineers have found that the problem of working minee in Lapland may he solved by a railway through the Lulea and Tornea valleys from the Bothnian creek across the mountains to the North sea, where coal can he procured from England. In winter, measures would he taken to prevent snowdrifts.

Steam Tramways in India.—A company, under government sanction, has been started to connect Darjeeling with the State railway by meane of steam tramways. The Maharajah of Bnrdwan has granted to the company a site for a terminns in Darjeeling.

Locomotive Gas Consumer.—According to the Springfield *Republican*, the locomotive gas consumer, on trial for the last few months hy the Southern road, is proving so euccessful that after a little further experiment it will probably be put on all the company's engines. The consumer destroye over one-half the gas which causes the smoke, so disagreeable to passengers, and saves 10% of the coal.

Useful Information.

Workshop Management.

Frederiek Smith, an Englishman, has written a book on this snhject in which he makes the following among othsr points, as deserihed in a review hy *Iron:* Not every one who owns or has charge of a workshop knows, or eares to know, npon what prineiplcs it should he conducted in order that success may accrue. Indeed, we do not hesitate to say that the incompetents are largely in the majority. Too often proprietors, so that they get an income which means a handsome interest on capital invested, au easy life, and soms dignity, do uot troubls themselves to inquire closely how the details of their busiuess are being carried out; and as a result petty tyranny often flourishes, and frequently dissimulation and dishouest practices grow apacs. Ths teaching that employers owe to their workpeople ths duty of watching their condition is not sufficiently recognized, and the consequences are found in diffidenee and contensions. Now, to ignors this duty is unwise as well as improper, for where the employer evinces little or no interest in his people—is rarely seen hy them, and more rarely heard as counselor—the helief forces itself that there exists indifference and selfishness, and corresponding qualitics spring up on the other eide. Demoralization is then rapid. "Give the least you can for the most yon can get" becomes a guiding principle. What follows is depreciation of profits, and whore drastic remedies are not applied crippling emharrassment often rears its head. If employers, then, desire the maximum of henefit from their husiness, among other things their knowledgc of their workshops ehould he intimate and their interest in the lahorers in them active. To the advocacy of this, much of Mr. Smith'e hook ie devoted. But the author also finds ample opportunity for scathing condemnation of unworthy foremen, who connive at dishonest practices, and, hy showing they have no self-respect, set the example of impropriety to those whom they are entrusted with the care and guidance of. The capahle foreman and his qualities are, of course, likewise coneidered. He should he honest, honorahle, respecting and respected, with his conscience ever for his guide, and intelligent enough to exercise his hrains when difficulties present. Of course there are very few such; hut only euch are fitted for the position; and an employer who lacks the foresight enabling him to detect such qualities is minue a power he can ill spare.

Tin Coating.

For the purpose of coating metals with tin, Messrs. Neuburg & Co., of Vienna, propose to use a zinc and carbon battery. The inner cell containing the carhon is half filled with chromic acid, and the outer cell containing the zinc is filled with dilute sulphuric acid. The articles to be coated with tin are put into a hath composed of protochloride of tin and cream of tartar, with or without chloride of tin. The proportions of these ingredients are: Eight parts of protochloride of tin, 16 parts of cream of tartar, and two parts of the chloride, if the latter is used. When it is present the tin coating is effected more rapidly, whereas when the bath is composed of protochloride of tin and cream of tartar only, the tin coating is very white, but is not produced eo rapidly as when the chloride is used. These ingredients should be dissolved in about 100 gallons of distilled water. The black plates are first "pickled" in any suitable manner, and then immersed in the above-described bath or solution, and are allowed to remain in the same for a longer or shorter time, according to the thickness of the deposit or coatiug of tin required on the plates. While in this bath the plates or other pieces to be coated are connected by a wire with the positive end of the battery, while the negative end of the battery is connected with a piece of tin hung in the same bath. When the plates or other pieces or articles have been sufficiently coated with tin, they are held over a fire in order to give the tin a lustrous appearance.

Note on "Blowing Off" Steam Boiler.—In a French essay on the care of steam hoilers we find a note on the advantage of cooling off the arch after etopping and before "hlowing off." It is as follows: Those who possess externally-fired hoilers working only hy day have all observed that the fire being covered at night, and the doore closed, the pressure rises dnring the night, often sufficiently to open the valves. This ehows that the masonry, being at a much higher tempsrature that the hoiler which it envelopes, imparts to it some of its heat. The same effect of heating the boilers by the masonry is produced to a less degree, it is true, but, nevertheless, to some extent on the outer jacket of internally-fired boilers. It is consequently injurious to empty hoilers soon after having stopped them, because after emptying the plates would be heated hy the action of the masonry. It is well to admit a current of air through the flue some honrs after the stoppage of the generator, and not to empty it before the flues have become cooled to a temperature below 150°. When the flues are not too hot, no serious inconvenience is experienced in emptying the boiler under pressure. We do not say at high pressure, as for a boiler the pressure of which would be 5 kilogs., the temperature of the water being 152°, a great quantity of steam would he generated dnring the process of emptying; we think that at a pressure at 1 kilog. the hoiler could vsry well he emptied.

In internally-fired hoilers, as thero is no masonry to cool in the furnace tubes, it would he preferahls to admit tho current of air intended to cool the masonry hehind the hoiler, as in this case the furnaces would not be cooled more rapidly than the jacket. We have sometimes seen owners empty their hoilers almost immediately after the fires have heen extinguished, clean them with cold water as soon as they were empty, and keep up a current of watsr so that the workmen might work there. Boilers of small dimensions sometimes resist this treatment, but in largs hoilers it will hs seen that unequal contractions must taks plaes which hurst ths rivets.

Introducino the Electric Light.—We read in an exchange that one of Philadelphia's largest carpet manufactories has recently put in the electric light to illuminats its floors, and the devics is a complete success. It consists of a Brush dynamo-electric machine of 12,000 candle power, arranged to give four separats currents, each running an electric lamp of 3,005 candle power. Two of the lamps were placed on the third floor and two on the fourth floor of ths immense huilding, and when the engine was started up the machine started at the same time, and without the slightest manual interference the lamps flashed ont their light in all its magnificence. The effect was most hrilliant. The rooms were flooded with a pure white light like the light of the sun, and it streamed out at all the windows, illuminating houses and streets for a long distance in every direction. The light was very uniform and steady, free from the flickering, and, considering its enormous illuminating power, was unexpectedly soft and endurahle to the eyes. Estimates were made as to the amount that the light furnished by this apparatus would cost if used hy the carpet company, as it was used on this occasion, and it was ascertained that the total cost from the whole light from the four lamps, including the items of consumption of carhon in the lamps, interest on the investment and wear and tear, would not exceed 30 cents an hour. The light produced was photometrically equal to 800 gas burners, hurning five feet of gas per hour each. This amount of gas would cost $8 per hour.

A Bad Climate for Needles.—It appears that now the English have succeeded in mounting Cleopatra's needle they have a new trouhle, namely, that of preserving it from red-hot lightning and disintegrating frosts. *Iron* eaye: Now that the ohelisk is safely and permanently established on its last resting place, there are certain precautions that must be taken to preserve it. The danger from lightning is not small; but a wire hrush, such as projects from the head of his Grace of York on Carlton terrace, would detract greatly from the appearance of the monument. A bronze cap on the apex, with a thin rihbon of the same metal carried into the river, would, however, without defacing, effectually protect it from the electric fluid. The danger from the chemical elements in the London atmosphere is more immediate. The surface, evcu of the Paris obelisk, is reduced to kaolin, and the air of London is likely to act still more powerfully. There are, however, applications that have heen proved quite efficient on the walls of the Legislative palace and elsewhere; and they cannot be too soon applicd, for it is alleged that the surface of the needlc already scales very easily, and that the external condition of the mass is such as to render it very liable to be disintegrated hy frost.

A Rose by any Other Name, etc.—At a recent meeting of an English scientific society it was stated that "otto of roses" has been derived from coal tar.

Good Health.

Alcohol in the System.

We find in *Hall's Journal of Health* a vigoroue article in reply to an English review which upheld alcohol as a food, etc. The article is long and forcihle, hut we have space only for the general summing up, as follows:

If alcohol is not a poison, hut food; because alcohol gives force, muscular power—then, arsenic is not a poison, but food, bscause aresnic gives force, muscular power.

As nature has formed no element in its purity, which element in large dilution is necessary to health, we conclude that such element in its purity is not essential to health.

As men have lived in perfect health without alcohol, the use of alcohol cannot add to that health, because a man cannot be better than well.

As we know of no article which contains hydrocarbon largely, which would not destroy life, if used alone, not even sugar; so we may conclude that alcohol, which does contain hydrocarbon largely, will destroy life, if used alone.

If any elementary snbstance in its purity detroys life, if used alone, it is reasonable to conclnde that the only safe methed of using any elementary substance is, in using it in the proportion in which nature has combined it with other materials: therefore, that however essential to existence hydrocarbon may he, it is not healthful or safe to uee it in its concentrated, artificial combination, but only healthful and safe in deriving our eupplies of it, as contained in our natural food. Therefore, wo consider it established, that alcohol is not essential to health; that it is not promotive of the health of those who are well; and that in proportion as it is used largely, or alons, in such proportion is it, like all other elementary concentrations, certainly destructive of health and life together.

A New Treatment of Tape-worm.—Malsfern oil, kousso, and the hark of the pomegranate root are the anthelmintics usually employed to oxpel tæniæ, hut their action is violent, and often uncertain. A careful inspection will always enable the medical attendant to discover the ova and fragments of ths parasite in the stools, and when this has heen done we have a simple and effeetual method of insuring a cure. From the results of numerous experiments M. Bouchut has asscrtained that not only ascarides, but fragments of tæniæ, when placed in a weak alcoholic solution, containing 1.35th of amylaceous pepsine, are digested hy ths fluid in the course of twelve hours. Wo thus ohtain an artificial digestion of the animal matter exactly similar to that which ensues when meat is treated hy the same process. On submitting the conclusion drawn from his experiments to the test of practice at the Enfants Malades, M. Bouchut found that ths solution of pepsine was eminently sucessful. If his experience he confirmed a valuahle addition will he made to adult as well as to infantile therapeutics.

Colic Cured by Standing on the Head.—Dr. D. L. Phares, in *Trans. Mississippi State Med. Association*, 1878, recommends as a prompt and effectual cure in many cases of colic, to place the patient in an inverted posture. Some cases which have resisted the ordinary treatment for hours and even days, have hy this simple means heen relieved and permanantly cured in from one to five minutes. Sometimes relief appears to he afforded from the escape of air. In other instances, the air in the howels changes its place, to the relief of the patient. Some movement of gas in the intestines appears to he essential to relief hy this method. Of course it is only flatulent colic which can be permanently relieved hy this treatment. The *Pacific Medical and Surgical Journal* says: The confidence with which Dr. Phares asserts the success of the plan entitles it to a trial. The treatment could be easily applied in popular practice. The patient might at least he held up hy the heels till the arrival of the doctor.

Another Cure for Corns.—The safest, the most accessihle, and the most efficient cure of a corn on the toe, is to douhle a piece of thick soft buckskin, cut a hole in it large enough to receive the corn, and bind it around the toe. If, in additiou to this, the foot is soaked in warm water for five or more minutes every morning and night, and a few drops of sweet or other oily substance are patiently rubbed in on the end after the soaking, the corn will almost infallibly become loose enough in a few days to be easily picked out with the finger nail; this savcs the necessity of paring the corn, which operation has eometimes been followed with painful and dangerous eymptoms. If the corn hecomee inconvenieut again, repeat the process at once.

Brain Work and Longevity.—The oldest living chemist is eaid to be Michel Eugene Chevreul, a Frenchman, born August 31st, 1786, and consequently just entering upon his 93d year. He has been for many ycars a resident of Paris, where he still continuee his studies, in full possession of his senses, the vigor of his mind being wholly unimpaired. The production and usc of colors has been a specialty with him, and the durability of the colors in the Gobelin tapestry is said to be due to his discoveries, by which hundreds of persons have been enriched, while he, as usually happens, remains poor. Chevruel serves to corroborate an opinion often expressed—that of all the classes that hahitually employ the hrain, men of science live the longest.

Plants as Air Purifiers.—Mr. Girdlestone says, in a little pamphlet lately published: "If a number of flies he placed in a glass case (such as an aquarium), with plenty of sugar to feed on, and the case be then made air tight, they will in a few daye have so poisoned the air with their hreath that they will die. But if some living plants, as well as sugar, are shut in with them, they will continue to live for months, with active appetites and in perfect health; the plants removing the carhonic acid and ammonia (both of them poisons to animals), and returning to them pure oxygen and nitrogen instead."

The Appetite of Temperate People.—We read that in Frankfort, Germany, the hotel keeper found that the members of the Peace Congress, who were mostly tetotallers, ate so much of solid food as to create an unheard of deficiency in certain dishes, as compared with an equal numher of his countrymen, who revelled in wines, hrandies and lager-heer. If this proves anything, it shows that temperance secures a good appetite.

Turpentine as a Disinfectant.—Mr. Thos. Taylor, Microscopist of the Department of Agriculture, has an article in the Washington *Evening Star*, from which we take the following: "Turpentine I also found to he a powerful deodorizer. A tablespoonful added to a pail of water will destroy the odor of cesspools instantly, and in the sick chamher will prove a powerful auxiliary in the destruction of germs and bad odors."

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The Week.

Forebodings of a panic in England have caused some anxiety in business circles. The fall in silver—bar silver lower in London, October 16th than for over two years—brought about in part by the demonetization effected in Germany, goes hard with English houses trading in India, the hills against that country being paid in silver. The failure of the Bank of Glasgow has caused most distressing depression, so that the matter is hardly made worse by the discovery of a further deficiency of £60,000, not shown on the first balance sheet of that concern, published since the crash.

The inauguration of Sherman's new system for buying fine silver was postponed by the late tornado, the telegraph wires were so demoralized. The amount of silver purchased per week is limited to 400,000 ounces. The bids will be opened at a stated time so that no seller can find out the prices of earlier bidders. The system will probably result in the depression of silver. The Government will certainly be bettered by it.

THE Franklin M. Co. of Dutch Flat exploded a blast of twelve tons of black powder in their claim on the evening of Oct. 23d, doing good work, as well as giving the town a shake-up equivalent to an earthquake.

The Study of the Natural Sciences.

The development of the natural sciences may be said to be the peculiar feature of the present century. We are all sufficiently acquainted with the benefits which science has scattered with a lavish hand among us, but few of us realize the increasing difficulty of the study, and the need of appliances of every kind to make its development continuous. The study of the natural sciences as a part of a liberal education is a growth not of a century, but, at least in this country, of only a score of years, and many of our college men who were educated 20 years ago in our old-time American colleges have but a faint idea of what the study consists of at the present day.

The study of the natural sciences is useful to the world in more than one way. In the first place, as a means of mental training; next, as a means of increasing the amount of human knowledge; and lastly, as a means of better developing the practical arts. As a means of mental training it is unequaled, since it brings the student face to face with nature, with the forces and the facts of existence. Such an intimate personal contact with the real never fails to stimulate the faculties of the mind. There is no logic so inexorable as that of nature; there is no mental training equal to its conscientious study. In the next place the study of natural science leads, by a process of natural selection, to the development of such students as are fitted by nature for the highest of privileges, the extension of the limits of human knowledge. And finally it is only by the thorough study of science that progress in the practical arts is at all possible.

Now, while all of us admit, in a general way, the importance of this study, there are but few of us who understand at all the many difficulties which surround it. The time was, and was not so long ago but that many of us may remember it, that our single college professor, with his air pump, his electric machine, his crucible and retort, could take in all the sciences, and teach besides, perhaps, a little rhetoric, or moral philosophy. That day is gone, never, we hope, to return. Science has grown so rapidly in the last score of years (thanks to the untiring labors of many heads and hands) that even of the most recent of the sciences no one man is master, much less able to make the proud boast of Von Humboldt that "all knowledge is my province." Science can to-day be profitably studied only with the aid of all the appliances which large laboratories, collections, libraries, and learned professors can furnish.

We have been lead to make these remarks, because we find there is a great deal of misunderstanding upon this subject, even by some of our leading citizens, who, educated in the old way, have been too busily engaged with their professions and business to become acquainted with these facts. There is an important corollary from the above conclusion, that the study of the sciences needs apparatus, collections and instructors for its successful accomplishment. That is, the amount of money which is spent upon institutions devoted to the higher education, is best utilized when it is concentrated upon one worthy institution, instead of being divided among a dozen others, all of which are necessarily of the lower order.

In the latter case apparatus is necessarily duplicated, it becomes impossible for any one to have instructors of proper ability, or to allow them to devote themselves to one department, as is absolutely essential in teaching science at the present day. The only way that we in America can fully realize the benefits which science is ready to bestow upon us, is to follow out as nearly as our different circumstances permit, the idea of the university system which has grown up in Europe. We in California have made a start in this direction. As to our success, we shall speak in an other number.

BULLION SHIPMENTS.—Extra, Oct. 17th, $5,430.27; Hackberry, Oct. 17th, $9,132.00; Manhattan, Oct. 16th, $10,600.00; Bodie, Oct 14th, $12,812.21; Northern Belle, Oct. 14th, $3,315.58; California, Oct. 19th, $92,207.61, total to date, $186,385,07; Con. Virginia, Oct. 19th, $26,402.99, total to date, $77,113.24; Independence, Oct. 14th, $12,027.40; Jefferson, Oct. 16th, $1,958.47; Leopard, Oct. 16th, $9,200; Bodie, Oct. 17th, $12,000; Tyho Con. Oct. 14th, $7,553.64; 18th, $7,781.92; total this month to date, $33,949.16; Navajo, Oct. 14th, $7,520.02; 21st, $7,300; Christy Con., Oct. 22d, $4,435. Received at Salt Lake: Ontario, Oct. 11th, $6,250.42; 12th, $4,608.87; 14th, $6,184 73; 15th, $2,886.75; 16th, $2,875.04; 17th, $2,034.56; Silver Reef, Oct. 12th, $5,577.33; 16th, $11,972.79; 17th, $10,475.52; Butte, Oct. 14th, $10,384.65; Indian Queen, Oct. 14th, $5,089.21; Hillside, Oct. 19th, $5,700; Northern Belle, Oct. 19th, $7,633.74; Oriental Con., Oct. 23d, $5,160.60.

ON FILE.—"The Silverado Mines," "Cap;" "The Niagara G. S. & C. M. Co.;" "The Golden Fleece G. & S. M. Co.," W. G. A.; "Sonora, Mexico," M.; "Mining Patents to Foreigners," L. C.

FIVE Rocky Mountain bison, of the kind so rapidly becoming extinct, were recently seen in the neighborhood of Whiteley Peak. One of them was killed.

The French Treaty and Our Productive Interests.

We own we never could quite understand why it was our Chamber of Commerce fell in so quickly with the treaty schemes which the clever Frenchman, M. Chobreau, announced in this city some months ago. Whether they only intended to give the foreign gentleman a most courteous reception, and unwittingly gave him material to use against our productive interests, or whether, as merchants, they only caught one idea, and that is, that the smoother the path for the introduction of commodities the easier the trade. However this may be it matters little, for our wine producers are moving vigorously to counteract whatever of prestige the treaty-hearer gained from his San Francisco endorsement, and to place the wine interests before the country in its true light. At least three notable meetings have been held—the first at St. Helena, the second in this city, and the third at Los Angeles—at all of which action was taken showing that the proposed treaty with France would be fatal to our growing wine interest, and hand over to the French all the advantage in the contest which we have been waging with them, with the hope of victory for our side. At the San Francisco meeting of the State Vinicultural Society, in addition to affirming the right of the industry to a continuance of the government protection under which it has grown thus far, measures were taken to enlist all vine-growers' societies throughout the country in a united effort to show up the proposed treaty in its true light as affecting our productive interests. We cannot but believe that the direction of public attention to the matter will prevent the ratification of the proposed treaty; for although we have a high idea of the French as producers of different articles, we do not want any more of their low grade wines in this country, nor do we want their free competition in the markets which we are endeavoring to build up in this country for California dried fruit and other local productions. We pay the French enough money already for articles which our producers should supply. There is every reason why the amount should not be increased. All our future in some lines of production, which we are now developing, depends upon the fostering which is now received at the hands of the government.

A Useful Book on Mines and Mining Matters.

There has just been issued by the publishers, Messrs. Francis & Valentine, a book entitled the "Annual Mining Review and Stock Ledger." It contains some 300 pages, and is devoted to a consideration of mining interests and properties on the Pacific coast. The main feature of the book consists of a Mining Directory, in which all the principal mines in California and Nevada, together with many situate in other sections of the country are briefly, and in some cases quite fully described. Where but little or no developements have been made on the mines, or where the owners have not cared to have them described in detail, the name and site of the property, with list of officers, locality of principal office, time of annual meeting, number of shares, amount of assessments levied, dividends declared, etc., are given. As this information is obtained from official sources, and therefore supposed to be correct, this book is likely to be largely consulted as a work of reference, for which purpose the alphabetical arrangement of the matter renders it exceedingly convenient.

This volume also contains a description of the several San Francisco Stock and Exchange Boards, with a list of members, constitution and by-laws, rules of order, etc., which also being authoritative may be fully relied upon. What forms an attractive feature of this work is the biographical sketches of many of our more prominent mining men and stock operators, and which, embodying as they do the leading facts and incidents connected with their busy lives, will interest a large circle of readers. A number of well written essays on bullion production, the remonetization of silver and kindred topics, and the several articles on the mines of California, Nevada, Idaho, Arizona, etc., adding materially to the value of the book.

A matter of general interest is the decision of the Commissioner of the General Land Office with regard to the width of all lode claims. A section of the Revised Statutes provides that no claims shall extend more than 300 feet on each side of the vein at the surface. The Commissioner says. "When the vein outcrops at the surface, there can be no question as to the point from which the lateral measurement must begin; but when it is discovered that a shaft develops the vein at some distance below the surface, and the location does not determine by any further prospecting that the nearest actual surface point is elsewhere, and the fact does not otherwise appear, I am of the opinion that the point of the vein so discovered must be assumed to be the middle of the vein, and the lateral measurement be calculated therefrom."

THE attempt to introduce cat fish into California waters is meeting with decided success.

Gold Mining with a Pump.

Our readers will remember the description which we published not long ago of the new gravel pump, invented by E. Moreau, of this city, and belonging to the American Mining and Dredging Company, and the report of the trial made with one of said pumps, of small size.

At the Union Iron Works, in this city, a large pump of the same kind is now being built, which will be shipped, presently, to Barbacoas, in South America, for working the auriferous gravel deposits, which are known to be very rich, in certain rivers there. This machine has a suction pipe fourteen inches in diameter, and will be driven by an engine of 100 horse power. The company claim, on the basis of working tests in this city, that such a pump has a capacity of raising 32,400 cubic yards in twenty-four hours, one-half of which may be solid matter, cobble-stones, gravel, sand, etc., if the bulk of the suction pipe be kept near the material to be raised. This claim, as to capacity, will not seem unreasonable when compared with the report, in *Engineer*, of a trial of a centrifugal pump, at the International exhibition in London, in 1863, which pump had a runner of the same size, moving at the same velocity, and raised 91 tons of water, 21 feet above the surface, per minute, or 131,000 tons in 24 hours.

According to Dr. Young, water moving with a velocity of 900 feet per hour, tears up fine clay; at 3,600 feet, carries fine gravel; at 2 miles an hour, moves pebbles as large as hen's eggs. In such a pump as we have described, running at 200 revolutions per minute, the velocity of the water will be about 20 miles an hour, and will tear up clay and carry cobble-stones as easily as chips. Any solid material, when once in the line of the flow, will be held in its place and forced through the pump at the same speed as the water. Mr. Moreau's pump differs from all other centrifugal pumps, in that it has no valves, contractions, nor obstructions of any kind, giving a continuous flow, free from stoppages, heating, or other cause of trouble. The company proposing to operate in South American rivers, have examined many dredging machines, in this country and abroad, and have finally selected the Moreau pump, as offering better results than any other. A company has recently been incorporated in this State for working the bed and bars of Feather river, at Oroville, with similar pumps.

Academy of Sciences.

The regular meeting of the California Academy of Sciences was held on Monday evening last, Dr. Gibbons in the chair. The following donations to the cabinet were received: From J. P Moore, Indian skull, from mound at San Rafael; from W. B. Heilings, reptiles, from Phœnix, Arizona; from James D. Hague, samples of guano, from Malden island, South Pacific; from J. R. Scupham, ores from 2200 level, Sierra Nevada mine, and from Northern Light mine, Shasta county; from Eichelroth, head of mountain sheep, from Sierra Nevada range. Hugh Hittel, M. D., was elected resident member. Mr. W. N. Lockington read a paper on "Specific Names," and also described two new species of fish. Dr. A. B. Stout presented 25 geological and mineralogical specimens from Bodie, California. He exhibited a map of the district and charts showing ideal sections of the mountain in which the mines are situated. He also gave a lecture on Bodie district, describing its geological conditions, etc., and in his ideal section put veins enough in the mountains to make all the miners hearts rejoice. He also brought forward some very startling theories on the formation of quartz veins, and the occurrence of gold, proving the old adage of the shoemaker doing better by "stieking to his last," for if he had lectured on ethnology, which is a specialty of his, and not taken up geology of which he apparently knows very little, the audience would have derived more benefit from his remarks. He claimed the veins were of volcanic origin and that the gold had been evaporated and then condensed in globules in the veins. The reports in the daily papers were to the effect that the subject had been referred to a committee of 15 for consideration, which was probably a reporter's joke. The fact was that one member called attention to the fact that they did not find gold in lava from volcanoes, and another objected to having any such theories as those advanced published as if sanctioned by the Academy. To the latter, the Secretary stated that the Publication Committee took charge of such things and never permitted the publication in the proceedings, of any theories advanced by persons dealing with subjects, or which in the judgment of the committee, they only had superficial knowledge. Dr. Stout's remarks elicited some surprise among those present who had knowledge of mining affairs, more especially his handling of some of the mining terms.

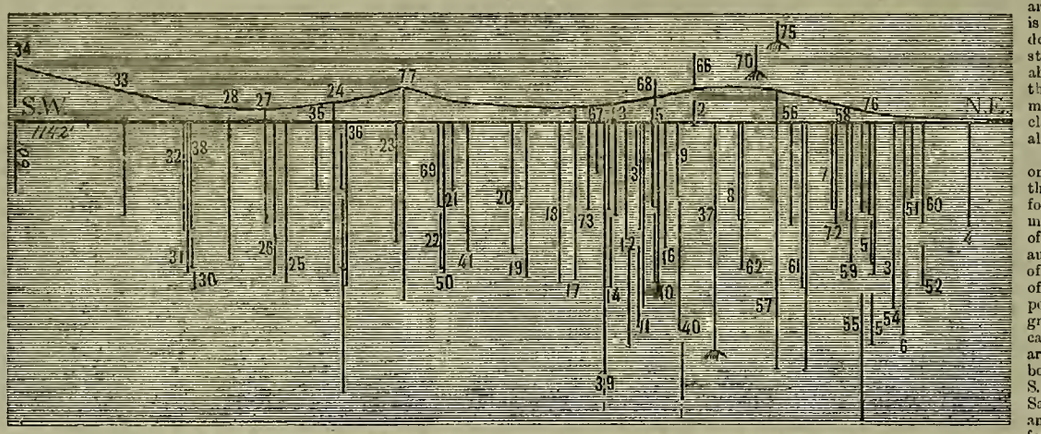
THE steamer Mohave arrived at Yuma from Ehrenberg on Oct. 23d, bringing 10 tons of copper ore and 6 tons of wool for San Francisco, and 28 tons Castle Dome ore for Oakland. All went forward by Southern Pacific R. R.

DURING a snowstorm in the Wahsatch mountains, two miners were carried on a snow-slide, over a precipice 500 feet deep. They escaped with only a few bruises.

Artesian Wells.—No. 3.

Fig. 5 shows the profile of the city on a line passing through 16th and Howard, and Market and First, together with the depths of some of the wells, below the datum of the city levelling. As there are many wells in the Figure not shown in the map published two weeks ago, it will be necessary to rapidly state the localities of some of these. No. 52 is on Beale street between Market and Mission; 53 is on Fremont between Howard and Folsom; 54 is near the corner of Fremont and Misson; 55 is on First between Mission and Howard; 56 is on Second between Howard and Folsom; 57 is on the block bounded by Market, Mission, Second and Third; 58 is between Sutter, Bush, Montgomery and Sansome; 59 is between Bush, Pine, Montgomery and Kearney; 60 is between Washington, Jackson, Kearney and Dupont; 61 is between Post Sutter, Montgomery and Kearney; 62 is near the corner of Dupont and O'Farrell; 66, Sacramento and Polk; 67, Van Ness Avenue and Sutter; 68, Bush and Larkin; 69, Van Ness Avenue and McAllister; 70, Laguna and Filbert; 72, Lombard and Gough; 73, Bryant and Fifth; 75, Polk and Broadway; 76, Market and First; 77, Folsom and Ninth. Beyond the profile the land rises, as a general thing. In front of it the land is generally lower. Wells, 70, 75 and 37 strike rock. Wells 39 and immediately below 40, are the deepest, running out of the limits of the Figure.

The *Alta* questions some of the figures given in the first two articles of this series. The possible number of wells bored in San Francisco was given at 1,500. It is suggested that this number was a misprint for 150. The estimate 1,500 was taken from the *Bulletin* of July 20th, but not without our having reason to believe that it was correct. Mr. Delaney says that he can answer for 1,000 wells in the city. Another well-borer has made at least 300; and it is known that many others have bored artesian wells here. The estimated capacity of the San Francisco artesian wells. 15,000,000 gallons per day, was also taken from the *Bulletin* of the same date. It is not an unreasonable estimate, as may be seen by referring to the *Bulletin;* nevertheless it was not indorsed in our articles. It is not unlikely that much of this water is allowed to waste. The *Alta* says, in support of the suggestion that this estimate is a "grave mistake:" "That amount (15,000,000 gallons per day) would be 50 gallons for every inhabitant of the city, or enough for the entire supply; whereas, four-fifths of the people depend upon the Spring Valley Water Works." This argument might lose some of its force if it were known that these four-fifths of the people who have depended upon the Spring Valley water have had, at times, mingled with the drainage of Pillarcitos canyon, a taste or so of water which comes from not quite so near the surface as the origin of the Spring Valley supply is generally supposed to be. If the Spring Valley Water Company have bored artesian wells to serve in augmenting their supply to the city, an additional reason exists for confidence in the ability of the strata underneath us to yield sufficient quantities of good water. The *Alta* says: "As a general rule, in the city as in the interior, the probabilities are that the artesian auger will not find water; or, in other words, by far the greater part of the area does not contain artesian water in a sufficient quantity to be of practical value." We do not think this is sustained by the facts.



PROFILE THROUGH SIXTEENTH AND HOWARD, MARKET AND FIRST STREETS.

Where an Artesian Well will be Successful.

In attempting to form some judgment as to whether or not artesian well boring will prove successful in a given locality, the general principle on which artesian wells depends must be borne in mind. Water falling on the earth as rain or snow or whatever, is disposed of in one of three ways: Part flows rapidly over the inclined surfaces, collecting in rills, and rivulets and rivers; part sinks into the earth; part is evaporated. That which disappears into the earth continues its course through permeable material until it meets with some impermeable obstacle. If this obstacle be a rocky cavity the water trickles into it, filling it up until some crevice is found through which the water can continue its always downward course.

If the obstacle met with be the rocky sides of some old watercourse long covered by material washed down its sides or carried into it by other means, the water follows the rocky incline to the bottom of the old channel, and runs down this, to appear at the foot of the old ravine in springs, or to meet other impassable obstacles, and collect in the reservoir furnished by the old river-bed, until it again finds outlet.

If the obstacle be an extended and somewhat regular stratum of impermeable material the water will run along upon it, seeking the lowest portion, and filling up the space or the porous material above the stratum until again some outlet is found. If the impermeable stratum has beneath it more porous material and below that again a similar impermeable stratum, and if the two are bent in such a way as to present their edges upwards so that the percolating water has access to the porous "filling," then the two together form a kind of U tube, which may become filled with water, the water at the bottom being subject to pressure corresponding to the hight to which it has risen in filling the tube. The water so caught in porous matter between impermeable strata continues in its "tube" until some break is found, and if no extensive break is met with there is a constant tendency for the water to force its way, under the influence of the above-mentioned pressure, through the upper stratum of the tubes and to appear in springs such as are found often in the center of valleys, at considerable distances from hills. This is likely to be the case only when the water-bearing strata do not reach to a great depth. When the strata are deep they may become swollen with water, having perhaps no outlet, or an outlet at great distance from the outcrop, as, for instance, under the ocean. In the latter case the strange phenomenon of fresh-water springs in mid-ocean occurs.

Considering then the origin of artesian supplies, it is seen that in determining a place for boring, three general questions must be noticed: The configuration of the country, in the locality, the character of the material occurring in the neighborhood, and the climate.

Configuration of the Country.

In studying the configuration of the country, much depends upon whether the aim is to obtain a comparatively shallow or a deep well. As a general thing the shallower well will yield a smaller supply of water than the deeper, and, very naturally, a smaller area of land need be considered and greater attention paid to the configuration in the more immediate neighborhood, when a shallow well is wanted than when a deep well with a probably great and invariable supply is the aim. A sufficiently good, though incomplete, illustration of this may be found in San Francisco. The Mission hills stop short of the end of the peninsula, leaving the northern part to the sand drifts and lower hills of different formation. The Mission hills are furrowed with numberless little canyons, which, in the rainy season, collect the water and send small streams down to the lower portions of the peninsula. Now, the surest place on the peninsula to bore an artesian well for a moderate supply only, is on the low land opposite and near to the foot of one of these little canyons. If larger and more reliable supply of water is needed, boring had better be made not so close to the hills, but nearer the bay, in the little valleys, as Hayes valley, or between Rincon hill and Ninth street hill, or south of Ninth street hill towards the Mission. In boring these, there is taken into consideration the configuration of greater area than in the previous case. When still greater supply is sought for, and boring is carried into the rock underneath the city, then our petty hills no longer enter the problem, but the dip and condition of strata that may extend eastward under the Coast range and outcrop in the Sierras, demand attention. Another illustration may be drawn from a part of California where few artesian wells have been bored. In parts of Tulare valley the country is covered with low, sandstone hills. These hills are parts of what was once a continuous deposit of strata, covering these portions of the valley, and, where not horizontal, rising gently towards the mountains to the east. The hills were formed by the washing away of parts of this deposit, in some places the washing having been carried so far as to lay bare the granite underlying the sandstone. The sandstone is of the tertiary age, and under favorable circumstances, artesian wells would be expected to prove successful in it, especially as it shows a gentle decline from the mountains. Now, as in the former illustration, in choosing a place to bore a shallow well for a moderate supply, the low hills, the little valleys which they form, and the little canyons on their slopes, would be considered; while in prospecting on a larger scale, the hills would be in part ignored and the broad deposits extending all over the country and rising towards the mountains, would require the larger share of notice.

Shallow Wells.

With regard to the selection of a place to bore a shallow well, for a moderate supply, enough has perhaps been said. At the foot of canyons and in the lower parts of small valleys the boring may be made with most confidence. An almost sure indication that a well will be successful, is the occurrence of springs in the neighborhood.

Deep Wells.

David Dale Owen, in the report of a geological reconnoisance of Arkansas, made in '59 and '60, gives three conditions, which are necessary to the successful boring of artesian wells: First, the fountain-head must be higher than the boring; second, there must be a general dip of the surface from the fountain-head towards the well; third, there must be alternation of porous and impervious strata. These are all self-evident. The first two illustrate well the popular idea of the best place for boring wells. A valley is par excellence the ideal location for a well. But "valley" need not imply the neighborhood of hills. On the contrary, the vaster the tracts of low land, and the more widely separated the hills which form the "valley," so long as the necessary conditions of strata are fulfilled, the better the chance for a deep well to obtain a large and lasting supply. No hills need be in sight, and their absence should not discourage the water-prospector. The larger the circumference of the rim surrounding any valley, the greater, other things being equal, the surface exposed for the catchment of water.

The most favorable condition of strata, as to inclination, is found where they dip on all sides from the rim to the center, forming a basin. They may dip towards an axis, forming a trough. Again, they may dip in but one direction, forming a nearly plane incline, in which case there can be little choice as to location of the borings.

Not only the dip of the strata demands attention; the condition of their outcrop is also of great importance. English engineers distinguish three or four different kinds of outcrop of water-bearing strata. The porous strata that absorb the water may appear on the surface at the top of a hill, the most unfavorable occurrence. They may outcrop on the slope of the hill, and become so worn to conform to the general inclination of the hill, that the water running over their edges may have so great a velocity that only a small porcentage can be absorbed. This will vary with the slope. At the foot of a hill, and in a depression, is the most favorable occurrence of the outcrop. The outcrop may be naked, so that the water may be directly absorbed, or it may be covered by drift material; in this case the character of the drift determines the amount of water that may reach the porous strata.

Besides the inclination of the water-bearing strata, and the condition of their outcrop, their regularity and continuity must be looked after. Often a bed of clay beneath a porous stratum is found to thicken up to such an extent that it is impossible for water to find a passage. An upthrust of any impervious material through the water-bearing strata may blast all hopes for artesian water, in an otherwise favorable location. In such cases the land lying between the fountain-head and the barrier is the more likely to yield artesian water, as in some instances may be indicated by the appearance of springs, which indeed may be the only evidence of the existence of the barriers.

All these details of the configuration of the country may be studied with advantage before attempting to bore wells in an untried region, especially when it is intended to make that outlay which is necessary in sinking to great depths.

In our next we will take up the subjects of the "character of material" and the "climate," giving illustrations relating to the position and condition of water-bearing strata and their outcrop. We shall also consider the outfit necessary for boring wells, and the *cost*.

Wells Bored and in Progress.

F. W. Morse of Chico, Butte county, obtained for us the data of a well bored on I. R. Bennet's farm, four miles north of Chico. Since the memorandum was handed to him it has been published in the Chico *Enterprise*. The well was finished one year ago, and proved a failure, reaching a depth of 686 feet without finding artesian water. The data are as follows: soil, 16 feet; gravel, 10 feet; yellow clay, 164 feet; gravel, 6; earth the color of ashes, 10; cemented gravel, 3; sandstone, 20; ash-colored earth mixed with white streaks resembling burnt or slaked lime, 40; brown hard-pan, 231; quicksand, 2; very hard basalt rock, 20; soft stone resembling blue clay, when pulverized, 80; quicksand, 1; sandstone, 30; pipe clay, 10; cemented gravel, 3; sand, 10; quartz gravel, 2; blue clay, 10; washed sand, 18; total, 686 feet. The bottom of the pipe is now in sand and gravel. We sunk the pipe five feet the last half day that we worked.

This is the only artesian well that has been sunk in the neighborhood. Plenty of water is obtained from surface wells at a depth of 20 feet, and in many cases a good supply is found at six or eight feet. The strata are often different at places only 20 or 30 feet apart. The water-bearing strata are principally sand and gravel.

J. W. A. W. writes us that there are only four flowing wells in Tulare county, one near Tipton of which so much has lately been published, and three others This well struck water at 280 feet below 6 feet of sandstone. It went 30 feet deeper through clay and four gravel beds, each of which gave water. It yields 86,000 gallons of water, containing only six grains of solid matter to the gallon. The three other wells in the county are on John Heinlan's place near Lemoore. There is a good deal of pipe being made at present in San Francisco for wells near Bakersfield. Pipe is also being shipped to the San Joaquin valley and to Mendocino county.

W. G. A. writes us from Gold Hill, Nevada: At Battle Mountain, Lander county, on the line of the C. P. Railroad, there are several artesian wells. The water is cool and quite free from deleterious chemical substances. The borings are about 150 feet in depth, and the geological strata are mainly volcanic detritus; clay strata, gravel and sub-alluvium.

At Elko on a bluff, or second bank of the Humboldt, the citizens are now boring for water. They have good machinery and are confident of success. At present the auger has reached the depth of over 400 feet. The valley of the Humboldt at that point is covered by strata of gravel, sand, clay and drusy carbonate of lime. The first artesian well in Nevada was bored in 1870, on the farm of S. C. Nevers, near Carson. Said well was 18½ feet deep, and the stream shot out 7½ feet above the surface, and is flowing yet with unabated vigor, sending up a stream sufficient to supply all demands for household purposes and a surplus equal to the wants of a large number of acres for irrigating purposes.

Prof. W. F. Stewart, State Senator from Storey county, introduced a joint resolution in the Senate of the last Nevada Legislature, which passed the Senate but failed in the House, memorializing Congress to make liberal donations of land in the arid valleys of this State to parties who were successful in causing a flow of water to the surface. There are millions of acres of as fine soil as can be found in any portion of the world, covered with luscious, succulent grasses during the spring and forepart of the summer, and not a hoof of stock to eat it because there is no water. These valleys are surrounded by mountains serrated by deep canyons, which if dammed at proper intervals, a supply might be stored up for summer use. This is one of Prof. Stewart's plans to make inhabitable the heavy rich valleys in this State, that are now worthless. Stewart intends to introduce his resolution again this winter.

The new City Hall well at San Francisco, near No. 20 in the Figure, was, at last accounts, 58 feet deep. It passed through yellow sand, 40 feet; then black sand. At about 40 feet a bed of vegetable matter was bored through. Wood of a dicotyledonous tree was brought up, together with a fibrous substance, either bark or peat.

In our next will be given more concerning wells nearer home.

Mining patents have been issued for the following mining claims: California, Nevada county—Mark Zellerbach, consolidated, gravel mine; Selby Hill Company, Downie placer mine; William Terran and others, Buena Vista blue gravel mine. Arizona—Edwin N. Fish, Enterprise lode. Utah—Hezekiah McCoy and others, Silver Dipper lode; Wm. W. C. Hiff, coal mine, No. 31. Montana—Robert Hale, San Jose lode; Charlee Dahler and others, Harlem, Iron Rod Clipper and Glenn Falls lodes; John Treanor, Roderick Leggot and James Ryan, each one placer mine.

It is now claimed that the United States produce more carpets than any other country in the world.

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Our intimate knowledge of the various inventions of this coast, and long practice in patent business, enable us to abundantly satisfy our patrons; and our success and business are constantly increasing.

The shrewdest and most experienced Inventors are found among our most steadfast friends and patrons, who fully appreciate our advantages in bringing valuable inveutions to the notice of the public through the columns of our widely circulated, first-class journals—thereby facilitating their introduction, sale and popularity.

Foreign Patents.

In addition to American Patents, we secure, with the assistance of co-operative agents, claims in all foreign countries which grant Patents, including Great Britain, France, Belgium, Prussia, Austria, Baden, Peru, Russia, Spain, British India, Saxony, British Columbia, Canada, Norway, Sweden, Mexico, Victoria, Brazil, Bavaria, Holland, Denmark, Italy, Portugal, Cuba, Roman States, Wurtemhurg, New Zealand, New South Wales, Queensland, Tasmania, Brazil, New Granada, Chile, Argentine Republic, AND EVERY COUNTRY IN THE WORLD where Patents are obtainable.

No models are required in European countries, but the drawings and specifications should be prepared with thoroughness, by able persons who are familiar with the requirements and changes of foreign patent laws—agents who are reliable and permanently established.

Our schedule price for obtaining foreign patents, in all cases, will always be as low, and in some instances lower, than those of any other responsible agency.

We *can and do* get foreign patents for inventors in the Pacific States from two to six months (according to the location of the country) SOONER than any other agents.

The principal portion of the patent business of this coast has been done, aud is still being done, through our agency. We are familiar with, and have full records, of all former cases, and can more correctly judge of the value and patentability of inventions discovered here than any other agents.

Situated so remote from the seat of government, delays are even more dangerous to the inventors of the Pacific Coast than to applicants in the Eastern States. Valuable patents may be lost by extra time consumed in transmitting specifications from Eastern agencies back to this coast for the signature of the inventor.

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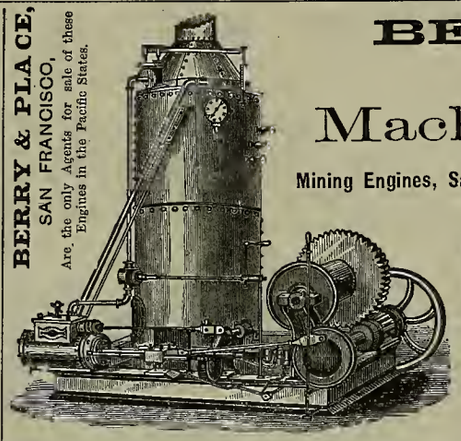

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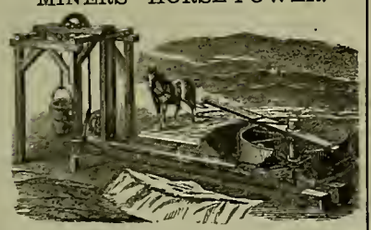

This Power is especially adapted to working mines, hoisting coal or building material, etc. It will do the work of a Steam Engine with one-tenth the expense. One Horse can easily hoist over 1,000 pounds at a depth of 500 feet.

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WIRE ROPE TRAMWAYS.

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HEMORRHOIDS OR PILES,

A treatise on their scientific treatment and radical cure, by E. J. FRAZER, M. D., San Francisco. Price, 25 cents; for sale at the bookstores and by the author at 221 Powell street. Sent by mail to any address on receipt of the price in coin, currency or postage stamps.

Continued from page 261.

THE Jennie June mine is a fine one, showing 14 feet of very good ore. The beauty of the ledge is the uniformity of the ore, there being no difference in the appearance of the entire ore body for 14 feet. This ore resembles very closely that of the Potter mine, and averages about $40 per ton in gold and silver, and it is the opinion of many good millmen that this ore can be milled without roasting.

SUPT. CHAS. DUNN, of the Northern Light mine can take out 1,000 tons of good ore just as easy as any place you ever saw; a face of rich ore the full size of the drift, and good ore everywhere in sight. This mine is very conveniently arranged for taking out ore—dumps the ore into a chute, where the teams can drive up and load without shoveling the ore, and the company's new road, now completed to Copper City, is a good piece of work, affording the company the best facilities for getting in their winter supplies; also for hauling their ore down to the mill for reduction. Mr. Whitney, President of the company, is always to be found at his post, carefully looking after the best interests of the company's property.

THE Winthrop company are driving their tunnel into the hill, and expect to cut their ledge in about 75 feet further. This mine is too well known to require any comment, and when the company put up a mill in the spring, a very material increase in the shipment of bullion may be looked for. There are many new discoveries, and so far as there have been any developments upon them, the parties find many most excellent prospects, and all they require is to sink a shaft or run a tunnel 100 feet to prove up a good ledge.

TUOLUMNE.

ITEMS.—*Independent*, Oct. 19: The Sonora foundry is now running on work for the mill being erected on the Kelsey mine, and on pumps for the Confidence mine. Six men are at present working at the Hunter, developing the parallel vein. On this a shaft is being sunk, and also a crosscut to connect, from the Hunter tunnel. Work on the La Rose claim has been discontinued, though the prospect is reported excellent.

LIVE OAK.—Work is progressing at the Live Oak. The shaft is now down 80 feet, showing the vein 2½ feet wide; ore rich and very thickly sprinkled with free gold. The rock proves richer as they get deeper, carrying also native silver. The sulphurets assay $75 in silver to the ton.

NEVADA.

MANHATTAN.—Austin *Reveille*, Oct. 19: During the six days ending yesterday the mill reduced 129¾ tons of ore, of the assay value of $16,696.30. Of this amount $701.67 was obtained from custom ores, $5,254.06 from tribute mines, and the remainder, $10,740.57, from the Frost and Curtis shafts. The 570-stope in the Frost shaft continues in good ore its entire width. A smaller amount of work has been done in the 670-level than usual, as the stope is up to the face of the drift. The drift, having been connected with the North Star shaft, is being pushed ahead. The 770 stope shows good ore on the west side of winze No. 2. The 770-west drift carries a strong ledge of average ore. Sinking has been resumed in winze No. 2 below the 870-station. The 560 stope in the Curtis shaft improves daily as work progresses up towards the 517. The ledge in the west drift is not as good as last week. The several stopes in the 600, 675 and 750 are not producing as much ore as formerly, but of a better grade. The 600-crosscut has cut the south ledge, and will be continued 75 feet further to the north ledge. The 825-east drift carries a strong ledge, with some good ore.

ITEMS.—J. F. Abel has a large ledge of mineral-bearing quartz on the west side of Paradise valley. The lower workings of the Fairmount mine look particularly well.

WASHOE DISTRICT.

CALIFORNIA.—Gold Hill *News*, Oct. 23: Daily yield, 225 tons of ore. The ore stopes on the 1650 and 1750 levels are looking well and show no changes of value to note. The north drift on the 1950 level is advancing on the ore streak before mentioned. The main north drift on the 1650 level is steadily advancing, the face in low grade ore.

CALEDONIA.—The north drift on the 1600 level is making fair progress, the face in favorable vein matter.

JULIA CON.—The damages to the pump rod will be repaired again to-day, and by to-morrow work will be progressing at all points as usual.

BULLION.—Sinking the main incline is going vigorously ahead, the bottom is a mixture of porphyry and quartz. The west drift on the 2000 level is now in 217 feet, the face in soft vein matter of a fine character.

SIERRA NEVADA.—Within three feet of the bottom of the sump ore rich in both sulphurets and free gold were taken out, which indicate not only the continuation of the ore vein downward with steady regularity, but a continuation of the uniform rich character of the ore as well. An assessment of $3 per share has been levied.

OPHIR.—The flow of water from the Union Consolidated during the first part of the week stopped the sinking of main incline, and rose in the shaft 50 feet above the 2100 level, at which point it was checked by the pumps and is now being again gradually lowered at the rate of about five feet per day, standing this morning at a point 30 feet above the 2100 level. It would have been entirely drained before this with the assistance of the tanks had it not have been for the breaking of a shaft which has prevented the running of the hoisting engine. The breakage will be repaired and everything again in running order by to-morrow, when the water will be quickly drained.

CON. VIRGINIA.—Daily yield, 180 tons of ore. On the 1950 level the south drift has been advanced at the rate of three feet per day, the face in vein porphyry carrying streaks of lively quartz. Crosscut No. 3, on this level, is being steadily advanced, the face in quartz and low grade ore. A drift northeast has been started from the south winze, the face of which is in quartz and low grade ore.

NEW YORK.—The south drift from the east drift on the 1100 level is now in favorable vein matter. The face of the north drift on the 1100 level is in the quartz, showing spots of good ore. Crosscutting this level will be commenced in a very few days.

HALE & NORCROSS.—Owing to the breakage of a pump rod, the water rose during the first part of the week above the 2100 level, where it has remained until this morning, when the station at that level was again drained

SENATOR.—The south branch of the Sutro Tunnel is running in directly on the west line of the mine and as soon as the tunnel has laid bare the broad side of the claim crosscutting the ore vein will be easy.

NORTH CON. VIRGINIA.—Sinking the main shaft is being pushed ahead with great vigor, the bottom in hard blasting rock. The flow of water in the shaft is light and gives but little trouble.

GOULD & CURRY.—The water is now drained and work is progressing as usual.

LEVIATHAN.—On the 750 level the lateral drifts both north and south are still being pushed ahead along the foot-wall of the ledge, in very favorable material, with good streaks of quartz continually being cut through. Crosscutting, so long deferred, will be commenced soon.

ALTA.—The ore in the bottom of the winze, below the 1450 level, continues to show a decided improvement. The face of the north drift on this level is also in better ore. The east drift on the 1550 level is also showing spots of good ore in the face.

JUSTICE.—The north drifts on the 1150 and 1225 levels are each showing good paying ore, and preparations are being made to stope ore on each of these levels. The west crosscut on the 1400 level is still advancing, the face in vein matter carrying spots of excellent ore. East crosscuts, Nos. 4 and 5, on the 1300 level, are still in good ore. Sinking in winze No. 1, below the 1300 level, is making good progress, the bottom showing occasional spots of rich ore.

BELCHER.—The south drift on the 2360 level is steadily advancing, the face in a mixture of quartz and porphyry. Crosscut No. 1 on the same level is now in 283 feet, the face in porphyry carrying streaks of quartz. The prospecting operations on the 2160 level afford no changes of value.

TROJAN.—The average assay of the car samples for the week has been $33 per ton. The usual amount of milling ore is being extracted from the second station level, at which point the ore stopes show splendidly.

BEST & BELCHER.—Sinking the new joint shaft is making the best of progress. The north drift on the 1900 level is again steadily advancing, the face in hard blasting porphyry.

NORTH BONANZA AND FLOWERY.—The putting in of the timbers from the tunnel level up to the surface will be completed and the hoisting frame raised ready to start up the machinery in a day or two more.

CROWN POINT.—The east drift from the bottom of the main joint shaft is still advancing, the face in quartz and vein matter of a favorable character.

CON. IMPERIAL.—The south incline winze, below the 2400 level, down 100 feet on the slope below the 2400 station, the bottom in quartz and vein matter of a very healthy character.

GOLDEN STANDARD.—Sinking the Golden Standard and Promontory new shaft will be resumed in about 10 days.

UNION CON.—The flow of water from the east drift from the north drift on the 1600 level is still quite strong. It is undoubtedly only a pocket and will be drained in a very short time.

SOLID SILVER.—The chamber at the head of the winze will be completed by Friday next, when, as soon as the water can be got out of the winze, crosscutting the fine ore vein developed at the bottom will be commenced.

LADY BRYAN.—The management of the mine are determined that the delay in prospecting shall be the very shortest possible. Work progresses accordingly.

MEXICAN.—The water is now under control and work was resumed in the joint Union Con. winze yesterday.

SILVER HILL.—Work suspended on the 900 level on account of water. No important changes to record of any of the prospecting drifts on the 800 level. As soon as a sump can be made, and a pump, tank, station, etc., can be put in, opening the 1100 level will be commenced.

UNION DISTRICT.

HIGH GRADE ORES.—Eureka *Sentinel*, Oct. 20: Our informant says that he saw larger bodies of high-grade smelting ores in the Union series of mines that he had ever seen on any part of the coast. The ore is rich and easily reduced, working from $60 to $150 in gold and silver. The company have now on their dumps many tons of high grade ore, ready for the melter. The company propose erecting a furnace this fall or winter, to be in readiness for the reduction of their ores as early as possible. Other mines in the camp are producing an excellent quality of first-class carbonate ore, among which may be mentioned the claim owned and worked by Messrs. Sanchez, Bennett & Co. The Blackhawk ledge is under the immediate supervision of Mr. W. E. Smith, a veteran miner of large experience, and under whose able management the most satisfactory results are being attained. A recent discovery, called the War Eagle, located by Messrs. Parks & Wilkins, is now attracting considerable attention in the district, on account of the richness of the ore, which assays up into the hundreds, and is easily reduced by a common mahogany fire. There are many other claims of more or less prominence in the district, which are being developed in a satisfactory manner.

OSCEOLA DISTRICT.

THE placers cover an area of twenty miles square; much of the ground being cut up by deep ravines and canyons, but in the canyons are beds and bars of gravel that prospect well. Osceola, like one-half the camps in Nevada, is without water sufficient for its demands, and a placer mining districts without water is like a Pioche saloon without whisky. * * * * The quartz runs all the way from $6 to $40 per ton; the ore is free milling and as averaged all over the district yields at the rate of $15 gold per ton. The Eagle Company's mill made a run on 700 tons of ore, which yielded $10,000 worth of free gold, and then a few assays from the tailings were reported as running from $5 to $22.50. The mill is idle at present, but the company employ some 15 men still at the mines and about the mill. The favorable climate in which this camp is situated allows the work to go on all winter, and the occasional finding of a rich nugget, has kept about 100 men "coyoting" and prospecting about with rockers and the little drippings of water, for the last six months, and this apparently insignificant work has not been thrown away, as in the time mentioned, these hundred men have taken out upwards of $20,000—all of this sum was collected by the use of the rocker and pan only. The largest nugget has been recorded and vouched for enough as coming from this district, and was worth $3,500.

ARIZONA.

GLOBE ITEMS.—*Silver Belt*, Oct. 10: Six men are at work on the Mexican ledge. The incline is 80 feet deep, and the sulphuret ore is coming in. W. A. Holmes asserts that one blast threw out 200 pounds of $2,000 ore the other day in his Ready mine. It is well to be ready for big things. A mill-crushing of five and a quarter tons of second-class ore from the Rescue mine produced 134 ounces, from ore worth by assay over $170 per ton. The El Capitan mine is prospecting well. From an opening 20 feet deep ore assaying from $289 to $2,084 has been taken. The vein from which this ore was taken is 20 inches wide. Good ore is still being extracted from the westerly half of the Richmond lode. The last shipment milled assayed $190 to the ton. In any other district this would be considered fine ore, but the owners thought it should have yielded more. At the depth of from 40 to 60 feet, the Cox & Coplin mines are yielding ore of wonderful richness. The highest grade, worth many thousands of dollars to the ton, is from two to four inches thick. Alongside of this is found good milling ore, worth $400 to $500 per ton. Six tons of the latter was sent last week to the Miami mill, and is lying there now unworked. The Chromo incline followed a vein of ore with an easterly pitch of 45° for over 40 feet. At the bottom a wall was found going down quite steep, and it is now believed that that will prove to be the foot-wall of the large lode. The theory of our mining men, it ought to be stated, is that the Imperial, Chromo and Sherman are on the same great fissure vein as the Stonewall Jackson, though they are five miles to the southwest of that celebrated mine.

COLORADO.

GOLD HILL.—Boulder *News*, Oct. 18: McBarnes, Clark, Christopher & Co., are working 10 men on the Horsefall, making money out of the old dump. They are also preparing to work the mine extensively. Our informant says that they will employ as many as 50 men when they get fairly under way. The ore is treated at the Corning Tunnel stamp mill, now rented and run by Hersey & Stevens. The Slide, under charge of Prof. J. Alden Smith, is sending a good deal is high-grade ore to market, employing 15 men. Van Wendt is working the Winona, for the Denver owners. Truman Whitcomb is working two shafts on the old Hoosier, and is also preparing to raise a large body of rich ore in sight in the Cold Spring. These, and other operations, are very encouraging.

SILVER CLIFF EXCITEMENT.—*Chieftain:* There is great excitement at Alamosa. Rosita is fast being deserted, it is said, for the new mines which are reliably reported to be the richest ever discovered in Colorado. The rush at Leadville is no comparison to this new excitement and rush. The people here are wild with the thoughts of the great richness of the new district. Eight tons of ore from the new district sold at Canon City for $11,000, and shipments are being made daily.

LITTLE PITTSBURG.—On Oct. 9th, the Little Pittsburg mine at Leadville produced 40 tons of ore. The next two days the product was 100 tons. It is currently reported that the $134,000 received by Geo. Hook for his one-third interest, and the $35,000 paid to release the bond held by Eastern parties has been taken out of the mine within a few weeks at an expense of about 3%.

ITEMS.—Boulder *News*, Oct. 18: Last week's run from the Caribou resulted in three silver bricks weighing 4,300 ounces, valued at $4,300. This represents six days work of the Nederland mill, with 10 stamps. On Saturday the Boston & Colorado Smelting works shipped from Central a gold brick worth $26,000.

IDAHO.

BLACK JACK.—*Avalanche*, Oct. 19: All reports from the Black Jack seem to confirm the extent and richness of the recent discoveries. At a point in the adit-tunnel about 375 feet from the mouth and 150 feet from the surface, the ledge shows up heavily in rich gold deposits, the pay-streak being over three feet in width and bearing all the characteristics of a permanent and immense ore-body. From that point to the shaft, a distance of nearly 300 feet, the yield promises to be unusually rich, and it is pretty evident that the Black Jack is steadily looming up as one of the great mines of the country. The Ellmore mill is pounding away on Black Jack rock and the crushings daily yield a steady amount of bullion.

GOLDEN CHARIOT.—This mine is once more coming to the front. An order was recently received here by Thomas West, the newly appointed Superintendent, to purchase wood and winter supplies and to set the works in full operation without delay. It will take several weeks to pump out the water, and after that is accomplished sinking operations will probably be resumed.

GOLD HILL.—The new level in the Gold Hill mine, which was opened about a month ago is 250 feet from the surface. They are in now about 50 feet each way running northeast and southwest. From the crosscut a No. 1 ledge has been struck three feet wide, the ore from which will mill from $50 to $150 per ton. The ledge contains streaks of specimen rock and zinc blende, with wire gold sprouting out like needles. It is a great curiosity and a very rare formation. Work is pushed night and day on the main levels. The stope at the turntable shows up some splendid ore, and the prospects are very flattering for a continuous ledge of the same, which, with the good showing elsewhere in the mine, will ensure a steady supply of rock for the 25-stamp mill for years to come. Under the careful attention of Superintendent W. A. Coughanour and his engineer, A. G. Phillips the entire works are in No. 1 order.

News in Brief.

THE Sacramento river is rising.

FROST near Memphis, Oct. 18th.

FANATIC riots in Mexico are reported.

THE Petaluma Woolen Mills have been started.

THE wheat crop may exceed 400,000,000 bushels.

THE oat crop will probably somewhat exceed last year's.

THE Russian army lingers 100 miles from Constantinople.

TROUT fishing is prohibited until after the first of November.

COTTON factory, at Chattanooga, Tenn., burned on Oct. 17th.

THE Santa Clara county fruit crop is estimated worth $2,800,000.

OCTOBER cotton crop returns, at Washington, indicate a yield of 5,000,000 bales.

THE British ship, *City of Dublin*, stranded on the Columbia river bar, Oct. 18th.

THE balance sheet of the Bank of Glasgow, shows a loss of £5,190,983.

THE outturn of the corn crop will not vary much from 1,300,000,000 bushels.

THE Russian Envoy to the Afghans, returns with an Afghan Embassy to the Russians.

THE steamer *John Bramhall*, with war material for Turkey, wrecked near New London.

A RETURNED miner from the Snohomish gold fields reports the alleged discoveries a fraud.

GENERAL GRANT is visiting Spain, where he has been most cordially received by King Alfonzo.

IT is said that the Rothschilds have agreed to loan Egypt $30,000,000 to clear off the floating debt.

THIS season large quantities of Napa county grapes will be shipped in refrigerator cars to the East.

DURING the rage of the yellow fever, 25 ministers have died at their posts in the southwestern cities.

OUT of nearly 2,000 turkeys raised by him this year, C. Rucker, Upper Pope valley, lost about 800 by roup.

THE whaling bark *Susan*, of New Bedford, was capsized in a hurricane, and 22 out of the crew of 25 were drowned.

CAPTAIN EADS estimates at as high as $200,000,000 the diminution in the amount of trade caused by the yellow fever.

A MORE pacific state of affairs has never been known to exist on the western side of the Republic of Mexico than exists just now.

THE Government is suing the Central Pacific Railroad to recover 20,085 acres of land in Colusa county, illegally entered and claimed.

THE Colorado potato beetle, the chintz bug and another insect have greatly damaged the potato crop in the neighborhood of Verde, Arizona.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch from Washington. D. C.

FOR THE WEEK ENDING OCTOBER 8TH, 1878.

HYDRAULIC AND WIRE ROPE PUMPING SYSTEM.—William P. Barclay, Virginia City, Nev.

ONE-TRACK RAILWAY CARS.—David B. James, Visalia, Cal.

ADJUSTABLE CENTER-BOARDS.—Dennis McColgan, San Francisco, Cal.

BUTTONS.—Albert Michelson, San Francisco, Cal.

BUTTON FASTENERS.—Albert Michelson, San Francisco, Cal.

TELESCOPE ATTACHMENTS FOR FIREARMS.—Chas Slotterbek, Lakeport, Cal.

CHAIR BRACES.—Soven P. Sovenson, Rio Vista, Cal.

HARVESTERS.—Wm. H Foye, San Francisco, Cal.

CHILD'S TABLE TRAY.—Charlotte Gillard, San Francisco, Cal.

BARLEY AND MALT DRIERS.—Gustav S. Reuter, Sonora, Cal.

——The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of special mention:

BASIN TRAP.—Wm. E. Worth, S. F. This is an improved stench or basin trap valve for the prevention of the admission of sewer gas into dwellings through the pipes connecting the basins with the sewers. Mr. Worth, who formerly kept the Worth house in this city, had considerable difficulty with the basin traps, and when he took the Nucleus hotel, which he now keeps, he found frequent repairs necessary there also. To remedy the defects he devised a trap consisting of two chambers in a cylindrical case, these being connected by a pipe through which water may flow. A float valve is arranged to close the opening at the upper end of this pipe when the water is out of the upper end of the chamber, while the pipe is opened by the valve while water is flowing. The pipe connecting the chamber extends down into a cylinder in the lower chamber, and a float valve in this cylinder allows the water to float down the pipe, but as soon as the flow ceases, floats up against the lower end of the pipe and closes it tightly. The water which enters the cylinder flows out of a passage at its top, and thence into the chamber and out of the waste pipe. Sewer gas is prevented from passing into the basin through this trap by its peculiar construction and operation, and the liability to siphonage is entirely overcome. The trap may be cleansed at any time. A body of water remains at all times in the cylinder, and both ends of the pipe connecting the chambers are sealed by the valves at all times except when water is flowing through the trap. The device is a practical one of great utility.

WATER GAS MANUFACTURE.—W. A. Goodyear, S. F.—Dated August 27th, 1878. The invention relates to an improved method of manufacturing water gas, the object being to produce at a minimum of cost, through the decomposition of the vapor of water, hy means of carbonaceous matter, a gas of great heating power. The apparatus used for the purpose is a suitable furnace, or generator, having one or more regenerative chambers connected with it. These chambers are loosely filled with firebrick, or other refractory materials, so as to allow a free passage of gases through the chamber, for the purpose of retaining and utilizing as much as possible the heat that is produced in the various stages of the process. The necessary pipes and valves for introduciug, discharging and controlling blasts or currents of air, steam or gas, which are employed or produced, are properly placed for the purpose. The apparatus is so arranged as to be continuous in operation, the currents of air, steam or gas moving through the chambers and furnaces, first in one direction and then in the other, suitable arrangements being made for controlling them at the proper time. The great result obtained hy the arrangement patented is the saving of hy far the greatest portion of the heat generated hy the combustion of the air gas during the passage of the air blast, which heat is subsequently taken up to the steam blast, and hy it returned to the generator, and thus utilized in the generation of the desired product, the water gas, which possesses a far higher degree of heating power than the air gas does.

Woodward's Gardens were never more attractive than at present. Besides three lions already mentioned, six monster living alligators, several Iguanas and a boa-constrictor have just been added. New stars are constantly engaged for the Pavilion exercises. Rates of admission as usual

FOR PRINTING MATERIALS, the publishers of this pape patronize Marder, Luse & Co., Pacific Type Foundry and Printers' Supply Warehouse, 532 Clay street, San Francisco, Cal. Send them a stamp for specimen sheet, and say advertised in this paper.

The Averill Mixed Paints.

Now that the dust has been laid in most parts of the State, all those who wish to refresh and beautify their dwellings and outbuildings will begin painting. We doubt not we shall help some readers to a choice of materials when we state that we have heard nothing but praise of the Averill mixed paints from those in the country who have written to us about them. These paints have been advertised considerably in the PRESS, and we doubt not are known experimentally to hundreds of our readers. To those who have not yet used the Averill we can but say that our experience with it has been most satisfactory and such that would lead us to commend it to others.

The fact is that the manufacture of the Averill mixed paint is one of the most thriving and progressive of our local industries. Not only are larger amounts than ever before shipped to all parts of this coast and continually winning new friends by sterling quality and readiness for application, but the export of the paint to the islands of the Pacific, makes the Averill paint a promising item in our export trade. It is being shipped to Australia in considerable quantities. In the Sandwich islands it has been in use five years, and the shipments this year are six times as great as in any former year. This increase of demand after the complete test which has been made of the material is indisputable evidence of the satisfaction which the paint gives to its users.

To its long list of victories at fairs and industrial exhibitions the Averill paint adds a conquest at this year's State fair at Sacramento. Among other valuable qualities the committee awarded it the first place for the "greatest durability." This is, of course, a very strong point in a paint, for almost any material if skillfully mixed looks well at first.

The California Paint Company, who are the manufacturers of the Averill on this coast, make it to suit all purposes, from the outside painting of barns aud bridges, or roof and sides of other buildings, to the exquisite tints for inside finishing. It is also made for painting wagons, and every other manufacture of wood or motals. We believe that any one needing paint for *any* purpose will do well to send to the California Paiut Company, No. 329 Market street, S. F., for card of colors and prices of material suited to the purpose they require.

EXAMINE the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.94. Lewis C. Grover, President; L. Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

METALS.

[WHOLESALE.

WEDNESDAY M., October 23, 1878.

IRON.—	
American Pig, ton	28 00 @30 00
Scotch Pig, ton	28 00 @30 00
White Pig, ton	28 00 @— —
Oregon Pig, ton	— — @— —
Refined Bar	2½@ 3
Horse Shoes, keg	5 00 @— —
Nail Rod	—@ 7
Norway	6¼@ 7
COPPER.—	
Sheathing, lb	34 @ 35
Sheathing, Yellow	21 @
Sheathing, Old Yellow	12 @
Composition Nails	24 @—
Composition Bolts	24 @—
STEEL.—	
English Cast, lb	13 @ 15
Anderson & Woods, ordinary sizes	15 @— —
Drill	15 @— —
Flat Bar	14 @ 19
Plow Steel	7½@ 12½
TIN PLATES.—	
10x14 I C Charcoal	7 50 @ 8 50
Banca Tin	23 @— 24
Australian	17 @ 17½
ZINC.—	
By the Cask	9 @— —
Zinc, Sheet 7x3 ft, 7 to 10, lb	9 @— 10
7x3 ft, 11 to 14	10 @— —
8x4 ft, 8 to 10	11 @— —
8x4 ft, 11 to 10	11 @— —
NAILS.—	
Assorted sizes	3 00 @3 25

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by SUTRO & Co.]

SAN FRANCISCO, October 23, 3 P. M.

LEGAL TENDERS in S. F., 11 A.M., 93⅜@93¾. SILVER, 2@1½. GOLD in New York, 100¾

COIN BARS, 890@910. SILVER BARS, 8@22 ℔ cent. discount.

EXCHANGE on New York, ½%; on London bankers, 49½@49¾. Commercial, 50; Paris, five francs ⅜ dollar; Mexican dollars, 83@91.

LONDON Consols, 94 4-16; Bonds, 106 ex coupon

QUICKSILVER in S. F., by the flask, 40 lb, 44c. (nominal).

Signal Service Meteorological Report.

Week Ending October 22, 1878.

HIGHEST AND LOWEST BAROMETER.

Oct 16	Oct 17	Oct 18	Oct 19	Oct 20	Oct 21	Oct 22
30.20 / 30.14	30.13 / 29.97	29.94 / 29.86	30.07 / 29.90	30.17 / 30.10	30.19 / 30.11	30.20 / 30.07

MAXIMUM AND MINIMUM THERMOMETER.

66 / 53	72 / 56	71 / 56	63 / 54.5	68 / 53	77 / 56	78 / 63

MEAN DAILY HUMIDITY.

66	61	71	87	62	37	48

PREVAILING WIND.

NW	NW	N	SW	NW	NE	NW

WIND—MILES TRAVELED.

136	136	141	181	226	131	153

STATE OF WEATHER.

Clear.	Clear.	Clear.	Fair.	Clear.	Clear.	Clear.

RAINFALL IN TWENTY-FOUR HOURS.

Total rain during the season, from July 1, 1878, 1.83 in.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Keystone Quartz Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Sierra county, California.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No 6) levied on the thirtieth day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Am't.
Carolan, James, Trustee	59	200	100 00
Hall & Charles, Trustees	68	1248	824 00

And in accordance with law, and an order of the Board of Directors, made on the thirtieth day of August, 1878, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the office of the Company, No. 201 Sansome street, corner of Pine, San Francisco, California, on the twenty-eighth day of October, 1878, at the hour of 12 o'clock M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

LOUIS VESARIA, Sec'y.

Office, No. 201 Sansome street, corner of Pine, San Francisco, California.

Mount Jefferson Milling and Mining Co.—Location of principal place of business, San Francisco, California. Location of works, Garrote Mining District, Tuolumne County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the seventeenth day of October, 1878, an assessment (No. 5) of five (5c.) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, Room 6, 315 Pine St., San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the twenty-fifth (25th) day of November, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Tuesday, the seventeenth (17th) day of December, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK, Sec'y.

Office, Room 8, No. 318 Pine St., San Francisco, Cal.

New Basel Gold Mining Company.—Principal place of business, 610 Merchant street, San Francisco. Location of works, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 24th day of September, 1878, an assessment of five (5) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary of the Company.

Any stock upon which this assessment shall remain unpaid on the 4th day of November, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 18th day of November, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. D. F. LUCAYE, Sec'y.

Office 610 Merchant street, San Francisco, Cal.

Orion Mining Company.—Location of Principal place of business, San Francisco, California. Location of works, Iowa Hill, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the fifth day of September, 1878, an assessment (No. 3,) of seventy-five (75) cents per share was levied upon the capital stock of the corporation, payable immediately in U. S. gold coin, to the Secretary, at the office of the Company, 28 Sansome Street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the fifth day of November, A. D., 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the 20th day of November, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

P. CONKLIN, Sec'y.

Office, No. 28 Sansome Street (up stairs), San Francisco, Cal.

Summit Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the tenth day of September, A. D., 1878, an assessment, (No. 5,) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of said Company, 318 Pine street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the twenty-second day of October, A. D., 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the nineteenth day of November, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK, Sec'y.

Office, Room 6, No. 318 Pine Street San Francisco, Cal.

The California Fruit Growing Association.—Location of principal place of business, San Francisco, California. Location of property, El Dorado County, California.

Notice is hereby given, that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 9) of three ($3) dollars per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, No. 641 Sacramento street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 30th day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Monday, the 21st day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco, Cal.

POSTPONEMENT.—At a meeting of the Board of Directors of the California Fruit Growing Association, held September 24th, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till Saturday, the 26th day of October, 1878, and the day of sale of delinquent stock is hereby postponed to Friday, the 22d day of November, 1878.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco.

POSTPONEMENT.—At a meeting of the Board of Directors held on the Nineteenth day of October, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till November 30th, 1878, and the day of sale of delinquent stock is hereby postponed to December 21st, 1878.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco, Cal.

Vigorit Powder Company.—Location of principal place of business, City and County of San Francisco, California. Location of works, California City, Marin County, State of California.

Notice.—There are delinquent upon the following described stock, on account of assessment (No 1) levied on the first day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. of Cert.	No. Shares	Amount
Louis McLaue, Trustee	30	437½	$218 75
Louis McLaue, Trustee	32	½ of 375	218 75
O W Grayson, Trustee	62	1312½	656 25
H H Shinn, Trustee	91	400	200 00
H H Shinn, Trustee	92	400	200 00
H H Shinn, Trustee	93	400	200 00
H H Shinn, Trustee	94	112½	56 25

And in accordance with law, and an order of the Board of Directors, made on the First day of August, 1878, so many shares of each parcel of stock as may be necessary will be sold at public auction, at the office of the Company, Room No. 1, 109 California street, on Wednesday, the second day of October, 1878, at the hour of 2 o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

JAS. W. BAKER, Sec'y.

Office, No. 109 California street, Room 1, San Francisco, California.

POSTPONEMENT.—By an order of the Board of Directors made on the First day of October, 1878, the above sale is postponed until Monday, October 21st, 1878, at the same hour and place.

JAS. W. BAKER, Sec'y.

POSTPONEMENT.—By an order of the Board of Directors made on the Eighteenth day of October, 1878, the above sale is postponed until Friday, November 1st, 1878, at the same hour and place.

JAS. W. BAKER, Sec'y.

Amusements.

BALDWIN'S THEATER.

THOMAS MAGUIRE.....Manager.
F. LYSTER.....Acting Manager.
G. R. CHIPMAN.....Treasurer.

PROOF POSITIVE.

Corner Market and Powell Streets. Open every evening and Saturday matinee. Box office open daily.

BUSH STREET THEATER.

CHAS. E. LOCKE.....Lessee and Manager

OATES COMIC OPERA COMPANY.

Open every evening and Saturday Matinee.

CALIFORNIA THEATER.

BARTON & LAWLOR.....Manager.
BARTON HILL.....Acting Manager.

FATINITZA.

Bush Street, above Kearny. Open every evening. Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance.

STANDARD THEATER.

M. A. KENNEDY.....Sole Lessee and Manager.

RICE'S SURPRISE COMBINATION.

Bush Street, above Montgomery. Open every evening. Seats may be secured six days in advance.

GRAND OPERA HOUSE.

FREDERICK W. BERT.....Acting Manager.

RED POCKETBOOK.

Reserved Seats at Box Office without extra charge.

CERTIFICATE OF PARTNERSHIP.

The undersigned, having formed a partnership to carry on the business of General Publishers under the firm name and style of Dewey & Co., Publishers, this certifies that the principal place of business of said partnership is situated at 202 Sansome street, in the city of San Francisco, State of California; and that Alfred T. Dewey, residing in the city of Oakland, State of California, and Warren B. Ewer, residing in the city of San Francisco, State of California, are all the members of said partnership.

ALFRED T. DEWEY.
W. B. EWER.

STATE OF CALIFORNIA, CITY AND COUNTY OF SAN FRANCISCO. } ss.

On this second day of October, in the year one thousand eight hundred and seventy-eight, before me, Chas. E. Kelley, a Notary Public in and for the said city and county, personally appeared Alfred T. Dewey and W. B. Ewer, known to me to be the persons whose names are subscribed to the within instrument, and they acknowledge to me that they executed the same.

In witness whereof, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written. CHAS. E. KELLEY,

[Seal.] Notary Public.

Endorsed—Filed October 7th, 1878.
THOS. H. REYNOLDS, County Clerk.
By J. WHALEN, Deputy Clerk.

CERTIFICATE OF PATNERSHIP.

The undersigned, having formed a partnership to carry on the business of Patent Agents under the firm name and style of Dewey & Co., Patent Agents, this certifies that the principal place of business of said partnership is situated at 202 Sansome street, in the city of San Francisco, State of California; and that Alfred T. Dewey, residing in the city of Oakland, State of California, and Warren B. Ewer, residing in the city of San Francisco, State of California, and George H. Strong, residing in the city of Oakland, State of California, are all the members of said partnership.

ALFRED T. DEWEY,
W. B. EWER,
GEO. H. STRONG.

STATE OF CALIFORNIA, CITY AND COUNTY OF SAN FRANCISCO. } ss.

On this second day of October, one thousand eight hundred and seventy-eight, before me, Chas. E. Kelley, a Notary Public in and for the said city and county, personally appeared Alfred T. Dewey, W. B. Ewer, and George H. Strong, known to me to be the persons whose names are subscribed to the within instrument, and they acknowledged to me that they executed the same.

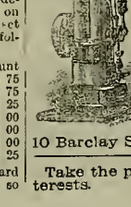
In witness whereof, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written. CHAS. E. KELLEY,

[Seal.] Notary Public.

Endorsed—Filed October 7th, 1878.
THOS. H. REYNOLDS, County Clerk.
By J. WHALEN, Deputy Clerk.

Established 1844.

JOSEPH C. TODD,



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Batteries for Dry or Wet Crushing, Amalgamating Pans, Settlers, Furnaces, Retorts, Concentrators, Ore Feeders, Rock Breakers, Furnaces for Reducing Ores Water Jackets, Etc.

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Crushing Rolls, Clarifiers, Vacuum Pans, Air Pumps, Concentrators, Bag Filters, Charcoal Filters, Blow-up Tanks, Coolers and Receiving Tanks.

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Flour Mill Machinery, Saw Mill Engines and Boilers, Dredging Machinery, Oil Well Retorts, Powder Mill Machinery, Water Wheels.

Engines and Boilers of all kinds, either for use on Steamboats and made in accordance with the Act of Congress regulating the same, or for use on land. Water Pipe, Pump or Air Column, Fish Tanks for Salmon Canneries of every description.

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The undersigned, owners of LESCHOT'S PATENT for DIAMOND POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING AND TUNNELING DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

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Refiners of Borax, Alum, Nitrate of Soda, Saltpeter, Potash, Etc.

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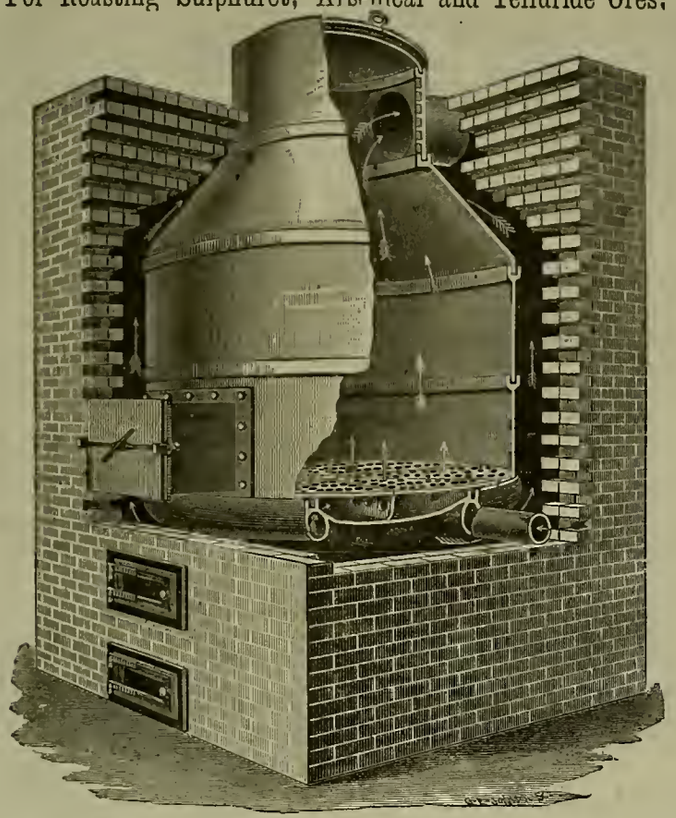
Z. A. WILLARD'S AUTOMATIC FURNACE

For Roasting Sulphuret, Arsenical and Telluride Ores.



The attention of scientific and practical men is called to Z. A. Willard's new method of treating sulphuret ores.

This process has been tried and tested on a large scale in Boston and in Colorado on every variety of ore, including sulphurets of iron, copper, lead and antimony, and arsenical and telluride ores of high and low grade, and in all cases with the most complete success.

The advantages claimed for the Furnace are: Perfect adaptation to the process. Simplicity and ease of construction. Cheapness—caused by shortness of time required in roasting, small amount of fuel needed, dispensing with skilled labor, and by the low cost and durability of the furnaces. Durability—the low heat used not injuring either iron or brick work. Economy of fuel—the amount used not exceeding one cord of wood to ten tons of ore. Economy of labor—no skilled labor, and very little labor of any kind, its automatic action only requiring one man to six furnaces. Perfect nature of roast—by which all the sulphur is burned away, the base metals oxidized and the precious metals set free. Ability, by reason of the perfect nature of the roast, to use chlorination (Plattner's method) for saving the gold in strictly gold ores. No loss by dust or volatilization.

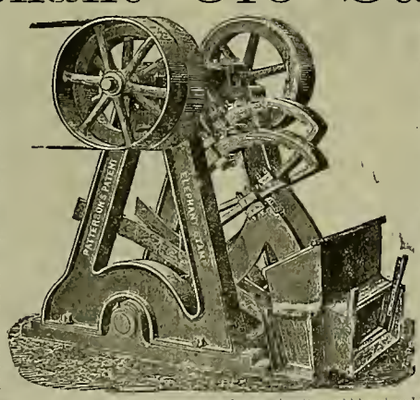
The cheapness and simplicity of this process renders it of vast importance in solving the question of the profitable reduction of low grade refractory ores.

Z. A. WILLARD, Patentee,

Baldwin's Hotel, Market St.,

SAN FRANCISCO.

Elephant Ore Stamp.



We beg to call your attention to this engraving representing the Elephant Ore Stamp. The advantages claimed for this Stamp are as follows:

CAPABILITIES.—The "Elephant" is capable of crushing as much stuff as a 12-Stamp Battery of the present system, having crushed as high as 1½ tons of tough copper ore in one hour, through a No. 4 punched screen. The undersigned, however, will guarantee 20 tons per day of ordinary quartz through the same size screen.

WEAR.—The "Elephant" having only two pairs, Shoe and Dies, the wear in this instance is equal to one-sixth of a 12-Stamp Battery. There being no Cam Tappets, Cam Shafts or Guides, the consequent wear on these parts is done away with; the leather thorough-brace, uniting the lever with the spring, would only require replacing at most, once a year.

POWER.—The "Elephant" only requires a seven horse-power engine to drive it, where a 12-Stamp Battery would require from 18 to 20 horse-power.

PORTABILITY.—The entire Battery, including Mortar, will weigh about six tons, thereby causing an immense saving in the way of freight to such places as Arizona, Mexico, Carihoo and Bodie. As no part of the machine weighs more than 1,800 lbs., the handling of the machine is comparatively easy, and in places where it would be necessary to pack the machine on mules, it could be easily made in pieces not to weigh over three hundred pounds.

The above engraving shows the Machine in exactly the position it would be placed in a mine; the reader will therefore see that all wood work is done away with, and that once the Machine is on the ground it will take but a few days to set it up and have it in full working order.

The "Elephant" can be seen working every day from 2 to 4 P. M. at No 342 Main St, near Harrison, San Francisco For particulars, apply to

EDMUND WHITE, Care of A. B. Grogan, 705 Sansome St.

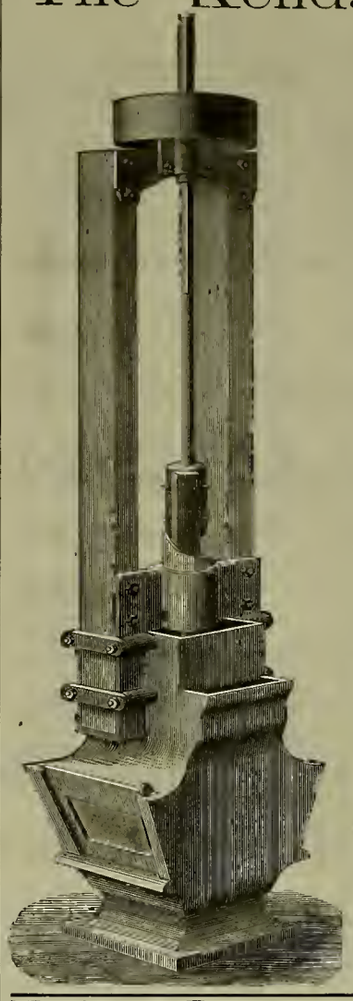
GOLD, SILVER AND COPPER MINING, Reducing and Concentration Machinery.

Hoisting Engines, Diamond Pointed Rock Drills, Manufactured by M. C. BULLOCK.

Address, FRASER, CHALMERS & CO., Chicago, Ill.

The Kendall Battery.

STEPHEN KENDALL, Patentee.



This Battery embraces the only genuine improvement that has ever been made in the process of reducing ores. The frame is all secured to the mortar, so that no extra framework is required. The stamp is rotated by a horizontal pulley on the top of the frame, and raised by the cam which is set horizontally on the girt timber. The upper end of the stem is made square, and works up through the pulley. When the stamp falls it crushes and grinds the ore fine by the continual rotary motion. The mortar has three discharge openings, and is adapted to either wet or dry crushing. A mill with an 800-pound stamp will crush five tons of average ore per day, shipping weight, 4,000 lbs., and requires about five horse-power. A 1,600 lb. stamp mill is in process of construction, which will give a capacity equal to any five-stamp mill. Several of them are now in successful operation in various parts of the country. For PROSPECTING PURPOSES this mill has no equal, as it can be set up and moved with such facility and operated at so small an expense. Address for further information,

Rankin, Brayton & Co.,

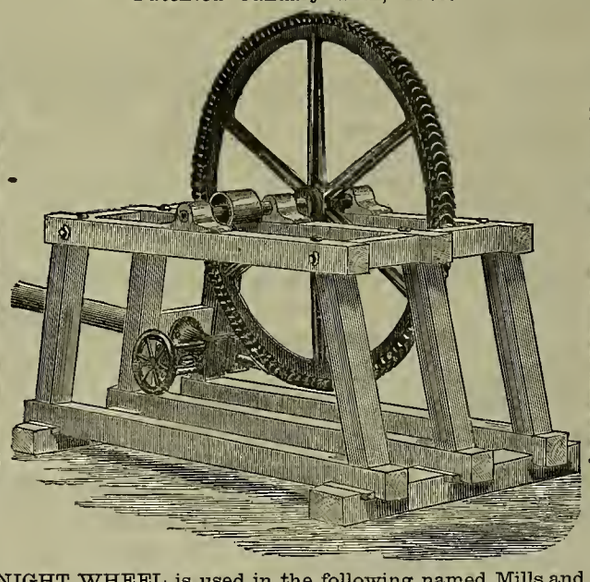
MANUFACTURERS,

Pacific Iron Works. San Francisco.

Knight's Water Wheel,

Patented January 12th, 1875.

This Wheel possesses more power for a given percentage of Water than any yet offered to the public. They are in practical use in many Mills and Hoisting Works, and never fail to give entire satisfaction, which facts speak fully for their efficiency, and render further comment unnecessary.



This Wheel possesses more power for a given percentage of Water than any yet offered to the public. They are in practical use in many Mills and Hoisting Works, and never fail to give entire satisfaction, which facts speak fully for their efficiency, and render further comment unnecessary.

The KNIGHT WHEEL is used in the following named Mills and Hoisting Works, to which the Public are referred:

1-Eight-foot wheel, running Oneida Co.'s Mill, Amador county, Cal.; 60 stamps. Rob't Robinson, Supt.
1-Eight-foot wheel, running Con. Amador Mining Co.'s Mill, Amador county, Cal.; 40 stamps and two Hepburn pans. David Davis, Supt.
1-Eight-foot wheel, running Lincoln Gold Mining Co.'s Mill, Amador county, Cal.; 40 stamps.
1-Eight-foot wheel, running pump at same company's mine. S. D. R. Stewart, Supt.
1-Eight-foot wheel, running Keystone Con Mining Co.'s Mill, Amador county, Cal.; 40 stamps.
2-Four and one-half foot wheels, used in hoisting by reversible water power at same company's mine. O. C. Hewitt, Supt.
1-Four and one-half foot wheel, running Original Co.'s Mill, Amador county, Cal.; 40 stamps, one pan, one rock-breaker. J. R. Johns, Supt.
1-Four-foot wheel, running Gover Mining Co.'s new Mill, Amador county, Cal.; 20 stamps.
1-Eight-foot wheel, running same company's old Mill; ten stamps. John Palmor, Supt.
1-Six-foot wheel, running Talismau Mining Co.'s Mill, Amador county, Cal.; ten stamps.
1-Eight-foot wheel, hoisting and driving pump at same company's mine. John Tregloan, Supt.
1-Four and one-half foot wheel, running Bunker Hill Mining Co.'s Mill, Amador county, Cal.; ten stamps. John Palmer, Supt.
1-Four and one-half foot wheel, running Cold Mountain Mining Co.'s Mill, Amador county, Cal.; ten stamps. J. C. Goodman, Supt.
1-Six-foot wheel, running St. Patrick's Mill, Newcastle, Placer county, Cal.; 15 stamps. Jno. Townsend, Supt.
1-Eight-foot wheel, hoisting and running pump, compressor and hoisting at Sheba Silver Mining Co.'s Mine, State of Nevada.
1-Four and one-half foot wheel, running Luck Q. M. Co.'s Mill; ten stamps, Oregon.
1-Four and one-half foot wheel, running Republic Mill; 20 stamps, Nevada county, Cal. E. H. Dyer, Supt.
1-Six-foot wheel, at the Plumas Eureka, running 48 stamps, two pans, two rock-breakers. Wm. Johns, Supt.
2-Six-foot wheels, sent up to Sierra Buttes Mines, one to run 50 stamps and the other to run pans.
1-Six and 2 Four and one-half foot wheels, sent to Sauls burg Mine, Sonora, Tuolumne Co. J. Leechman, Supt

☞ Orders can be filled at short notice, or further information given, by addressing the undersigned. ☜

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Room 20, Safe Deposit Building, S. F., Cal.

KNIGHT & CO.,
Sutter Creek, Amador County, Cal.

A. S. HALLIDIE.

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Office, No. 6 California Street, SAN FRANCISCO.

Manufacturer and Dealer in all kinds of

Iron and Steel Wire Rope,

Flat and Round, for Mining, Shipping, Hoisting and General Purposes.

Having the most complete and extensive Wire Rope Works in the United States, I am prepared to manufacture Wire Rope and Cables of any length or size at short notice, and guarantee the quality and workmanship equal to any made at home or abroad.

Iron, Steel and Galvanized Wire

Of all sizes on hand or made to order.

WIRE

Barbed Fence Wire.

Sole Proprietor of

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For the Transportation of Ores, etc.

Send for a Circular.

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Office, No. 6 California St., San Francisco.

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PATENT DETACHABLE TOOTH SAWS,

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CHLORIDIZING FURNACE.

Patented Sept. 10th, 1878.

Now in Operation at the Extra Mining Co.'s Works, Copper City, Shasta Co., Cal.

Two men and two cords of wood roast

Forty Tons of Ore in Twenty-four Hours,

Giving a full chlorination (100%) at a cost of 30 cents per ton. Address,

O'HARRA & FERGUSON,
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Or CHAS. W. CRANE, Agent,
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The Company's Steamers will sail as follows, at 12 M.:

CITY OF TOKIO.....December 3d.
CITY OF PEKING.....January 4th.
For YOKOHAMA and HONGKONG.

COLIMA.....November 5th
For Panama and New York, calling at Mazatlan, San Blas, Manzanillo and Acapulco, touching at San Jose de Guatemala and La Libertad, to land passengers and mails only.

Tickets to and from Europe by any line for sale at the lowest rates—also to Havana and all West India ports.

CITY OF NEW YORK.....October 28th, at 12 o'clock, noon, or on arrival of the English Mails, for HONOLULU, AUCKLAND and SYDNEY.
$10 additional is charged for passage in Upper Saloon.

ALASKA.....October 30th
For Victoria, Port Townsend, Seattle, Tacoma and Olympia, connecting at Tacoma with Northern Pacific Railroad for Portland, Oregon.

Tickets must be purchased before 11 A. M. on day of sailing, at Wharf office.

For freight or passage apply at the office corner First and Brannan streets.

WILLIAMS, BLANCHARD & CO., Agts.

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—SOLD BY—

GEO. FINCK, JEWELER,

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Successor to WM. SHERMAN & CO.)

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LARGEST STOCK AT LOWEST PRICES.

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Best Refined Cast-Steel.

Warranted Most Superior for Drills, Hammers, Etc.

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Stronger, Better and Safer than any other High Explosive.

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It breaks more ground, pulverizes it better, saves time and money, and is superseding the ordinary powder wherever it is tried. ☞Triple Force Caps and all Grades of Fuse.

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"OLD RELIABLE"

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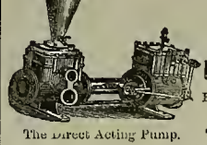

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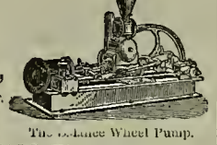

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Publishers. SAN FRANCISCO, SATURDAY, NOVEMBER 2, 1878. VOLUME XXXVII Number 18.

Artesian Wells.—No. 4.

Character of Material.

Spon says, in his "Practice of Sinking and Boring Wells": "Every permeable stratum may yield water, and its ability to do this, and the quantity it can yield, depend npon its position and extent" The type of pormeable material is sand; of impermeable, compact clay. As rock is full of irregular fissures water does not exist in it in regular strata, thero is small chance of obtaining water in it, and for this reason, as well as on account of the difficulty of horing in it, rock is avoided as much as possible. Between sand and clay, there are innumerable grades of permeability according as the one or the other predominates or as other material, for instance, gravel is mixed with these. Experiments by Prestwich, quoted by Spon, have shown that ordinary siliccous sand will hold about one-third of its bulk of water, or from two to two and one-half gallons per cubic foot. When clay and gravel are introduced the amount absorbed is less. When the material is compacted as in sandstone or limestone water is still absorbed but in very diminished quantity. Drift material, consisting largely of sand and gravel bronght down comparatively recently by rivers or floods, may yield water, but not in large snpply. Alluvion, consisting of sand, gravel, rolled pebbles, clays, and found in the valleys of great rivers, is distributed more regularly than drift and over more surface and hence may yield larger supply of water. But, as has been already many times hinted, it is in more regular, more widely extended, and, generally speaking, deeper strata of sandstones, limestones and clays, that reliahlo snpplies are to be sought. The striking of rock is, of course, no sign of failure. The rock may he drilled through, or if it is merely a boulder it may be avoided by another boring.

The Climate.

The amount of rainfall ou the outcrop of water-hearing strata determines the quantity of water that may probably be obtainod from them at a distance by artesian borings. An entirely rainless district may he supplied with artesian water. In fact the gentle tilting of alternating pervious and impermeable strata seems to be a special arrangement of nature, by which low, dry, unwatered plains may receive their share of irrigation. All that is needed is rain on the surrounding highland where the edges of the water-bearing strata are turned up and exposed. An examination into the condition of this outcrop (as in the last article) of its extent and of the rainfall upon it, may furnish data for roughly calculating the amount of water that the plains may expect to be able to obtain. For instance, on a steep outcrop less water can be absorbed than on a more level one; again, less water can be appropriated by the outcrop from a deluge immediately followed by burning sunshine, than from a long continued drizzle followed by dull cold days. It is unnecessary to enter further into this. The entire subject in fact is very simple and even suggestions are hardly necessary to an intelligent and observant mind.

The Tools.

Artesian well-boring machinery has been made quite a study. A great number of inventions and improvements have been made over the primitive auger and rods, so great a number that it would be impossible in a short space even to name, much more so, to describe and explain them. Only the most necessary apparatus will he mentioned without description, leaving the latter to cuts which will appear in the next issue.

A derrick is required, which may be easily rigged out of three spars. It must be at least as high as the length of the longest rods to he used in sinking the auger. A tackle is necessary for use with the derrick; also a barrel and cranks for winding the tackle rope. For boring in stiff clays, a twist auger of some kind is needed; for working in soft materials, a pod auger; for rock, a drill. The rods for sinking the auger, may he made of stont poles, joined together by wrought-iron couplings, and may be gotten np hy any good carpenter and blacksmith. For ohvious reasons it has been recommended to make the rods of straight-grown trees, of requisite diameter. Iron rods and pipes are used frequently, but while better than wood on many accounts, are much more expensive. Wooden rods may be turned by a stout wooden lever; for the iron rods and iron lever is better. The iron couplings for the rods are made with shoulders, upon which iron shoes attached to the hook on the tackle block catch, and hy this means the rods are raised and lowered. Two of these shoes are needed. In the vast majority of cases the well must be tubed. Where any great lateral pressure is exerted hy the strata passed through, it is necessary to use considerable force in the sinking of the tubes. They are best made of sheet iron, lack or galvanized. Upon the lower pipe, a steel ring sharpened on its lower edge, is riveted, and serves cut the way for the pipe. It must be stoutly riveted, for its detachment when at considerable depth may ruin the well. The pipe may be forced down by applying snfficient pressure at the top, in almost any convenient way. Sometimes an iron ring is fitted over the top of the pipes Chains attached to the ring descend and are wound about a lever made of two stout timber. spread so as to include the pipe. One end of the level is fastened to the ground a foot or so from the pipe. The long end extends out for some twenty or thirty feet on the other side of the pipe, and is weighted. By this means tremendous pressure is exerted on the pipe. When sinking the pipe, sand or other fine material has to he removed from the bottom. This is accomplished hy a sand-pump. If the hole is not large enough to allow the pipe to pass, reamers are used to scour it out larger under the end of the pipe. With an outfit such as this, and in addition a few tools for recovering articles that may accidentally fall down the well, arrangements for soldering the pipes, and sharpening the cutting apparatus, any intelligent and careful man, with a couple of laborers, can sink an artesian well in favorable material and to a reasonable depth, say 200 or 300 feet.

We had the cost of tools prepared for this issue, but it is crowded out. It will be published in our next, together with cuts of the tools and description of methods.

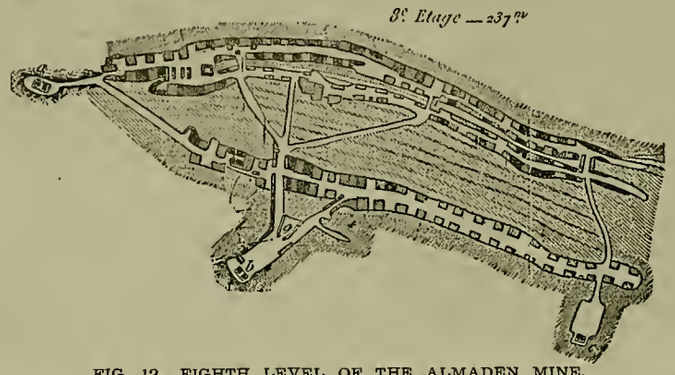


FIG. 12. EIGHTH LEVEL OF THE ALMADEN MINE.

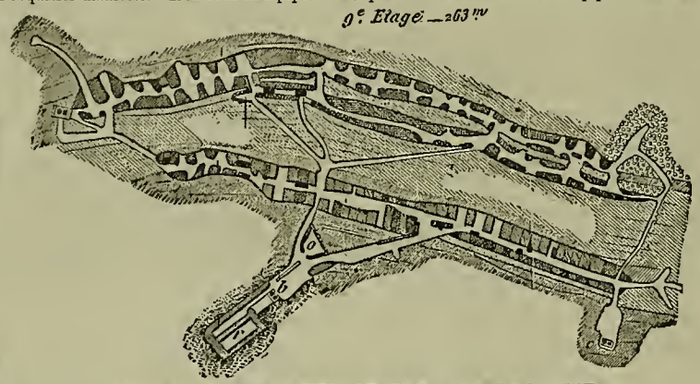
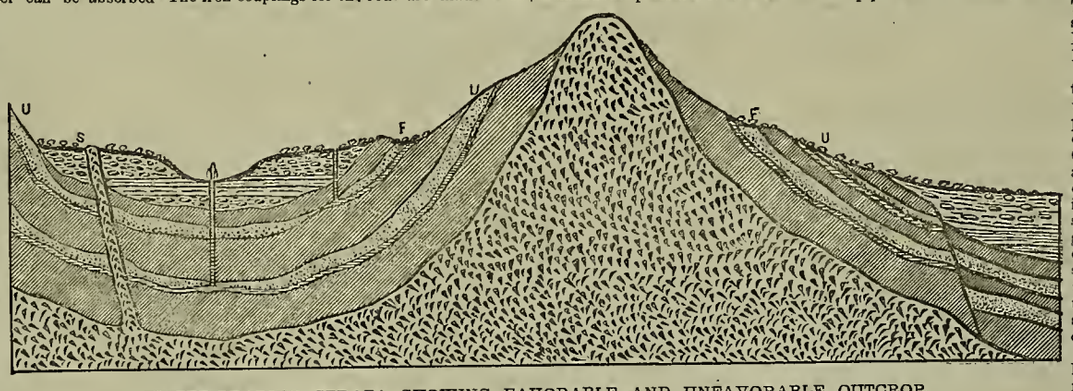


FIG. 13. NINTH LEVEL OF THE ALMADEN MINE.



WATER-BEARING STRATA—SHOWING FAVORABLE AND UNFAVORABLE OUTCROP.

Mines and Works of Almaden.—No. 7.

[Translated for the Press from "ANNALES DES MINES."]

Eighth level; depth, 237-64 meters.—Fig. 12. From the 7th to the 8th levels the three veins dip slightly to the south: The vein San Pedro y San Diego takes an importance more and more great; it extends for a distance of 170 meters in length, with a mean width of eight meters. At its western extremity it is inflected slightly to the north, so that its bearing becomes nearly north 125° east; it is then abruptly cut by the schistes.

The San Francisco and San Nicholas are in their eastern part sensibly parallel to the San Diego, but the western part of the two veins turns in such a manner as to pass gradually from the direction north 110° east to the direction north 90° east. From this disposition of the two gronps of veins, it results that their distance apart at their eastern extremities is nearly the same as npon the npper levels, while it diminishes towards the west, where it is reduced to about 15 meters.

The length of the San Francisco is 180 meters, the mean thickness is 4.40 meters; the similar dimensions of the San Nicholas are 185 meters and 5.5 meters; the two veins now run parallel, and at a small distance the one from the other; they even seem to unite at their western extremity; when at any rate the interval which separates them has been too small for the rock to preserve.

Ninth level; depth, 263.55 meters—Fig. 13. The tendencies of the 8th level, already mentioned, pronounce themselves more and more. The San Pedro y San Diego has a length of 170 meters, and a thickness of 6.50 meters. Its southern wall to the east is formed of a sterile sandstoue, to the west by schiste. Its hanging wall is entirely formed of a very argillaceous schiste.

The San Francisco and San Nicholas separated from San Pedro y San Diego by alternating beds of quartzite and of schiste, forms in their *ensemble* a great curve, concave to the south. Quartzite forms the hanging and foot walls of the San Francisco. The foot wall of the San Nicholas is formed of sandstone, its hanging wall of schiste. The length of the San Francisco is 145 meters, its thickness 2.60 to 3 meters. The San Nicholas, which seems to absorb the San Franoisco to the west, is 180 meters in length.

These two veins abut to the east against a rock, which has already appearcd, but less developed, to the east of the 6th lcvcl. This melaphyric rock is composed of a grayish white paste, in the midst of which are seen a great number of grains of quartz. It is often in a very advanced state of decomposition, which makes it difficult to recognize; it then resemhles a coarse porcelain clay (kaolin).

A prospecting tunnel has heen run into this rock, but no trace of cinnabar was found, and it was abandoned before this mass was traversed, hence its extent is unknown.

Tenth level; depth 290 meters—Fig. 14. (Fig. 14 has been crowded out of this issue It will accompany the next article.) As the figure shows the 10th level it is only in a state of beginning. A gallery starting from

Continued on page 284.

CORRESPONDENCE.

We admit, unendoreed, opinione of correspondents.—Eds.

The Golden Fleece Gold and Silver Mining Company.

[From our Traveling Correspondeut.]

This mins is located in Peavine mining district, Washoe county, Nevada, distant 10 miles north from Reno. The mine is incorporated in this State; principal place of business, Reno, Nevada; capital, $300,000, divided into 30,000 shares, of the par value of $10 per share. President, T. K. Hymers; Secretary, M. Lippman. This mine was located October 4th, 1873, since which tims there has been expended upon the mine in running a tunnel, sinking a winze, making crosscuts, and other uecessary improvements, $36,000. The ledge has been opened for about 200 feet, and in the several crosscuts is found to average about 24 feet in width, and by actnal measurement there is in sight more than 10,000 tons of ore that will yield $56 per ton. This conclusion is arrived at hy a rock test made by the usual milling process. The ore is what is denominated "free milling," that is, containing bnt little rebelliousmetal. There is on the dump abont 600 tons of ore awaiting milling facilities. The stock is nearly all in the hands of three gentlemen, citizens of this town, who, by good management and hard work, have succeeded in bringing this valuable property to its presant advanced stage of development; hut when about to realize a hsfitting reward for their labor and money, they encountered a body of water in one of the lower levels, which they eonld not handle with their machinery, and which will entail upon the company an expenditure of money which they are not preparsd to meet. They are now offering inducements to capitalists to put their shonlders to the wheel and aid them in putting this property among the dividend-paying mines of the Pacific coast. What is required is heavier pumping machinery and a mill. The mine is plsasantly sitnated, plenty of wood and water, easy of access, and in one of the healthiest countries in the world.

The Southern Nevada Mining Co.

This mine is located in Santa Fe mining district, Esmeralda county, Nevada, and about 27 miles northwest of the village of Bellville, which is the nearest postoffice. The company is incorporated, and owns at present five original locations of 1,500 feet each—namely, the Reno, Sunrise, Jennie, London and Badger—making 7,500 linear fest, by 600 feet wide; a claim extensive enongh to make a half dozen big mines. The capital is $10,000,000, divided into 200,000 shares at $50 each. President, Mark Strouse, of Virginia City; Secretary, M. Lippman, of Reno, where is located the principal plaes of businss. A tunnel has been run, shafts have been snnk, drifts have been extended in different directions, crosscuts have been made, showing that ths ledges are quite large, and in fact, that the bill npon which it is located is literally full of ore. The mine is on a minsral belt that is known as the bass metal rangs, and consequently will have to be smelted. The ore contains about 40% lead, and 20 tons averags rock worked in San Francisco yielded $260 per ton, principally silver. There is a great abundance of wood and water, belonging to the company. A furnacs will soon he constructed, and work commenced in earnest to open up this mine. A new stage line has just been estahlished from Virginia City to Bellville, which passes withiu eight miles of the property. The point of dsbarcation is new Boston, from which a good wagon road leads to ths company's works.

This property is in the hands of prominent and enterprising citizens of Reno and Virginia City, and from the tenacity witb whicb they cling to this stock one would naturally suppose that they bslieve in "Southern Nevada." W. G. A.

Reno, Oct. 21st, 1878.

The Silverado Mines.

EDITORS PRESS:—As Santa Rosa mining district is attracting no little attention from the mining public, perhaps a brief skstch of its history and progrss may interest your readsrs.

Santa Rosa district is sitnated in the southeast corner of Los Angeles county, adjoining the wsstsrly lins of San Bernardino county.

The first discovery was mads in August, 1877, by Messrs. Purcell and Slaukard. District was organized ths same mouth. The first location was the Southern Belle lode; next ths Mammoth lods, and soon after the Grayhack lode, which at this date is one of ths most promising lodss in ths district. The locations on this lode are the Grayhack (the discovery clain); first extension north, Mountain View company's claim, now owned by Messrs. Lake & Sears, of Santa Ana; the first extension south, the Blue Light mine; the second extension south, the Dunlap miue; the third exteusion south, the Flanagan mine. The three last named are owned by the Blue Light M. Co., recently iu oorporated under that name, with principal place of busiuess at Los Angeles. Up to January, 1878, little or no attention was paid to those discoveries by people of this sectiou, save some little prospsoting hy the discoverers of these claims. In January, 1878, a disiuteresed party sent ores to San Francisco for assay from the Blue Light location—four samples in all, which assayed in silver respectively as follows: $9, $18, $23 and $100 per ton. This furnished an inducement to the parties to prospect and trace out their ledge, which led to the discovery of a fine body of galena ore at the top of the mountain (ths previous assays being from the canyon), whicb gave $145 per ton silver, with from 20% to 60% lead. Other assays following thess gavs as high as $350 per ton silver. These assays, when made public, attracted some of the farmers (many of whom are old miners) from ths valleys to prospcct, and there has heen more or less prospecting going on all summer, with favorable results. At this time it is well demonstrated that we have a mineral belt of from 5 to 6 miles in width hy 20 miles in lsngth—tracsd continnously at this date for this distance.

Other Districts.

South of Santa Rosa district the Santiago district has been recently organized. Still to the south of this is the Trabuca district—the former embracing that section of conutry known as Shrewsberry canyon, the latter that of Trahuca canyon and the Santa Rosa district, embracing that of Maderia canyon, Ladd canyon and a part of Shrewsberry canyon. The first discoveries were made in Maderia canyon, whers the town of Silverado is situated. Silverado is a veritable mining town—having already two stores, two meat markets, fivs saloons, two hlacksmith shops, two feed stables, two hotels, one restaurant, and two bakerics, besides other business establishmeuts.

There are a number of families that have already taken up their residence here, and more are coming. We ars in daily communication with Santa Ana and Anaheim by stages; also a direct line from Los Angeles every other day.

There are some half-dozen different lodes already discovered and traced out, besides others that are claimed to exist which have not been traced any distauce. Among the prominsnt lodes of Santa Rosa district are the Bear Gulch, Galena, Ophir, Grayback, Silver Belt, Faustina and the Pocohontas, all of which show ore at openings mads on the various locations. In Shrewsberry canyon, the greater portion of which is embraced in Santiago district, the prominent lodes are the Young America, Betty, American Union, Great Fall and Mint. These are continuations of the lodes passing through the Santa Rosa district. Still south the continnations are traced into Trahuca district. Some of the promineut locations in that district are the Emma, Bavaria and Vulture, all of which show an ahundance of galena ore, assaying in silver from $75 to $200 per ton. In the Santa Rosa district west of ths silver-bearing belt a vein of tin ore has been discovered; the ontcrop is about 40 feet wide and has been traced for two miles. The Geo. Washington company on this lode have had ssveral tests which show from from 20% to 30% tin. Still west of this at ths base of the mountain, about five miles west of Silverado the formation changes from slate and limestone to slate and sandstone. In this latter formation is the coal belt in which is situated the Sauta Clara and Black Star coal mines. The Santa Clara company have a 3-foot vein. At present they are not at work. The Black Star company have expended some $12,000 on their mine, and are now producing an excellent qnality of coal, which finds a ready market with consumers of southern Califoruia. Ths mine is now on a paying basis. This company has rescntly let a contract to bore 200 feet to prospect for other veins bslow the present ones. I hear of other discoveries of coal to the south in the same range that are very promising; also of discoveries of mineral in the belt some 30 milss south of present discoveries. Taking all things into consideration, there is no douht of the mineral wealth of this section of southern California, and all that is needed now is capital to develop. I am sorry to say that capital does not seem inclined to lend a helping hand. Were thess prospects on the other side of some desert or within the limits of the desert we would havs an abundancs of capital seeking us. One thing we are gratified with, our district is standing on its own merits, whicb is prohably the best for all interested. "CAP."

Silverado, Oct. 21st, 1878.

The Niagara Gold and Silver and Copper Mining Company.

[From our Traveling Correspondeut.]

This mine is located on ths eastern slope of the Sierra Nevada mountains, about 2½ miles west of Carson City, and in what is known as King's canyon. Contains 1,500 feet on the vein by 600 feet in width. Incorporated. The principal place of doing business, Carson City. Capital, $3,000,000, divided iuto 30,000 shares of the par value of $100 per share. President, W. D. Torreyson; Vice-President, T. W. Healy; Secretary, Thomas Roche. Title, perfect. Near the center of the claim a shart has been sunk to the depth of 100 feet in the ledge. From the bottom of the shaft a drift was run to the west 85 feet without finding the footwall. Some 300 feet south of the shaft and at a point much lower, a tuunel was run in parallel with the ledge along the east wall, exposing vein matter and pay ore of a very promising character. The ledge is supposed to he about 150 feet wide, taking the surface measurement as a oriterion. The lode is evidently a true fissure contact vsin, the gangue or vein-stone being quartz, calcite and a littls fluorspar, carrying gold, silver and copper. The hanging or east wall is a gneissoid granite, and the footwall is slate—hoth well defined. The trend of the ledge is nearly north and south, with an easterly dip. The ors assays reach a very high grade in gold and silver and a good percentage in copper. The facilities for mining and reducing are good; plenty of wood and water and a good millsite on the ground. The property has been examined hy such well known experts as Prof. Frank Stewart, C. A. Luckhardt, C. E. Hoffman, Superintendent Boyle, of the Alta, and others who have universally expressed flattering opinions of the prospect. There is now on the dump abont 80 tons of ore that would pay to mill, were there any milling facilities in rcach. This company—like hundreds of other meritorious mining enterprises that have been brought to the notice of your correspondent in this State—is at present doing nothing with their mine, for the want of money to put up machinery to raise and reduce the ore; and I am authorized by Judgs Healy, the principal owner, to promise most flattering terms to the money king, or kings who will come up with the coin to put this mine in working condition.

Before closing this article I desirs to oall attention to the following extract, with referense to this mine, taken from the report of the Nevada State Mineralogist, for 1874:

"The Niagara gold and silver and copper mine, is situated north of King's canyon. The vein is over 80 feet wide on the 100-foot level, and is encased in slate and gneiss. Besides two crosscuts on the surface there is a shaft 5x6, sunk to the depth of 100 feet. A drift about 75 feet running in a westerly direction (the dip of the vein being to the west pitching into the hill), cuts the vein at about 40 feet, thence runs 35 feet towards the west wall. The rock is of a greenish cast from the copper, which occurs from 5% to 30%. The copper schiste lies eastward of the gneiss, in which fine gold is found. This mine has good clay walls, and is doubtless a true fissure vein. It is a promising mine, and upon development may prove valuable. Assays of ore from this mine have reached into the hundreds."

W. G. A.

Carson City, Nevada, Oct. 7th, 1878.

Mining Patents to Foreigners.

EDITORS PRESS:—Thres years ago I wrote you from Silver Mountain, Alpine county, in this State, calling your attention to the great inconvenience, if not actual hardship, entailed upon foreiguers owning mines in ths United States, hy the Mining Act of 1872, which, whils tacitly allowing the foreigner to possess and work his claim, expressly dehars him from perfecting his title to it by United States patent.

Whils endeavoriug to enlist your advocacy in favor of some modification of this law, I pointed out at some length why I thought that, when a foreigner or foreign corporation had acquired his mining claim hy purchase from an American citizsn, and had complied with all the laws rsgulating its working and holding, he should hs entitled to the same privilege as to title as the citizen from whom he purchased—as part and pertiusnt of his purchass.

I shall not, therefore, uow occupy your time hy a recapitulation of thsse reasons.

Soon after so addressing you, I had this matter brought under the consideration of her Majesty's Secretary of State for Foreign Affairs, and after some correspondsnce with our representativs at Washington, a hill was introduced January 11th, 1875, in your Senate, of which I send yon a copy:

A Bill,

Authoriziug tbs issue of patsnts to mining claims in certain cases.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That in cases whers foreigners or foreign corporations have purchased mining claims for a valuahle considsratiou of citizens of the United States, who had complisd in the location and possession thereof prior to sale with the laws of the United States governing the same, *and such purchase was made prior to the date of the approval of the act to promote the development of the mining resources of the United States, approved May 10th, 1872*, and whers purchassrs shall have complied with the said law in the working of said claims, and shall apply for patent therefor, as in other cases, and pay to the United States the price thersof as provided by law, patents shall issue to such parties in ths sams manner and to the sams effect as in other cases.

SECTION 2. That in casss where application shall bs mads for patent to mining claims hy citizens of the United States, being *bona-fide* owners thsreof, and in possession of ths same, patent shall not be refused therefor on the ground that one or mors of the locators thereof may have been foreigners at the date of location: *Provided*, that said location shall have been made prior to the tenth day of May, 1872.

The hill was read twice, referred to the Committee on Mines and Mining, and ordered to be printed. And there the matter rests; but, finding, on my retuiu from England, that a conventiou on the Constitution is in session, I hcg again to call your attention to the subject, and if possible, through you, that of the Committee on Mines and Mining.

I do not propose to ask your Legislature to give foreigners the right of location on the puhlic domain; that is a privilege which should attach ouly to citizenship. All I ask is that when a foreigner purchases *bona fide* from a citizen, he shall be entitled to go direct to the landoffice and get bis patsnt, just as if he had been a citizsn.

Tbe people of the United States would be gainsrs in a financial point of view, becauss so long as a pateut is unobtainable by a foreigner, so long is your revenue dsprived of the $5 per acre which is not payable until a patent is ohtained, and you cannot take the land from him so long as he continues in possession and doss the statutory work on his elaim.

The citizen ownsr would also he a gainer from the simple fact that if his right of possession carried the right to patsnt, in whose hands soever, it wonld bs of more value and command a higher price; he would also bs savsd, in the case of dealing with a foreigner, the expense of getting the patent himself.

The hill sent applies only to cases where the purchase hy the foreigner from the United States citizen was made prior to the passage of the act of 1872, because it was thonght that a foreigner could now always protect himself hy insistiug on the citizen procuring a pateut before the purchase was completed; but a patent cannot hs got at a moment's notice, and the seller citizen who had not, previous to ths negotiation for purchase by the foreigner, got his patent, might not he in a position to remain in the country long enough to get it, nor the foreigner ahle to wait, and so the sale falls through.

I do not see, therefore, why the provisions of the bill should bs confined to purchasers prior to ths act of 1872, and would therefore delete all the words which I have underlined, and in place of the words "said law" immediately following, insert "provisions of the miniug act of 1872."

So much for this question of patents to foreigners or foreigu corporations; but there are two other matters which affect equally ths citizen and the foreign miner, and to which, as one deeply interested, (having expended upwards of £100,000 sterling of English capital in the purchase and development of mines in tbis State, yst unproductive,) I would taks tbis opportunity of directing attention:

1. I think that non-pronucing mines should he exempt from taxation, or only nominally assessed until they do produce. Tax the bullion but not ths mine or works, and in taxing the bullion allow a fair percentage discount for cost of production. I know mines in California taxed on $50,000 that never produced ore to pay.

2. Where a mine owner expends, or bas expended, in any one year, on an unpatented claim, say $50,000 or $100,000, or any sum over and ahove the statutory amouut necessary to bold the possession, and is unable in the following year to do even ths work necessary to hold the claim (cases of which I know), the excess expended in that year shall be credited to bim in following years, or, in other words, if the work I have to do in 1878 shonld be $1,000, and if I expend, in place of $1,000 in 1878, $10,000, that this amouut of work shall hold the claim for 10 years, on my satisfying the Recorder that such amount of work has been performed.

A miner or corporation, in 1878, has expeuded in *bona fide* work, say $100,000, on a claim on which the statutory work required is only $1,000; but in 1879 he meets with reverses and is nnable to expend even $1,000, is it fair that a jumper should he entitled to go in 1879 and relocate not the claim only hut also ths $100,000 worth of improvements? But such a thing is possible as the law at present stands, and, therefore, I hope the Committee on Mines and Mining will agree with me that, the sooner the law is amended in this particular, the hett r

LEWIS CHALMERS.

San Francisco, October 23d, 1878.

DANGER IN USE OF TANKS FOR DRINKING WATER.—A friend raises the question whether thers is really any serions objection to nsing ths water from household tanks for drinking and culinary purposes. If the tank is frequently cleaned and is protected from ths access of sewsr-gas and other contaminations, aqueduct or rain-water will not suffer from being temporarily kept in it; but since in nine cases out of 10 the danger of contaminations will *not* be sufficiently guarded against, ths discrest honseholder will make it a rule not to nse the water from the tank for drinking if it can possibly be avoided. Analysis has sometimes shown a considerable degree of contamination in water, even when the tank, supplied by an aqueduct, had been cleaned a week hefore; and in no case should a tank be allowed to go uncleaned for more than three months. The water as it flows through the aqneduct pipes carries more or less impure matter along with it, which settles to the bottom of ths tank. The amonnt may not be sufficient to affect seriously the quality of the water as drawn directly from the pipes, but its accumulation in the tank may be injurious if not dangerous. Then, again, it the tank is used to supply a water-closet, or if the overflow, as is often the case, communicates directly with a soil-pipe, the water may be contaminated in that way. This has happened in more than one instauce reported by sanitary anthorities, and probably in thousands of instances not reported nor suspected. The chief use of a tank where the water supply is by aqueduct is to prevent trouhle with hot-water apparatus if the supply is temporarily cut off; but it is rarely the case that such interruption continnes so long as to render it necessary to nse the water from the tank for culinary purposes. At any rate, it should be thus used only in cases of absolute necessity.—*Bost. Jour. Chem.*

MECHANICAL PROGRESS.

The Philosophy of a Chip.

Few of us who have set our lathe tool for a good "chip" and then watched the displaced metal slowly curling from the revolving shaft as the "feed" brings the iron to the point, have ever indulged in much philosophy on the form of the chip. This, however, and many other common operations of the machine shop, have been investigated by mechanical philosophers, and we find one of them in a paper read at a meeting lately held at the Paris exposition, discoursing as follows:

Flat surfaces are cut in the planing machine or in the lathe, and under most circumstances the two kinds of cuttings are almost identical in appearance—that of a cylinder formed of spirals more or less close, sometimes even in juxtaposition; but for this combination it is necessary that the two edges of the cutting should have been equally reduced, that is, that they should be of the same thickness. If it were otherwise the spirals would become conical; and such of these as appear to be most characteristic will now be described. The cutting obtained in mortising by means of a straight tool is absolutely cylindrical. When the tools cuts out in this manner, a rectangular groove, the material is compressed without any lateral deviation. If the cutting is of great thickness it is triangular, and the smooth surface is formed by the combination of the three faces at which the separation takes place, the direction in which crumpling takes place being the same as in all ordinary cuttings. The triangular form is the result of the compression being greater towards the middle line. To aid in forming an opinion on this point two blocks were placed side by side, which were planed at the same time in the line of junction of the pieces. Two distant horns were formed, which parted symmetrically from one another; each half-cutting following the law of shortening by which it was bound to assume a form concave towards the side which was held by its attachment to the block. The cuttings from a lathe, when they were produced from the annular groove by means of a straight tool, assumed exactly the same forms. For example, a cutting from a groove in what is called the Swedish piston is a continuous ribbon rolled up as on bobbin with the greatest regularity and of great length, without a rent. When turnings take the form of a helix the small lateral displacement of the piece is not large enough to give to the ribbon a different character to that from a planing machine, when, for instance, it is required to turn a shaft to a uniform diameter, and it is then easy, with good metal, to produce cuttings of great length. But when it is required to turn the end of the shaft or of any cylinder whatever the cutting follows a special course. If the tool be large in proportion to the diameter of the rings or circles on which it is acting the difference of diameter between the two edges of the cutting makes itself felt in the cutting, which assumes the form of a helicoidal surface with inclined generating lines, of which the two directrices are two helices of the same pitch but of different diameters. This universal geometrical character, moreover, is manifested in special ways according to the width of the ribbon and the interior diameter of the ring. In this way three horns may be obtained encased one in the other if the cutting of the tool be radial. Successive spirals foul each other when the direction of the cutting edge is a little inclined. The inner helix is replaced by a straight edge when the tool cuts right to the center of the face. Notwithstanding these differences of detail the same rules prevail; a greater or lesser reduction or shortening according to the thickness of the cutting; a less reduction of length at the thicker edge of the cutting; a smooth surface of separation, which always forms a developable surface; a rugged reverse face ridged as if waves of metal had been successively projected there; in fact, all the circumstances of a transverse flow of material—setting apart the secondary circumstances of transformation of the prism of metal from which the cutting is produced by augmentation of thickness and corresponding reduction of length.

It is the author's opinion, that for the construction of the best machine-tools, with the most suitable thickness of cuts, the minute examination of the cuttings is of the greatest importance; and that by the same means the surest evidence may be derived with respect to the qualities and homogeneity of the metal.

SHEFFIELD CUTLERS USING BESSEMER.—The *British Trade Journal* says that the exigencies of severe competition are forcing Bessemer steel pretty largely into use in the cutlery manufacture, but the quality of the resulting good is not such as to enhance the world-wide fame of Sheffield wares. It appears that steel rail ends and middles are bought for this purpose, and the increased consumption has induced several makers to blow special qualities of Bessemer steel, running them in small ingots—the same size, indeed, as "cast"—and pricing them to suit all customers, from £9 upwards. Scissors steels, which have been considered worth £40 a ton, are now "marked" in Bessemer at £12 10s per ton. German competition has been a powerful factor in inducing the use of low-class material.

Hardening Steel Tire Flanges.

An English journal gives an account of an Austrian furnace for partially hardening the steel tires of locomotive wheels. Although we do not build many locomotives on this coast, the arrangement may have other adaptations. A condensed description of the process is given in the *Iron Age* as follows: The furnace has a small, square, central grate, above which the section of the furnace is circular. The wheel with the tire on it is placed on a projecting ring of the furnace, and the nuts of the tire bolts are slacked to allow the tire to expand from the wheel when heated. The annular space around the tire is then packed with coke in a state of ignition, and blast coming from a large number of nozzles attached to a circular blast pipe is directed at the root of the flange of the tire under treatment. In order to insure uniform heating, the wheel is turned around from time to time. When the flange of the tire which is thinner and therefore heats more rapidly, has become dull red, the wheel is lifted from the furnace and the heated tire is plunged into water of 60° to 70° Fahr. As a fragment shown by the Oravitza-Anima railroad at Paris proves, this process hardens the steel to a depth of from 0.08 inch to 0.12 inch, especially near the root of the flange. The heating process, which must be rapid to insure its being local, requires only from six to seven minutes. The inner part of the tire must be kept cool by a covering of old cotton waste constantly moistened. It is stated that tires so treated last twice as long as ordinary ones.

AMERICAN COMPETITION IN EUROPE.—The *British Mercantile Gazette* says: The American exports of hardware from the port of New York to Europe, for the quarter ending March, show a considerable increase over the corresponding period of last year. The increase is mainly in household and builders' hardware, mechanics' tools, saws, cutlery, etc., which in some instances are being offered in England at quotations so low as to make it impossible that the manufacturers can derive but the barest margin of profit. A letter from New York states that advices then in hand from Europe were encouraging, and that dealers in one or two lines were quite sanguine of their efforts to create European trade. Travelers are now in England representing American houses, and there are American merchants in Sheffield who are prepared to take orders for hardware and deliver the goods within three weeks. In Canada, in a few special lines, the Americans are having it pretty much their own way. No steel rails are being sent from Sheffield to America, though once this was one of the best markets. These figures show how the Bessemer steel rail trade in America is growing: In 1873 the manufacture in the United States was 129,015 tons; in 1874, 144,914 tons. This increase continued each succeeding year until 1877, when the total was 432,169 tons.

AN ENGLISH MINING PUMP.—A recent English patent relates to pumping apparatus for mines, wherein a bucket and a plunger ram move together, the ram in a case communicating with a barrel containing the bucket, so that as the bucket discharges during the up stroke, and the plunger ram during the down stroke, a continuous discharge ensues. In the improved apparatus the bucket and plunger each obtains its supply of water through a separate suction and valve. The pump stands on two perforated suction pipes (windbores) fixed in a cistern, into which water flows from the mine. In a double clack piece (or valve piece) are two clacks (or valves), one over each suction, and two doors are provided, by opening which the clacks may be examined and changed. On one side of the clack piece is fixed the working barrel containing the pump bucket, which is suitably attached to the engine rods. On the other side of the clack piece is fixed the case containing the plunger ram; thus, the bucket is vertically over one clack or valve and suction, and the ram is vertically over the other clack or valve and suction. The ram is attached to the same engine rod as the bucket. On top of the barrel is a changing door-piece with door, by opening which the bucket may be examined, and leather replaced when necessary.

THE MECHANICAL CHESSPLAYER.—Mr. Gumpel's figure, Mephisto, of which we took a description from *Iron*, about five months ago, is now to be seen at the Westminster aquarium. His inaugural sitting was attended by a number of prominent players. Mephisto is unaltered in appearance, but is clad in a new and gorgeous dress. An important improvement, however, has been made in the board and men, which now approach nearly the ordinary Staunton pattern. No pressure is now required on the squares involved in the moves, but they may be made quite silently, and are fully observed by the unseen manipulator of the mechanism. This adds much both to the interest of a game and to the difficulty of penetrating the inventor's secret. The ingenuity of the contrivance is not only beyond question, but deserving of the highest praise. Its usefulness may possibly be doubted, but Mr. Gumpel, says *Iron*, is certainly entitled to the credit of having produced the most intellectual-looking machine we know of.

ENGLISH TRIBUTE TO AMERICAN INVENTIVE GENIUS.—*Punch* says that a Yankee baby will crawl out of his cradle, take a survey of it, invent an improvement, and apply for a patent before he is six months old.

SCIENTIFIC PROGRESS.

Getting Close to Nature.

In the *Popular Science Monthly* for November Prof. W. K. Brooks writes an article on "how to study natural history," which urges a true method. Concerning relying upon prints and the like, he says: The original investigator of nature soon learns by constant experience that descriptions or even drawings, however correct, do not exactly represent the objects themselves, but are imperfect and ideal abstractions. This is true, to a greater or less extent, of every drawing of the simplest organ or tissue, and of every description of a species of genus of animals or plants; but it is especially and most emphatically true of all attempts at definitions of the larger and more comprehensive groups of organisms.

A definition of such a group as an order or class of animals, attempting as it does to state in a few words the characteristics which are common to all the forms included, is necessarily abstract, and may not, in fact cannot, be exactly embodied in any one individual of the whole group. Then, too, certain characteristics which are exhibited by only one or two aberrant forms, and are accordingly not characteristic of the group as a whole, may be omitted from the definition, although they furnish the clue to the relationship with allied groups, and are therefore of the utmost importance. An illustration which is not drawn from the organic world may make this more evident. The fact that printed books have followed and are a perfected form of the parchment manuscripts of the middle ages is shown by the ornamental initial letters, imitations of the illuminated letters of the manuscripts, which are placed at the heads of the chapters of a few books. Notwithstanding their significance, these initial letters would not find a place in any definition or general description of a modern book. As a consequence of this inevitable lack of agreement between natural objects and their definitions, all knowledge of nature is of very little value unless it is based upon a direct personal acquaintance with nature itself.

LEAD AS IODATE.—Mr. C. A. Cameron, in a paper which he has read before the Society of Analysts at Dublin, states that as a result of experiments, he has found plumbic iodate absolutely insoluble practically. Iodic acid and alkaline iodates precipitate lead far more perfectly than sulphuric acid, even when alcohol is added to the latter. The plumbic iodate formed is weighed, or, if a volumetrical inertia be desired, the following is the process: Precipitate with standard solution of soluble iodate, and filter off the plumbic iodate. The filtrate and washings are to be mixed, and the excess of iodic acid contained in them estimated volumetrically by the hydrochloric acid and hyposulphate method. As it is almost impossible to procure pure iodic acid or potassium iodate, the solution of iodate must be standardized by means of a solution of pure nitrate of lead. Owing to the slight solubility of plumbic iodate in alkaline chlorides, iodies and bromides, none of these salts must be present. HCl rapidly dissolves iodate and lead.

MOVEMENT OF TEMPESTS.—M. Faye has studied tempests as moving whirlpools with vertical axes, comparing them to the eddies of streams. In the course of a river, as soon as there is any difference of velocity between contiguous portions of water, such eddies tend to be produced. As soon as the tendency becomes effective, it can be mathematically shown that the angular velocity of rotation increases in the inverse ratio of the square of the distance from the axis. Moreover, although the eddy is plunged in the mass of the surrounding water, it will remain isolated, as it were, by the surface of its own, which is a surface of revolution around the vertical axis, with the concavity of its meridian generatrix turned downward.

TRICHINOSIS IN BADGERS.—It is well known that rats and mice sometimes harbor *trichinæ*, and that larger animals eating their flesh become infected. The London *Farmer* announces that a correspondent of the *National Zeitung*, writing from Guben, states that a badger recently shot in that neighborhood was found on examination to be infested with *trichinæ*. It was by accident only that this discovery was made, one of a company of sportsmen who had determined on supping on the animal in question having amused himself by submitting a portion of its muscular fiber to microscopical examination. We have badgers in this State, but we have never heard of *trichinæ* being found in them. Microscopists who have badger meat available should look for the parasites. Meantime, let those who eat badger meat cook it well.

NOT A TARANTULA'S NEST.—At the late meeting of the San Diego Natural History Society, Prof. Kleehurger made some remarks upon the tarantula of California, and stated the distinction between the tarantula (*Mygale Hentzii*) and the trap-door spider (*Cleniza Californica*), and wished to correct the popular error that the nest with trap-door found thereabouts is a tarantula nest.

RADIANT ENERGY.—We learn from exchanges that Harper Brothers are about to publish a book entitled "Scientific Memoirs," by Dr. J. W. Draper, being a concise account of this distinguished chemist's contributions to a knowledge of radiant energy. From the host of his brief contributions to scientific literature, Dr. Draper has selected such papers only as relate the effects of radiations, and has condensed them into still narrower space than they originally occupied. A few among the special points herein determined are as follows: That ignited solids yield a spectrum that is continuous, not interrupted; that it is not the violet rays, commonly called the "chemical rays," but the yellow rays of sunlight, by the action of which carbonic acid is decomposed by plants; that all the colored spaces in the spectrum are equally warm, and that while the violet produces a certain chemical effect, it does not stand alone in so doing, but that all the other rays accomplish their special changes also; and that the circulation of sap in plants is due to sunlight. The first photograph from life was made by Dr. Draper, and he obtained the first photograph of the moon. In fact, it is astonishing to see how many important discoveries are due to a single active laborer in the scientific field. These essays are mostly short, but they contain descriptions of all the chief experiments by means of which the author's points were determined. To those who are interested in the history of spectrum analysis, or photography, or the effects of the sun's light in many directions, the book will prove to be a notable acquisition.

THE SPINAL CORD.—One of the most remarkable cases in the history of surgery is that of ex-Sheriff Van Blascom, Hackensack, N. J. He was thrown from a buggy and had his neck dislocated. Few, if any, cases are on record where such an accident did not result in instant death. The spinal cord is the main channel of vital force, and in dislocations of the neck is either ruptured or so injured that all organs cease to act immediately. In Van Blascom's case the spinal cord may have been disarranged sufficiently to have produced unconsciousness, which, had it continued, would have resulted in death. The dislocated bone, however, was set, when the patient immediately returned to consciousness. In other words the spinal cord, not having been materially injured by displacement, continued its functions as soon as returned to its normal position. The case is not only a curiosity in surgery, but also a suggestive element in the problem of life.

A COMPREHENSIVE ENCYCLOPÆDIA.—The great Chinese encyclopædia, recently purchased by the British museum at a cost of $7,500, is voluminous indeed. There are 5,020 volumes all told. The commissioners, who executed this work in 40 years, professed to have taken all works from about 1100 B. C. to 1700 A. D., and it is supposed that the whole Chinese literature of any importance between those dates is to be found embodied in these 5,020 volumes. The subjects are classified under six headings, under which are arranged writings relative to the heavens, the earth, mankind, inanimate nature, philosophy and political economy.

DAUBREELITE.—Prof. J. Lawrence Smith, of Louisville, Ky., has recently made analyses of the new meteoric mineral, daubreelite, the discovery of which he announced in 1876. From his present experience he has reason to believe that further research will show the constant presence of daubreelites in meteorites. The mineral occurs in small nodules mixed with troilite; it is black, scaly in structure, and is composed of 68 parts of sesquisulphide of chromium to 29.75 parts of sulphide of iron, closely approaching the formula $FeS + Cr_2S_3$

NOTE ON THE SOLAR SPECTRUM.—Prof. J. C. Draper, in a paper contributed to the *American Journal of Science and Art*, places on record recent researches on dark lines in the solar spectrum, which possess a close relationship in position to the lines of oxygen, slight differences that exist being within the limits of error of experiment. His researches lead him to believe that to prove the presence of oxygen or other substances giving faint lines in the solar atmosphere is a problem which cannot be solved by the comparison of two spectra of small dispersion.

BEN NEVIS AS A METEOROLOGICAL STATION.—Mr. Milne Holme, chairman of the Meteorological Society of Scotland, has ascended Ben Nevis and made several observations with a view to erecting a station on the summit. He found the top enveloped in a mantle of snow. It is proposed to construct the building after the following plan: first, a wall of stone with an inside lining of wood and an inner coating of felting, and the outside of the wall to be covered with corrugated iron. An external wall of stone would also be erected to serve as a protection from the blast.

BARCENITE.—Huitzuco, State of Guerrero, Mexico, says the *Iron Age*, is the locality of a new mineral, barcenite, described by J. W. Mallet of the University of Virginia. It is black, finely granular and often porous, opaque and with a dull, earthy luster. Its specific gravity is 5.3 and its hardness, 5.5. The mineral holds 20.75% of mercury and 50.11% of antimony; it is a mixture apparently of sulphide of mercury, antimonic acid and an antimoniate of calcium, mercury and antimony.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending Oct. 10.		Week Ending Oct. 17.		Week Ending Oct. 24.		Week Ending Oct. 31.	
Alpha	19	15	16½	12½	15½	13	15½	13½
Alta	18	14½	16	11	16	12½	15	12½
Andes	1.40	1	1	50c	90c	75c	75c	50c
Alps	1	65c	90c		75c			
Argenta	5⅞	5	5¾	5	8¾	6	7¾	6
Atlantic			90c	80c	90c	8 c	1.15	1
Aurora Tunnel	3	2½	3	1½	3	2½	2½	1
Baltimore Con	3.50	2	3	2½	3¼	2½	3	2½
Belcher	12	8½	10	7⅜	9¾	7⅜	9⅜	8
Belmont	4	3	4	2¾	3¾	2½	2.65	1.70
Best & Belcher	32½	24	27½	20	27	21½	25	22½
Bullion	16⅝	14½	15¾	9½	12⅜	11½	15	11½
Bechtel	1¼	1.20	2½	1.40	1.40	1.20	1.35	1.25
Belle Isle	70c	40c	45c	40c	45c	30c	60c	50c
Bodie	23¾	20	21	16½	19½	18	21	19½
Benton	9	7½	8½	8	9	6¾	7¾	7
Bulwer	20	14½	20	17	18	14½	17	16½
Boyle								
Black Hawk	75c	50c	1	1	2.10	1.05	1½	1
Belvidere	1½	1½	2	1½	2	1½	1.80	1
Booker	1	90c	1.40	90c	1½	1.20	1.35	1
Caledonia	6	4½	6	3¾	5½	4½	5¾	3½
California	1.45	1½	1.35	1½	1½	1½	1½	1½
Challenge	2.50	2	2.20	1½	2	1.60	1.90	1.05
Chollar-Potosi	61	48	60	47	64	55	68	58½
Comanche								
Gonfidence	13	10	12.57	9½	11½	9½	11	10
Con Imperial	1.65	1.25	1.40	1.05	1.40	1.20	1.35	1
Con Virginia	15	13¾	14½	11½	13½	11½	12	11½
Crown Point	11	8¾	10	7½	13½	9¾	11½	9¾
Con Washoe	2.15	2			2.60	2½	1.95	1.90
Champion	2	1.25	1.80	1½	50c		1½	1½
Concordia								
Dayton	50c	40c						
DeFreea	30c	25c	25c	20c	20c	10c	20c	
Daney								
Day	55c	40c	50c	40c	80c	30c	85c	70c
Eureka Con	46	44	45	44	43	36	39	33
Exchequer	8½	6	6¾	4½	6¾	5½	6¾	5¾
Endowment	1½	1	1.30	1	90c	60c	95c	70c
Gen Thomas								
Grand Prize	5⅝	5	5.55	4½	7½	5½	6¾	6¾
Gila	55c	40c	45c	40c	40c	30c	40c	
Golden Chariot			15c		1½	35c	50c	15c
Golden Terra	4							
Goodshaw	1	80c		75c	90c	80c	75c	50c
Gould & Curry	22½	17½	20½	13	20	14½	18	15¾
Hale & Norcross	30	21½	30½	21	25¾	20	25	23½
Hillside	5½	4½	5¾	4½	4	3½	4	3¾
Highbridge	2.25	1.80	1.90	1½	2	1.70	2.40	1.95
Homestake	9				10	9		
Hussey	60c	30c	50c	30c	85c	30c	35c	25c
Independent	3¾	3½	3½	3.10	2¾	1.35	2.60	2
Julia	7¾	5¾	7¾	6½	7	6¼	7	6¼
Justice	11¾	9	10	8	9½	8	9½	8½
Jackson	14	11	10½	9	10	8	10	9
Joe Scates								
K K Con								
Kentuck	9½	6½	8½	4½	8	6	7½	6½
Kossuth	35c	30c	30c	25c	35c	20c	30c	25c
Keystone								
Lady Bryan	3½	3	3½	1½	3½	1½	3½	2.90
Lady Wash	3½	2½	2½	2	2½	2	3	2
Leopard	1.30	1	1.10	70c	1.40	75c	1	80c
Leviathan	1.50			75c	1	80c	1	80c
Leeds	1.75	1.50	2	1.40	1.90	1½	2	1½
Lee	75c							
May Belle	1		5c		50c		40c	50c
Modoc	50c	15c	20c	10c	60c	10c	55c	50c
Manhattan	6	5½	5½	3	4	3½	3½	3½
Martin White	8½	8	9		11	9	9	
McClinton	80c	30c	75c	50c	75c	60c	75c	60c
Meadow Valley	35c	20c	25c		40c	30c		
Mexican	82½	67	77½	46	65	56	63½	56½
Mides	2	87½c						
Morning Star	6	3½	5	3	3¾	3	3½	
North Con Virginia	9½	8	8¾	6½	8	7	8¼	7½
New York	2½	1½	2.20	1.60	2	1½	1.80	1½
Northern Belle	10¼	10	10	9½	11	9½	10⅜	10½
New Coso			40c					
Navajo	1.50	1.10	1½	80c	80c	50c	1	90c
Occidental	1½	1			1	75c	1	
Ophir	65	53	62	40	55½	45	51	46½
Oriental	2	1½	1½	95c	3	1	1½	95c
Overman	27	21	26½	20	27½	23	27	24½
Panther								
Phenix	6	5			5	4½	4	3½
Phil Sheridan	3	2	2	70c	1½	1	1½	1
Prospect	60c		40c		20c			
Raymond & Ely	6½	5½	6	4	5½	5	6½	6
Richer	6	2	2½	1	1½		1½	1½
Rock Island							5c	
Rye Patch								2
Round & Ready	3½	3	4	3½	2½		1	
Savage	23½	18	24½	17	26	19½	24½	22
Seg Belcher	38	30	39	38	35			
Sierra Nevada	241	190	210	135	195	161	190	163
Silver Hill	3.75	2.90	3.30	2½	2.85	2½	3¼	2.15
Silver King	18	16½	16½	16	17	15	18	
Silver Prize	10c	5c	10c		15c			
Succor	2	1.80	1.85	75c	1.65	1	1½	1.10
Summit	2	1½	2	1.80	1.90	1½	1½	1½
Scorpion	9½	6½	7½	5½	6	2½	5	4⅜
Solid Silver	2.10	1.90	2½	1.90	2½	2	1½	1
South Bodie	90c	75c	90c	60c	80c	60c		
South Standard	55c	50c	65c	60c	60c	50c	60c	55c
Star	75c		75c	60c	75c	60c	75c	55c
St. Louis	1	80c	1	80c	80c	50c	80c	50c
Syndicate	2½	2	2			2½	3½	2
Tioga Con	2½	2½	3½	2½	3	2½	2½	2½
Tiptop	1.75	1.50	1½	1½	1½	1.40	1½	1.30
Trojan	45c	35c	40c	35c	30c	25c	30c	25c
Union Con	187	160	184	129	162	140	160	143
Utah	43	35	39	23	32	27½	36	31½
Vermont Con	9½	9	8	6½	6½	5½	6	6½
Ward	1.75	1.25	1.80	1½	1.60	1.40	1½	1.30
Wells Fargo	20c	20c	70c	20c	70c	45c	60c	45c
Woodville	70c	60c	65c	45c	60c	50c	60c	40c
White Cloud								
Yellow Jacket	34½	28	33	21	27½	21	23½	21½

Sales at S. F. Stock Exchange.

Friday A. M., Oct. 25.

885	Alta	14½@15	
105	Alpha	14½	
535	Best & Belcher	25@24½	
1335	Bullion	12@12½	
1195	Belcher	9½@9⅝	
1420	Con Virginia	12@11½	
340	California	11½@11½	
688	Chollar	62@61	
1005	Crown Point	13½@13¾	
3555	Con Imperial	1.35@1.30	
650	Caledonia	4.95@5¼	
350	Confidence	11	
665	Exchequer	6@6½	
630	Gould & Curry	17¾@17¾	
1395	Hale & Nor	24½@25	
400	Justice	9½@9¾	
480	Julia	6⅜@6¾	
400	Kentuck	6¾@7	
780	Lady Bryan	3½@3	
1075	Mexican	57½@58	
530	Overman	27@26½	
1575	Ophir	51@50	
300	Succor	1¾	
600	Sierra Nevada	180@174	
2385	Savage	24½@24	
700	Union Con	153@154½	
190	Utah	34@35	
1255	Yellow Jacket	23½@22½	
	AFTERNOON SESSION.		
300	Atlantic	1	
200	Andes	75@76	
1960	Argenta	6½@6¾	
100	Aurora T	1¼@1.20	
140	Bechtel	1¼@1.35	
760	Bodie	20@19½	
550	Belmont	2½@2½	
1345	Bulwer	18@17½	
1400	Belle Isle	50c	
200	Baltimore Con	2.95@3	
620	Booker	1¼@1.15	
150	Belvidere	1½@1½	
595	Benton	7¼@7½	
150	Champion	1¼	
700	Chieftain	15@10¢	
1400	O Pacific	2¾@2.70	
230	Challenge	1.90@1.65	
110	Scorpion	6@4½	
120	Sitting Bull	1¼@1.35	
1310	Solid Silver	1	
100	St Louis	65c	
150	Syndicate	2½	
280	Silver Hill	2½@2.60	
50	Summit	1½	
750	Senator	30@10c	
9	Silver King	1.15	
400	Sta Mina	25c	
550	Trojan	30@25c	
235	Tiptop	1.40@1.35	
800	Tioga Con	2½@2½	
1150	Washoe Con	2.65	
475	Ward	1¼@1.30	
300	Wells Fargo	50c	
Saturday A. M., Oct. 26.			
25	Alpha	14½@14½	
540	Alta	14@13⅝	
1355	Argenta	7@7½	
690	Bullion	12½	
310	Best & Belcher	22½@23	
620	Belcher	8½@8¾	
1000	Belmont	2½@2¾	
200	Bodie	20½@20	
100	Baltimore Con	3¼	
1250	Belle Isle	50c@60c	
590	Con Virginia	11½	
60	California	11½	
110	Confidence	11¢@10½	
180	Chollar	60	
405	Crown Point	10½@11	
230	Caledonia	4½	
1670	Con Imperial	1.40@1.30	
210	Exchequer	6¼@6½	
250	Endowment	75c	
60	Eureka Con	38½@38½	
405	Gould & Curry	17@16¾	
490	Grand Prize	6.30@6	
400	Gila	40c	
380	Hussey	35c	
800	H & Norcross	25@24½	
1740	Highbridge	2.10@2	
630	Independence	2.60@2.50	
595	Julia	6¾@6½	
195	Julia	6½@6¾	
325	Kentuck	6¾@7	
920	L Bryan	3@3½	
395	Mexican	58½@58¾	
200	Manhattan	3½	
21	Norcross	10@9c	
10	Northern Belle	10⅜	
580	Ophir	49@48	
285	Overman	25¾	
3025	Paradise	1½@1¾	
630	Raymond & E	6	
2760	Savage	23½@23¾	
120	Sierra Nevada	183@182	
100	Silver Hill	2¼@2 60	
50	Star	75c	
375	Union Con	147@145	
175	Utah	32@31½	
1430	Yellow Jacket	23½@23	
Monday A. M., Oct. 28.			
1350	Alta	12½@13½	
50	Alpha	14@13⅝	
150	Andes	70@60c	
200	Atlantic	1.05	
200	Best & Belcher	23@22½	
510	Belcher	8½	
310	Benton	7½@7	
1000	Bullion	11½@11¾	
100	Baltimore Con	3¼	
1455	California	11½@11¾	
650	Con Virginia	11½@11¾	
105	Chollar	58½@58¾	
865	Crown Point	10¾@10½	
700	Con Imperial	1.40	
110	Confidence	10¾	
580	Caledonia	4¾	
520	Challenge	1½@1.90	
410	Exchequer	6¼@6½	
800	Gould & Curry	16¾@16½	
1060	Hale & Nor	23½@23¾	
150	Justice	9½@9¾	
120	Julia	6¾@6¾	
210	Kentuck	7@6¾	
100	Kossuth	25c	
100	Lady Wash	2½	
1065	Lady Bryan	3@2.90	
655	Leviathan	80@85c	
760	Mexican	57½@58	
480	New York	1¼@1.60	
190	North Con Vir	7¾	
2300	North Sierra Nev	15@20c	
765	Ophir	47@47½	
240	Overman	26@24½	
620	Phil Sheridan	1.05@1.15	
600	Senator	25@20c	
1530	Savage	22@22½	
310	Silver Hill	2¼@2.15	
335	Sierra Nevada	165@163	
2	Scorpion	4½	
220	Succor	1¼@1.10	
400	Solid Silver	1¼	
100	St Louis	80c	
350	Trojan	30c	
40	Utah	31¾	
620	Union Con	143@144	
270	Vermont	5¾@5½	
50	Wells-Fargo	60c	
440	Ward	1.30@1.35	
950	Washoe Con	1.95	
100	Woodville	50c	
1280	Yellow Jacket	22½@22¾	
	AFTERNOON SESSION.		
955	Argenta	7¼@7¾	
250	Aurora T	1¼@1.15	
170	Bodie	21@20¾	
290	Bulwer	16½	
160	Bechtel	1¼	
240	Belmont	2½	
1230	Booker	1¼@1.20	
1300	Belle Isle	50c	
510	Belvidere	1¾@1¾	
20	Champion	1½	
600	C Pacific	2½@2.90	
100	Chieftain	15c	
150	Dudley	1¼@1.40	
150	Day	70@75c	
100	DeFrees	20c	
100	Delmonte	20c	
100	Grand Prize	20c	
260	Eureka Con	37½@37	
140	Endowment	90@80c	
405	Grand Prize	6¾@6¾	
215	Gila	40c	
1350	Goodshaw	85@85c	
150	Golden Chariot	20c@15c	
225	Hamburg	1.95	
1055	Hussey	35@30c	
50	Hillside	4½	
1600	Highbridge	2.10@2.30	
1700	Independence	2½@2.30	
30	Julia	6¾	
175	Leeds	2	
850	Leopard	1¼	
1250	Modoc	50@55c	
320	Manhattan	3½@3¾	
100	Mono	51@53	
110	Martin White	10	
100	McClinton	65c	
145	Northern Belle	10¼@10¾	
3030	Navajo	95c@1	
675	Oriental	1.60@1.65	
240	Raymond & Ely	6	
250	Richer	1½	
50	Rustler	75c	
500	Rye Patch	1	
430	Santa Mina	2	
300	Sodie	60c	
210	Syndicate	2¾@2½	
50	Summit	1½	
110	Tiptop	1.40	
700	Tioga Con	2.30@2½	
Tuesday A. M., Oct. 29.			
70	Alta	13¾	
905	Alta	14½@13¾	
525	Andes	50c	
1300	Atlantic	1.10@1.05	
195	Best & Belcher	22¾@22½	
345	Belcher	8¾@8½	
560	Bullion	11¾@11½	
150	Baltimore Con	3¼	
270	Benton	7¼@7	
150	California	11¾@11½	
1055	Con Virginia	11½@11¾	
1140	Con Imperial	1.40@1.30	
165	Chollar	63	
260	Caledonia	4¾@4.60	
480	Crown Point	10½@10¾	
120	Confidence	10¼@10½	
1540	Con Washoe	1.95@1.90	
630	Challenge	1½@1.80	
380	Exchequer	6¾@6¾	
615	Gould & Curry	16½@16¾	
485	Hale & Nor	23½@23¾	
515	Justice	8¾@9	
105	Julia	6¾	
80	Kentuck	7¼@7	
250	Kossuth	25c	
140	Lady Bryan	2.90@3	
650	Leviathan	95c@1	
490	Lady Wash	2¾	
740	Mexican	56½@57½	
1000	Margarita	90c	
300	Morning Star	3¼	
195	N Sierra Nevada	20c	
165	New York	1.60@1½	
165	N Con Virginia	7¼@8	
150	N Bonanza	70c	
250	Orleans	3	
450	Ophir	46½@47	
85	Overman	24½	
1220	Phil Sheridan	1.10@1.05	
200	Succor	1.20	
1.5	Sierra Nevada	165@164	
1750	Silver Hill	2.20@2	
520	Savage	22½@22	
650	Senator	35c	
85	Scorpion	4½	
31	St Louis	50@30c	
450	Ophir	46½@47	
100	Woodville	50c	
855	Yellow Jacket	21½@22	
	AFTERNOON SESSION.		
1720	Argenta	6¾@6½	
260	Aurora T	1¼@1.15	
1080	Belmont	1.70@1½	
330	Bullion	11½	
450	Black Hawk	1¼@1¼	
300	Bodie	20½@20¾	
550	Booker	1@1.10	
1050	Belle Isle	50c	
100	Belvidere	1.55@1.60	
1200	C Pacific	2¼@2.90	
100	Chieftain	15c	
350	DeFrees	20c	
555	Day	75@70c	
150	Dudley	1	
1100	Eureka Con	35@34	
700	Endowment	95@90c	
700	Fourth of July	10c	
200	Gila	40c	
685	Grand Prize	6¼@6¾	
250	Golden Chariot	20c	
335	Goodshaw	90@85c	
240	Hillside	4@3.90	
2150	Highbridge	2¼@2.20	
150	Hussey	30c	
1320	Independence	2.60	
50	Ida	5c	
100	Jackson	9½	
100	Klamath	2	
870	Mono	5¼@5½	
915	Manhattan	3¼	
650	Modoc	55c	
250	McClinton	65c	
1455	Northern Belle	10¾	
100	Sitting Bull	1	
100	Syndicate	3	
400	S Bodie	60c	
100	S Standard	60c	
1300	Tuscarora	5@10c	
355	Tiptop	1.40	
600	Tioga Con	2.40@2¼	
Wed'sday A. M., Oct. 30.			
400	Alta	14½@14¾	
240	Alpha	14½@15	
95	Andes	60@50c	
465	Atlantic	1@1.16	
420	Best & Belcher	23½@24	
200	Baltimore Con	3¼	
1515	Bullion	15¼	
160	Belcher	8½@8¾	
200	Benton	7	
505	Caledonia	5@4¾	
605	Con Imperial	1.30@1.40	
400	California	11½@11¾	
1319	Con Virginia	11½@12	
60	Confidence	10	
180	Chollar	60@59½	
435	Crown Point	10¼@11	
205	Challenge	1.60	
1300	Exchequer	6¼@6½	
225	Gould & Curry	17@16¾	
265	Hale & Nor	23½@23¾	
580	Justice	9¼@9¾	
470	Julia	7@6¾	
70	Kentuck	7@7¼	
500	Kossuth	25c	
100	Lady Wash	2.60	
693	L Bryan	3@2.90	
400	Leviathan	90@.95c	
1050	Mexican	59@58¾	
150	Mt Hood	60c	
1100	Nevada	20c	
900	New York	1.80@1.70	
1520	Ophir	46¾@47	
500	Orleans	3	
170	Overman	26@26¾	
1165	Occidental	1	
965	Phil Sheridan	1.10@1	
100	Rock Island	50c	
345	Rough & Ready	2@2¼	
400	Sierra Nevada	173@175	
480	Savage	23@22¾	
300	Succor	1¼	
1165	Silver Hill	2¼@2.15	
20	Scorpion	5	
800	Solid Silver	1¼@1¼	
310	St Louis	70¢@50c	
400	Trojan	30c	
500	Union Con	155@150	
90	Utah	31@35	
225	Vermont Con	5¾@5¾	
725	Ward	1¼@1.40	
75	Woodville	60c	
1850	Wells-Fargo	55c	
660	Yellow Jacket	21¾@22	
	AFTERNOON SESSION.		
2125	Argenta	6@6¼	
280	Aurora T	1¼@1.15	
1025	Bodie	20½@20¾	
1050	Belmont	2¼@2.65	
1100	Belle Isle	50c	
730	Booker	1¼@1.15	
600	Belvidere	1½@1.80	
300	Bulwer	16¾@17	
1100	Black Hawk	1.30	
1110	Pacific	2¼@2.80	
400	Dudley	1	
350	DeFrees	20c	
700	Day	75@70c	
300	Eureka Con	33	
1200	Endowment	90c	
935	Grand Prize	6¾@6¾	
430	Gila	40c	
600	Golden Chariot	40@50c	
2200	Goodshaw	60c	
980	Hussey	30@25c	
1185	Highbridge	2.20	
1185	Hillside	4¼@3¾	
5190	Highbridge	2.20@2.40	
500	Indepe.dence	2.60	
40	Jackson	9¼	
100	Klamath	1.85	
100	Leopard	90@80c	
100	Leeds	2	
100	Modoc	55c	
125	Manhattan	3.60@3.65	
1430	Mono	5½@6	
100	McClinton	60c	
775	Navajo	90c	
570	Oriental	95c@1	
3450	Paradise	1¼@1.60	
300	Raymond & Ely	6¼@6½	
35	Richer	1½	
100	Rustler	75c	
800	Tioga	2¼@2½	
500	Tuscarora	5c	
50	Tiptop	1.30	
300	Star	60@55c	

SALES OF LAST WEEK AND THIS COMPARED

Thursd'y A. M., Oct. 24.		Thursday A.M., Oct. 31.	
100	Andes	75c	
120	Alpha	13¾@14	
630	Alta	12¾@13¼	
250	Atlantic	90c	
1105	Belcher	9¼@9⅜	
980	Bullion	12½@12¾	
190	Baltimore Con	2¼@3	
150	Benton	7	
470	California	11½@11¾	
225	Con Virginia	11¾@12	
470	Crown Point	11¾@11¾	
190	Chollar	60@59	
4100	Con Imperial	1.35@1.40	
320	Confidence	10¼@11	
500	Caledonia	5@5¼	
375	Con Washoe	2.60	
930	Exchequer	5¾@6	
700	Gould & Curry	17@17¼	
740	Hale & Nor	22¾@23	
330	Justice	8¾@9	
175	Julia	6½	
220	Kentuck	7¼@8	
200	Leviathan	90c	
920	Lady Bryan	3.45@3¼	
860	Mexican	57¼@58	
100	Morning Star	3	
500	Margarita	1¼	
3250	N Sierra Nev	15c	
25	North Con Vir	7¾@8	
800	Ophir	46¼@47½	
300	Overman	27	
725	Orleans	3	
1095	Phil Sheridan	1.10	
214	Sierra Nevada	162@170	
3555	Savage	22¾@23½	
100	Succor	1¼	
1290	Silver Hill	2¼@2.25	
585	Ophir	48@48¾	
340	Solid Silver	2	
735	Union Con	145@143	
20	Utah	30	
50	Vermont Con	5½	
100	Ward	1.30	
300	Wells-Fargo	70¢	
645	Yellow Jacket	22¾@22¾	
	AFTERNOON SESSION.		
440	Argenta	7¾@8	
50	Aurora T	1.30	
120	Bulwer	15@17	
325	Bodie	19@19¾	
500	Bechtel	1¼@1.30	
655	Booker	1.20@1¼	
120	Black Hawk	75c@1	
100	Belvidere	1½	
300	Champion	1½	
300	Chieftain	16c	
330	C Pacific	2½@2¾	
580	Caledonia (B H)	4¾	
1670	Day	75@60c	
50	Dudley	1	
340	Endowment	60@65c	
195	Eureka Con	38@38½	
600	Golden Chariot	15@30c	
1310	Goodshaw	70@ 5c	
980	Grand Prize	7@7¼	
2.0	Gila	35@40c	
30	Gould & Curry	17½	
60	Hamburg	2	
450	Hussey	35@40c	
80	Hillside	4	
380	Hale & Nor	24@25	
2225	Highbridge	2@1.85	
400	Ida	75c	
1095	Independence	2@1.90	
235	Jackson	9@10	
225	Leopard	1@1.10	
1650	Goodshaw	60@55c	
1205	Mono	4½@6	
110	Manhattan	3.80@4	
100	M White	9½	
700	Modoc	55c	
50	Nag Hed	1	
280	Mexican	59½@60	
1770	Navajo	65@80c	
835	Northern Belle	10@10¾	
260	Ophir	49	
830	Oriental	1.10@1.15	
600	Phenix	2	
6650	Paradise	1½@1¾	
200	Richer	1½@1.60	
405	Raymond & Ely	5¾@6	
300	Rustler	1	
250	Red Cloud	1¾@2	
525	Summit	1.90@1.80	
900	Sta Mina	1.10	
100	South Standard	60c	
100	S Bodie	65c	
320	Savage	24@24½	
100	Star	75c	
100	Syndicate	2¼	
110	Tiptop	1.40	
200	Tuscarora	10c	
250	Tioga Con	2@2.20	
223	Yellow Jacket	22@23	
20	Vermont Con	6	
300	Ward	1.45@1¼	
200	Woodville	40@50c	
1050	Wells-Fargo	45@50c	
260	Yellow Jacket	23@23½	
	AFTERNOON SESSION.		
600	Aurora T	1	
1030	Argenta	6¼@7	
830	Belmont	2½@2¾	
795	Black Hawk	1¼@1½	
115	Bodie	20½@20¾	
200	Bulwer	17@1.7	
120	Bechtel	1.50c	
1200	Belle Isle	50c	
600	Belvidere	1½@1.55	
250	Booker	1@1.05	
600	Coso Con	20c	
815	C Pacific	2½@3	
50	Chieftain	15c	
130	Day	70@75c	
325	Eureka Con	35@36	
5 0	Endowment	90@85c	
985	Grand Prize	6¼@6¾	
225	Gila	35c	
1650	Goodshaw	60@55c	
300	Golden Chariot	30@45c	
750	Hussey	25@30c	
10	Hillside	4	
2570	Highbridge	2.40@2¼	
120	Hamburg	2	
1200	Independence	2½@2.60	
500	Indian Queen	1	
100	Jackson	9½@9¾	
100	Leopard	90c	
823	Leeds	2@1¾	
600	Modoc	50c	
130	Manhattan	3.60@3¾	
75	Martin White	9¼	
450	May Belle	40c	
300	McClinton	65c	
250	Mono	6c@5¾	
230	Northern Belle	10¼	
1555	Navajo	70@90c	
1850	Oriental	1	
2300	Paradise	1.60@1¾	
900	Raymond & Ely	6¼	
50	Rustler	75c	
400	Star	60c	
400	Silver Prize	5c	
50	Sitting Bull	1	
100	Summit	1.40	
100	S Bodie	60c	
180	Tioga Con	2¼@2½	

Pacific Board—Latest Sales

300 Crown Point	10½@11	40 Alpha	15½@15¾
60 Con Imperial	1	180 Andes	60c
135 Con Virginia	11½@11¾	390 Bullion	17@15½
130 Caledonia	4.90@5	10 Best & Belcher	24
10 Chollar	59	130 California	11½
200 Dardanelles	1	110 Cou Virginia	12
220 Exchequer	6½@6½	20 Caledonia	5@5½
270 Gould & Curry	16	90 Con Imperial	1.3
25 Hale & Nor	23½@23¾	40 Crown Point	11
10 Julia	9	350 Exchequer	7¾@7
150 Justice	9½@9	50 Eureka Con	30
125 Mexican	58½@58	80 Gould & Curry	17
150 Mackey	1	70 Julia	7
100 New York	1.8	100 Justice	9½@9
200 N Sierra Nevada	18c	30 Kentuck	7
190 Ophir	46½@46	35 Mexican	62c@62
100 Phil Sheridan	1.05	50 Mono	5
50 Savage	22	20 N Con Virginia	8
140 Sierra Nevada	17	150 Ophir	48½@49
200 Silver Hill	2	20 Overman	26
500 Solid Silver	1	130 Phil Sheridan	1.10
500 Silver Potosi	2	50 Savage	24
500 Twin Peaks	9c	100 Silver Prize	5c
35 Union Cou	151@150	170 Silver Hill	2.60
30 Utah	34	10 Union Con	152
255 Wells-Fargo	59@55c	20 Ward	1.45
40 Yellow Jacket	22@22	1380 Wells-Fargo	55c
AFTERNOON SESSION.		30 Yellow Jacket	22½@23
110 Alta	14		

California Board—Latest Sales.

Wednday A.M., Oct. 30.		50 Union	151@148
150 Atlantic	1.10	300 Union Flag	5c
100 Atlanta	50c	30 Yellow Jacket	22½@23
60 Alta	14½@14½	AFTERNOON SESSION.	
210 Alexander	8½@8½	75 Atlanta	45c
150 Alpine	2c	75 Alexander	8½@8½
500 Brilliant	1	80 Alpha	15½@14½
40 Belcher	13	200 Actna	2c
70 Best & Belcher	23½@23½	230 Argenta	7
10 Bullion	13½	30 Best & Belcher	24½@24½
190 Caledonia	4.80@4.90	50 Belcher	9½@9½
70 California	11½@11½	240 Bullion	16@14½
30 Cou Virginia	12@12½	300 Brilliant	1.05
30 Crown Point	10½@10½	100 Crown Point	11½@11½
800 Coso Con	15@20c	150 Caledonia	5@5½
30 Chollar	60	60 Con Virginia	11½@12
80 Endowment	95c@1	30 Chollar	62
50 Exchequer	6½@6½	310 Cou Imperial	1½@1.30
50 Fairfax	1½	600 Coso Con	18c@16c
80 Gould & Curry	16½@17	75 Exchequer	7@6½
250 Golden Chariot	25c@22c	80 Gould & Curry	17½@17½
40 Hale & Norcross	24½@24½	200 Goodshaw	57½@55c
50 Julia	6½@6½	300 Golden Chariot	22@25c
100 Justice	9½@9½	70 Hale & Nor	24½@25
500 Lee	35@37½	150 Julia	7@7½
40 Mexican	59@59½	400 Lee	50c
735 Mackey	1½@2	140 Leviathan	90c
1500 Monumental	8c	50 Mexican	61@61½
200 Mint	25c	400 Monumental	8c
100 Mt Hood	40c	600 N Sierra Nevada	18@17c
580 N Sierra Nevada	19@17c	150 Newark	45c
250 Newark	62½	70 Ophir	47½@47½
300 N Union	60c	60 Overman	26½@26½
40 Ophir	47@46½	100 Senator	50c
445 Pacific	25c	60 Savage	23@23½
70 Savage	23½@23½	40 Sierra Nevada	17@17½
40 Sierra Nevada	17½@17½	250 Trojan	27c
100 Senator	45c	1700 U Flag	6@8c
20 Silver Hill	2	40 Union Con	151@152
1000 Twin Peaks	7@9c	700 Wells-Fargo	53c
150 Trenton	7½	40 Yellow Jacket	22½@22½
20 Utah	34@34½		

Mining Share Market.

The tendency of the market to rise towards tbe close of the week has been shown again. Accidents in mincs and reports of developments of water or ore no doubt affect the price of stock. But some of the movemente of the market appear eo utterly senseless that it is perhaps about as well to expect the move in cycles governed by the time only as to try to study out any relation between the news from the mines and tbe etate of the market. The Comstock mines still hang upon the Sierra Nevada honauza. The fact that the stocks waver as rumors are whispered about of the state of negotiations between Skae and Flood argues a hope that with the full development of the great ore body, the neighbors will be pulled up in the market along witb it. In ehort that sympathy will serve the same purpose as higb assays in those mines that have no immediate prospects.

The Bodie mines have shown a general rise. Perhaps the operators are growing tired of the Comstock. Tuscarora mines also showed an upward movement. One case of traceable relation between newe and prices is exhibited in Eureka Con. The breaking of the spur wheel has led to the fall in the stock.

No new dividends have been reported this week, to our knowledge. Bullion shipments havs not heen hackward.

Inspection day on the Comstock has passed, and still no startling news.

PACIFIC COAST POSTAL CHANGES.—Offices estahlished—Rye Valley, Baker county, Oregon, William Blaine, Postmaster; Key, Thurston county, Washington Territory, William Shuman, Postmaster; Brown's Park, Summit county, Utah, John Parsons, Postmaster. Offices discontinued—Low Gap, Meudocino county, Cal.; Providence Wells, Pima county, Arizona. Postmasters appointed—Sylvanus Gardner, Erie, San Benito county; J. C. Morrison, Lindale, Modoc county; W. E. Fifield, Madison, Yolo county; M. L. Landrum, Peach Tree, Monterey county; J. B. Datel, Sherman, Santa Clara county, Cal.; Gaines M. Adams, Hood River, Wasco county, Oregon; Chas. A. Connelly, Leeds, Washington county, Utah.

IT is suggested that the condition of the British markets renders possible a sharp demand upon us for gold, to he obtained hy returning American securitiee other than United States honds.

IT is etated that the Union and Central Pacific railroads have completed arrangements with all the Eastern lines hy which California freights will he loaded separate in full car loads, and cars run through with hut one transfer.

THE grain crop of lower Puget sound will he mucb larger this year than for any previous season. The yield has been much less per acre than last year, hnt the acreage much larger.

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

CALIFORNIA.

AMADOR.

TO BE TRIED AGAIN.—*Dispatch*, Oct. 26: The Markle mine, near Volcano, a few years ago one of the prominent quartz mines of this county, hut siuce abandoned hy its former owners, an English company, has been taken possession of by a new company, who, we understand, will commeuce working it agaiu at an early day. The mine is thought to be a very valuahle property if properly worked.

A MINE REVIVES A TOWN.—Ouce thrifty little Scottsville is beginning to again assume a life-like appearance, in consequence of tho flattering prospects of the Moore mine. A new office for the company is almost completed, steam hoisting works are being put up, and ground is being levsled upon which to erect a new water-power quartz mill.

HAPPY STOCKHOLDERS.—It is stated on good authority that ths quality of rock taken from tho Monterichard, continues to grow hotter and hetter every day.

PHENIX.—The 80-stamp mill is running to its full capacity. The rock is said to hs as rich as at any time in the past. A new shaft is sinking south of the south shaft.

BUTTE.

CAPITAL COMING BUT MORE WANTED.—Oroville *Record*, Oct. 26: The mining prospects of the county look brighter and hrighter, day after day. The mines that are now heing worked are yielding as well as ever they did, with good prospects for the future. The extensive gold fields just across the river that have only heen waiting the strong hand of capital to put them in working order, when they would pay rich returns, have now passed into the hands of some of the richest men of this State. Work will soon he commenced with a view of bringing in a large volume of water that may be used in any direction from the top of South Table mountain that it may be wanted. We predict that mining will he carried on inside of a year, at double the rate that it now is in this county. Men of money are now owners of these mines and they intend to open them at once. There is still room for others to purchass good mines that never will pay one dollar until water is brought in, and then they will pay large rewards.

MONO.

ALWAYS CHEERING.—Bodie *Standard*, Oct. 23: The week passed has witnessed the erection of a numher of new hoisting works and an unprecedented amount of work done on different properties. The most cheering results have heen reached in many of our mines, and indications point to a numher of honanzas in the near future. The great drawhack has been the want of lumber, and if our mill men do not hurry up and fill their orders, we fear that a number of promising mines will he ohliged to discontinue work for want of proper cover for their men. The Standard mill, under the competent management of James M. Dawley, continues to reduce the usual quantity of ore from the Standard mine, and the weekly shipments of gold hullion goee forward as regularly as ever. Ths reports from the Bodie, Bulwer, Blackhawk, Con. Pacific and others of our leading mines are of the most encouraging character, and add additional assurance of the permanency of our camp.

BEN BUTLER.—This mine was located Sept. 18th, 1878, and has heen worked hy Wilson and Ben Butler and Roger Horner. Some samples of ore from this mine taken from a depth of 40 feet from the surface contain large particles of "ferniform" gold, and also much free gold sprinkled generously throughout the specimens. A ehaft is heing sunk on the ledge and will be continued to an indefinite depth. The Ben Butler is west of the Last Chance and uorth of the Excelsior location.

DOUBLE STANDARD.—This recently incorporated company has heen taken in charge hy W. A. Skidmore, mining expert, who will push work forward with his accustomed energy. It is located on the south extention of the Standard and the South extension of the Summit and Linden mines. The ground is 300 feet in width and 1,500 in length. Work has hcen done hy a shaft 80 feet deep, at which point a ledge was struck about three or four feet wide of very fair quartz. It is intended to commence the sinking of a new shaft which will he at once pushed to the depth of from 200 to 300 feet, when it is expected a rich gold-hearing vein will be encountered.

BOOKER.—C. T. Singletary has assumed charge as superintendent and has commenced energetically to push matters forward. The main shaft is now down 210 feet from which points levels are heing started. The hottom of shaft is fine looking quartz which looks promising in the extreme.

MARYLAND.—This mine is situated on Queen Bee hill, east of the University and Booker. The work of development is bcing done hy sinking a main shaft which is now going down on a four-foot vein. The quartz found promises well. The property has heen incorporated and has heen placed in charge of G. H. Howard. Work will continue through the winter months.

MONO AND CROSS CON.—Shaft down 91 feet. Have heen making fair progrese during week past. The character of the rock has not changed materially, but still looks well.

RICHER.—The south winze is down 42 feet, to a point where qnite a body of water has been struck. Still sinking in winze, and evsrything looking favorahle for a good pay streak of orc.

DITCH COMPLETED.—For the past two weeks the Standard mill and miuing company have had men sngaged on a water ditch, leading from tbeir mill a distance of 4,500 feet to Barney's canyon, north of town. The spring from which the water was turned into the ditch will afford a three-inch supply the year round. Fear of want of water is thus dispelled, and now it can be safely aseerted that the Standard mill will pound away on ores through winter and summer, spring and autumn.

ITEMS.—Oro from the University mine, worked in arastra 12 years ago, gave from $30 to $48 per ton in gold. A two-foot ledge has been cut in the west crosscut, 480-level, of ths McClinton. The Summit ledge is 2½ feet wide, good orc. At a depth of 65 feet in the Ajax new shaft a two-foot vein was struck. The Staudard has at least two ledges exposed, two and three feet wide respectively. Fine ore and favorahle indications in the Bodie. Rich ore heing extracted from the Con. Pacific. Ledge matter, eight feet wide and prospecting well, in South Bulwer. Bulwer shows at least two ledges, 15 inches and three feet wide reepectively. Two very promising veins to he opened up in the Orient. Two etringere of quartz in White Cloud, one of them prospecting slightly in gold.

NEVADA.

CLEANING UP.—*Herald*, Oct. 26: The North Bloomfield Gravel mining company have heen engaged for the past few daye in making a complete clean-up of their tunnel and undercurrente. They make this complete clean-up about once a year. The upper part of the tunnel, where the flumes are, is cleaned up about every three weeks, heing accomplished in a day, hut to clean all the tunnel and undercurrents it takes about a week. It will he remembered that this tunnel is over one and a half miles long. The water is turned off at the upper end of their ditches, which are over forty miles in length, and the work of cleaning the gold out of the tunnel and arranging for another run is gone through with. Their undercurrents extend from the mouth of the tunnel aloug the mountain side dowu to the South Yuha. It is expected that this clean-up will yield an immense amount of bullion.

NEVADA COUNTY MINING ASSOCIATION.—Grass Valley *Union*, Oct. 26: This is the name of a new mining organization recently perfected in Grase Valley, intended for general miuing operations. It has takeu a one year's lease on the North Star mine (the French lead) and will do some work the present season, hut any extensive work or the erection of machinery will he postponed until next snring.

SWISS-AMERICAN. — *Union*, Oct. 26: The perpendicular shaft which is being sunk on this new mine is down 80 feet, and is now in hard hlasting ground. At the depth of 100 feet a crosscut will he run to the ledge a distance of about 25 feet, when sufficient hacks will he obtained to give at least a year's work. Another shaft has heen put down on the workings of the ledge, and has reached the depth of 50 feet. Whsn a good face of quartz is reached in this shaft a winze will he sunk down to a connection with the perpendicular shaft, through which the quartz will be raised. The water in the mine is not troublesome, and is easily handled hy the machinery.

ANOTHER MINE REVIVED.—*Herald:* Forlorn Hope is the name of a quartz mine located west of Rough and Ready. It was worked about two years ago and some very good rock taken out, hut it has for some cause eince that time, until quite recently, lain idls. Its owners have now gone to work on it, and the first part of the week they came across eome rich rock. The vein is prohahly a pocket ledge, hut the pockets when found, are very rich. The quartz is of a neat white color, and looks very handsome, interspersed with gold. The specimens make very neat jewelry, for which use the last find was priucipally sold.

ITEMS.—Lafayette No. 2, a prospecting company on Oshorne hill, has hsen taking out some fine looking rock which shows well in ore and free gold. The Cold Spring mine has good prospects. The Manzanita mins is preparing to uss 1,300 or 1,400 inches of water next season. Centennial is sending another hundred load lot of ore to the Orleans mill for crushing. This ore always pans out well. The Godfrey gravel mine on Alta hill, is regularly running and they are taking out some quite rich looking hlue cement which requires crushing, occupying a five-stamp mill regularly. The Scadden's Flat new mining company have purchased extensive machinery for hoisting and pumping works and are putting the same in shape for a thorough opening up and working this well-known mining property. The Derhec, drift gravel miue, is working a force of 35 men now and putting on more as the drifts are opened. The machinery used for hoisting and pumping is laige and first-class, and the gravel yields from $6.50 to $13.50 per ton. Winze No. 3, in the Watt mine, is now down 15 feet. Bedrock was struck at a depth of 12 feet, and the striking of the channel is a mere matter of days. The work of raising for the gravel deposits in the Planet has begun. A recent crushing of 48 loads of rocks from the Alpha yielded $1,082.72 in gold, or $22.55 per load.

PLACER.

TO BE DETERMINED.—*Herald*, Oct. 26: The mining interest in the neighhorhood of Wisconsin Hill seems to be somewhat at a standstill. There are two large ditches which bring water from Shirt-Tail canyon during the winter, affording water for the working of a few hydraulic claims; hut the deposits of gravel are irregular, and chopped up by deep canyons. There has becu considerable prospecting, as on every side may he seen open cuts which have been commenced in the hills, hut which are now abandoned. The future prosperity of Wisconsin Hill, as an extensive mining section, is yet to be determined. It is to hs hoped that the enterprise of the miniug community will yet he rewarded.

ABANOONED TWICE.—Soms thirteeu years ago thero was a mine opened in the vicinity of Michigan Bluff, which was then known as tho Bird's Valley mins, and for some time was worked with moderate success, hut for some cause was abandoued. After the mine had remained idle some time the attention of other individuals hecame directed to it, who determined upon re-opening the old mine, which they did, and worked it with similar succese as the parties who first opened it, and soon it again becams ahandoned. Some time since this same old mine was opened by a Mr. J. C. McCook, who is now working it with hetter success than any of his predecessors. Ws have often heard it said that the third time is the charm, and so it proves to he in this case, as wo are credibly informed that Mr. McCook took out in two days two tons of rock which will yield $75 to the ton. The hest part of it is that the prospect for its continuance is good.

PLUMAS.

GREENVILLE NOTES.—Quincy *National*, Oct. 26: Mr. A. McIntyre has purchased a half-interest in the Antelope mine from F. A. Murphy. This mine is about one-fourth of a mile from the New York mine. McIntyrs will mill the Antelope rock in the New York mill, and also the rock from tbe Wiles claim. The latter mine is also about three-fourthe of a mile from the New York, and was formerly worked by Mr. S. Wiles, who sold out to a stock company. The company ran some 400 feet of tunnel, and McIntyre has hought most of the company out, and is ready to take out pay rock as soon as he completes a new grade from the New York mill to the mine. Mr. M. will also start up the old Union mill to work the Hidden Treasure rock.

SHASTA.

COPPER CITY.—Reading *Independent*, Oct. 18: The Extra company have made their regular shipments of hullion the past week, and propose to keep doing so the entire winter, regardless of rain or snow. There are about 15 teame hauling ore from the Potter mine, on Bully hill, to the mill. The Northern Light mine continues to yield rich ore in ahundance, and have a fine pile of high-grade ore on their dump ready for the mill. This company will build a mill in the spring, if not eooner, as they have plenty of ore now in sight to keep a 20-stamp mill running.

TRINITY.

A MINING ENTERPRISE.—Weaverville *Journal*, Oct. 26: The new company which is operating near McWhorter's place on lower Trinity is to he known as the Dixon Bar M. Co. Dr. P. W. Fonda, who has been superintending operations, tells us that everything is progressing nicely, and that ditches, flumes, etc., will he completed in time to commeuce running at the opening of the water season. The company have excellent prospects, and it is to he hoped their efforts will he rewarded with success. Dr. Fonda left here for Oakland last week; during his absence Mr. Charles Tucker bas charge of the company's affairs at Dixon Bar.

GOOD PROSPECTS.—It is reported that Joe Watrous and his partner have found very fair prospects on the headwaters of the north fork of Trinity, about 15 miles above the town of North Fork, near what is known as Blue Ridge. Coarse gold has heen found in paying quantities, soms pieces weighing as high as $12.

TUOLUMNE.

THE REWARD OF PATIENCE.—Sonora *Democrat*, Oct. 26: The Harris mine, situated at Whisky hill on what is known as the mother vein, is proving to he a very valuable property. It is another of the many instances whsre large amounte of money havs been expended hy capitalists in opening veins to he ahandonsd as costing more than they would prohahly come to. Some years ago Gen. W. S. Rosecraus and others prosecuted work on the mins now owned and worked hy Mr. Harris, resulting in ahandonment. After it was ahandoned the presnt owner took it up and quietly worked several years until he was satisfied he had a good mine. This summer he built a mill and is now reaping the reward of his patience and industry. Thie week he cleaned up a run of 12 days, of 12 hours sach, resulting in a yield of several thousand dollars. There is room on Whisky hill for a number of mines on the same vein, which can be traced quite a distance, that there is reason to helieve will prove as rich as this one.

NEW MILL.—A five-stamp mill with capacity for 10 stamps was commenced at the Evans mine this week. It will he huilt under the superintendence of James Tullock.

NEVADA.

WASHOE DISTRICT.

SIERRA NEVADA.—Gold Hill *News*, Oct. 30: The south incline has reached the 2200 level, at which point cutting out a station is well under way. This station is heing cut out in the porphyry on the east side of the shaft and ore

Continued on page 284.

Rotary Dry Ore Concentrator.

Mr. E. W. Stephens, of Erie, Pa., has employed his ingenuity in adding another dry ore concentrator to ths fast increasing list of that class of machines. His invention is the result of practical observation and of experience in the concentration of lead ores. The Erie *Dispatch* describes it as follows:

The machine is an iron frame supporting an endless belt of wire cloth, which, by means of pulleys, is passed over an ore bed in which a horizontal blast plate or fan acting vertically, oprated by a lever and spiral spring, gives intermittent air impulses at a rate not exceeding 500 strokes a minute to a stratum of ore resting upon the cloth, thus affecting a concentration of the heavy minerals contained in the ors from the associated rock, by the action of specific gravity. The specific gravity of rocksand is about 2½, of iron ore 6, galena 7½, copper 9, silver 9, and gold 19. The material in order to be treated over an air concentrator must first be crushed to about the size of wheat, then dried iu oveus, and then divided into separate sizes by sieves or screens. This ends the preparation of the ore. After being passed over ths concentrator and the mineral separated from the rock, skimming knives at the forward end of the machine separate the concentrated strata as the wire cloth belt is revolved, the lightsr passing over the knives into one receptacle, and the heavier mineral passing below the knives into another receptacle stationed at convenient distances in front of the machins. The capacity of a machine having a 2 by 3 feet blast-plate or fan would be six and a half tons per hour. It is claimed that this is many timcs in excess of the capacity of any ore separator of similar dimensions hitherto in use.

In other dry ore concentrators, similar to that tested by the Pacific Concentration Company last November, the ore is compelled to pass over a stationary ore bed, thus limiting the capacity to a practical working of about 1,000 pounds per hour. In this rotary machine, however, ths ore remains stationary npon the ore bed and is then concentrated and removed from it by the revolution of the endless belt, aud the capacity is practically uulimited, as it depends entirely upon the length of the belt, which may he mads to pass over a frame containing a series of an indefinite number of blast or fan plates. It is claimed that a length of 60 feet of belt exposing about 20 feet to the simultaneous action of the fans would bs the best practical working capacity. The capacity of such a machine would bs about sixty tous an hour, aud the cost of concentration, exclusive of preparatory work, would in that case not exceed five cents per ton.

It is intended for use in separation of all mincrals associated with a large quantity of rock, such as lead, copper and eilver, and also for iron ore where found associated with sand as it is iu a number of counties in this State, in the Lake Superior region and at points on the Atlantic seaboard, and in the separation of gold sands. It is claimed that the advantagcs of air over water as a separating medium for ores, is very decided on account of the superior elasticity of air, rendering it practicable to give four times the number of impulses per minute that can be given by water and also the freedom from lateral current, which iu the case of the finer sizes of ores causes great waste.

Falling in of a Mine.

An exchange publishes a letter dated Scranton, Pa., October 10th, which gives the followiog account of the accident to the ooal mine reported briefly by telegraph a short time ago.

A destructive caving in of the extensive Diamond coal mine is causing much consternation on the Hyde Park side of this city. The crash was announced several days ago by a series of rumbling sounds in the roof of the mine. These signals, indicating the unsettled condition of the overhanging rock, became eo loud and constant that on Wednesday morning the men were forbidden to enter the mine except to remove their tools. This task was attended with some peril. The mine has three working veins, the lowest of which is 350 feet deep. About 90 feet of rock separated the upper and middle veins, and a similar partition existed between the middle and lower, before the caving in occurred. When the men entered for their tools they found all three veins in a dangerous condition, and in the bottom one the pressure was so great upon the props that the iron T rails, on which they rested, were in many instances bent and nearly reached the roof. The men could feel the rails moving beneath their feet nnder the great strain.

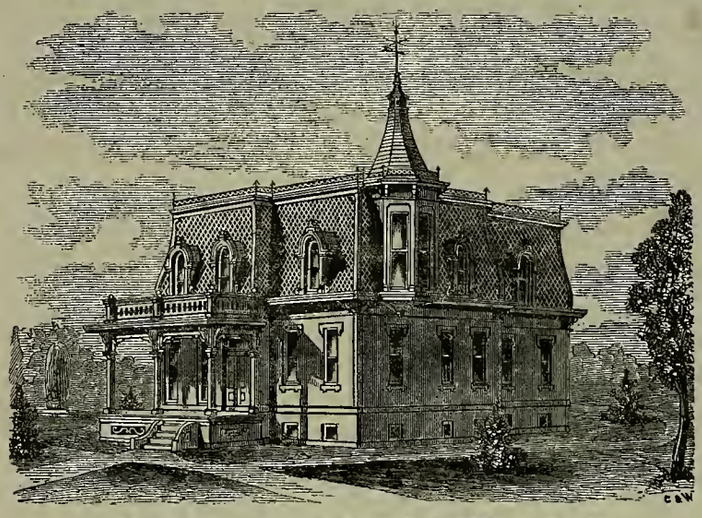
The crash occurred about one o'clock this morning. A gang of workmen who had been on the watch desoribe it as terrible in its effects. The three veins caved in simultaneously, with a roar that was deafening. This sound wae repeated a number of times, like thunder-claps, while, in the midst of the din, a euccession of short, sharp reports, like those of a rifle, kept up a regular fusilade. The caving in covers an immense area, and will cripple the mine for many months. The plane by which coal was lowered from the middle of the bottom vein, to be hoisted through the main shaft, was oruehed, together with its eugines and hoisting gear, and about 300 feet of the main gangway road filled with rock. The mine is still in convulsions, and will not settle for several days. A large flood of water, walled into some old workings, may possibly bs released, and if it is will flood the entire colliery. The disaster throws about 400 men and boys out of employment. The Diamond mine is the first ever sunk in this section by the Delaware, Lackawanna and Western Company, and its coal is the best in the valley.

GAS-WELLS.—An East Liverpool (Ohio) correspondent of the Cleveland *Leader* says of the natural gas-wells of the former city: "They form one of the seven wonders of the world. They are situated in and around the city, and give it a continual supply of the finest light. The gas is almost as free as the air. It costs practically nothing, and forms the illuminator and heater of the town. The city is lighted by it, and the street lamps blaze away at noonday as well as at midnight. It costs nothing to let them burn, and it takes trouble to put them out. Its light is not the flickering mockery of poorly-manufactured gas, but a flame which approximates in its brilliancy that of the electric light. Almost the entire fuel used in the town is this gas. It is conducted into the grates and stoves in pipes, and by it all the cooking and heating are done." It is also used in furnishing steam power for many of the largest pottery and ironstone china manufacturing establishments, 22 of which are in operation and busily engaged, employing over 2,000 hands, and which it is considered justly entitles East Liverpool to be designated "the Ceramic City" of America. Regarding the duration of the supply from these wells, it is stated that "the first well discovered now burns as brightly as when it was first opened, and for the last 20 years has never flagged in its briliancy, and none of those now in operation have ever shown any signs of giving out. For years Liverpool used manufactured gas, never dreaming of the rich supply that was wasting away daily under its very feet." The poor quality of the manufactured product induced the opening of the first well in 1859. This well, which is 450 feet deep, "has been furnishing fuel and light to several houses, producing the steam for a large engine and burning pottery kilns every day for nearly 20 years."

ENGLISH LOCKS AT PARIS.—We recently stated that United States lockmakers were far in advance of all competitors at the Paris exposition. English manufacturers, however, show some interesting things. In one lot of locks the keys are ornamental in the extreme. One of these—valued at £50—is 17 inches in length, the work of the bow, in silver and gold, being very delicate and intricate. Another is a copy of one made for the late Queen Isabella, of Spain, set with rubies and diamonds. A key concealed in a gold signet ring, and one in an oyster-shaped gold locket are curiosities worth looking at and worth using. An oddity ie a model in German silver of the fish adopted as the trademark of the makers cleverly fashioned into a look, with keyhole under a fin, and bolt shooting out of the mouth.

A Neat Dwelling.

In the planning of honses and the ornamentation of their exteriors and interiors, there is wide room for ths application of individual tastes. What would please one homs-maker would not another. In our choice of dssigns to present to our readers, we have made a wide diversity in styles that each might choose according to his liking. The designs which we give on this page is another from the establishment of Isaac H. Hobbs & Son, architects, of Philadelphia, Pa. It is quite different from the light aud airy cottage exteriors which we have given before. It is rather more severe in outline; the feature of the building being the French roof. It is qnite flat above, but the upper rooms are kept from overheating by the downpouring of the snn's rays, by leaving an air-space between the roof and the ceilings of the upper rooms. It is estimated that the house can bs built of frame, as shown in the plans, for $2,500 where materials is of average cost.

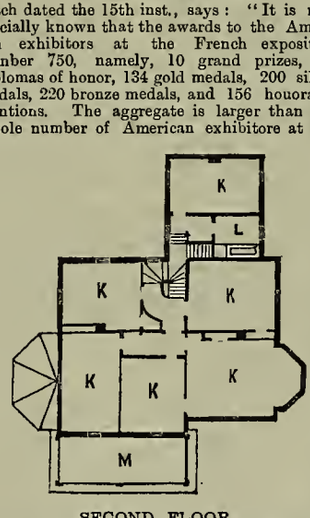


DESIGN FOR A COTTAGE WITH A FRENCH ROOF.

The floor plans are sxplained as follows: *A*, hall, 8 feet wide; *B*, parlor, 18 by 20 fest; *C*, library, 14 by 16 feet; *D*, diniug room, 14 by 16 feet; *E*, chamher, 12 by 14 feet; *F*, kitchen, 16 by 17 feet; *G*, chiua closet; *H*, porch.

In the second floor, *K* represents the chambers; *L*, bath room; *M*, veranda.

FIRST FLOOR.



SECOND FLOOR.

THE UNITED STATES AHEAD.—A Paris dispatch dated the 15th inst., says: "It is now officially known that the awards to the American exhibitors at the French exposition number 750, namely, 10 grand prizes, 30 diplomas of honor, 134 gold medals, 200 silver medals, 220 bronze medals, and 156 honorable mentions. The aggregate is larger than the whole number of American exhibitore at the Paris exposition of 1867, or at the Vienna exposition of 1873, and is a larger proportional award to exhibitors than to any other nation represented at this exhibition."

GOLD IN WASHINOTON TERRITORY.—It is reported that the Swank mines are doing well this season. New leads have been discovered and more are, so to speak, "on the way." The diggings are worked principally by Chinamen, who lately shipped from $80 to $100 each to their respective companies in Portland. Some fine nuggets have been produced by the mines. The Fehastin quartz mines are paying well. About 25 men are engaged at these mines and six or seven small mills are iu successful operation.

PLACERS and quartz mines are reported lively in Lynx Creek district, Arizona. Extensive deposits of stone coal have been discovered about 30 milee from Brigham City, north of the Little Colorado, Arizona.

New Incorporations.

The following companies have filed certificates of incorporation:

RED JACKET CON. M. Co.—Devil's Gate district, Storey and Lyon counties, Nevada. Capital—$10,000,000. Directors—D. L. Thomas, John Crockett, Philip Henkle, H. O. Reinhardt and A. D. Snedeke.

SULTAN HILL M. Co.—Indian district, Mono county. Capital — $10,000,000. Directors—Sumner D. Prescott, Joseph Wasson, E. C. Locke, T. E. Jewell and Clinton Gurnee.

BODIE LION M. Co.—Mono county. Capital $10,000,000. Directors—J. M. Gitchell, A. C. Dietz, William A. Phillips, J. L. Sanford and A. C. Hendley.

ALPHA H. GRAVEL M. Co.—Nevada county, California. Capital—$1,000,000. Directors—David Morrow, James F. Haycock, Thomas Redwayne, Alex. Girvin, W. H. H. Hamilton and James Ireland.

EAST SIERRA NEVADA CON. M. Co.—Storey county, Nevada. Capital—$10,000,000. Directors—Solomon Heydenfeldt, A. J. Holmes, B. B. Minor, G. Holland and G. R. Ghisclin.

NUMA M. Co.—Trinity district, Humboldt county. Capital, $10,000,000. Directors—W. M. Pierson, E. W. Blasdel, A. M. Bnrns, N. Dupera and B. Block.

MOUNT ROSE M. AND M. Co.—Mount Rose district, Humboldt county, Nevada. Capital—$10,000,000. Directors—F. A. Huntington, M. P. Ivory, S. P. Pharis, S. F. Curtis and W. T. Robinson.

BUNKER HILL DISCOVERY Co.—Mono county. Capital, $250,000. Directors—E. B. Cooper, Benjamin J. Haslett and Alexandsr Warfield.

PIONEER Co.—Capital, $10,000,000. Directors—Charles Land, J. M. Byrne, W. H. Wallace, N. H. A. Mason and E. Straus.

GLYNN DALE CON. G. M. Co.—Capital, $10,000,000. Directors, F. B. Taylor, George B. Hubbard, Irving M. Scott, F. Home and John Neale.

EAOLE G. AND S. M. Co.—Capital, $10,000,000. Directors—George A. Gates, A. C. Mc.-Skinner, W. D. Kock, W. J. Richardson and N. Mason.

CON ASTOR M. Co.—Capital, $10,000,000. Directors—C. L. Weller, J. Landers, A. Andrews. Cameron H. King and Frederick A. Roe.

TIGER G. AND S. M. Co.—Pyramid Lake district, Nevada. Capital, $10,000,000. Directors—James Ward, J. C. Pray, George Eggsrs, P. L. Archibald and A. J. Jeffers.

BUTTE H. M. Co.—Capital, $23,000. Directors—George W. Deitzler, Ephraim Chaquette, M. Ls Duc, Chas. L. A. Laplant and A. Redovan.

SOUTH BELVIDERE G. AND S. M. Co.—Mono county. Capital—$10,000,000. Directors—H. H. Hubbard, J. W. Young, Jr., George M. Condee, A. J. Adams and D. W. Douthitt.

BULLETIN M. Co.—Bodie district. Capital—$10,000,000. Directors—A. Judsou, John Yule, R. Woods, W. H. High and Z. T. Adams.

TRUE BLUE M. Co.—Lake district. Capital—$10,000,000. Directors—Johu Neale, S. M. Holmes, J. T. Davis, C. A. Genning and C. A. Wisely.

BRIGHT STAR G. M. Co.—Kern county. Capital, $10,000,000. Directors—P. T. Colby, J. M. Gitchell, H. F. Scott, H. H. Pearcon and Delos Lake.

OAKLAND CON. G. & S. M. Co.—Location: California. Capital, $6,000,000. Directors—Charles E. Fairbank, Jamee Gibson, R. W. Granniss, John Curtie and I. W. Lent.

HAPPY VALLEY B. G. AND H. M. Co.—Location: Calaveras county. Capital, $300,000. Directore—James Ireland, M. E. Austin, David Morrow, A. D. Allen and J. C. Warren.

SILVER HILL T. M. Co.—Location: Bodie district. Capital, $10,000,000. Directors—Thomas Steele, A. A. Babb, F. F. Sturges, A. L. Tracey and J. B. Mackle.

PRINCETON MARIPOSA G. M. Co.—Location: Mariposa county. Capital, $15,000.000. Directors—S. Heydenfeldt, Mark Brumagin, I. W. Raymond, S. Heydenfeldt, Jr. and John W. Brumagin.

LORD BEACONSFIELD G. & S. M. Co.—Location: Bodie district. Capital, $6,000,000. Directors—John D. Barry, John Moss, G. E. Smith, J. W. Harding and J. C. Chalmers.

PACIFIC COAST PETROLEUM Co.—Location: San Mateo county. Capital, $50,000. Directors—Alfred E. Davis, Edward Barron, A. B. Rowley, George H. Waggoner and B. B. Minor.

THE LAKE VIEW M. Co.—Capital, $10,000,000. Directors—John Neale, S. M. Holmes, John T. Davis, C. A. Gennng, C. A Wilsey.

IRONCLAD CON. M. & M. Co.—Directors—R. H. Lloyd, Benjamin Prindle, George J. Smith, John Cammet, John H. Cammet. Capital, $10,000,000.

GOLD LEAD G. & S. M. Co.—California and Nevada. Capital. $10,000,000. Trnstees—David Porter, F. Bonancina, J. W. Walls, A. Charles and W. Williams.

CENTRAL CON. G. & S. M. Co.—Mono county. Capital, $10,000,000. Trustees—J. H. Canavan, I. E. Richards, John Martin, W. B. Leith, and R. M. O'Neil.

ONE of the wire cables on the California Street Hill railroad, San Francisco, has been stretched so that its diameter is reduced from one and one-fourth to one and one-eighth inches.

THE first discovery in the Santa Rosa mining district, Silverado, was made in August, 1877, by Messrs. Purcell & Slankard. The district wae organized the same month.

The Mines and the Courts.

Interesting to Mine Jumpers.

The Commissioner of the General Land Office, in refusing the application of certain parties to be allowed to re-locate the American Hill quartz mine, announced the following new and important rulings.

First—A mining claim is not subjected to re-location subsequent to its entry for entry.

Second—A failure to perform the labor or make the improvements required by Section 2324 of the Revised Statutes, between the date of entry and the delivery of a patent, does not work a forfeiture of the rights acquired by entry, nor demand its cancellation, when such failure is brought to the attention of the General Land Office by such re-location or otherwise.

Third—The annual expenditures named in Section 2324 are required to support the possessory title only.

Fourth—The objection from third parties, which, by the last clause of Section 2325, may be heard, relate only to the conditions of the purchase, and not to those of possession.

Buying Washed Wildcat Stock

Samuel Geddins sues N. H. A. Mason to compel the payment of a promissory note for $15,000. The note was given in payment for 1,000 shares of stock in the Geddes & Bertrand M. and M. company, owned by the plaintiff, who, it is alleged, falsely represented that the stock was worth $4 per share in the San Francisco Board, and that there was on the dump of the mine not less than 1,000 tons of ore, valued at $100 per ton. Defendant avers that he believes that none but "wash" sales of this stock were ever made in the Board, and that it was, and now is, without any market value. The stock not having been transferred to his name upon the books of the company, defendant claims the note was given for no consideration.

A Bonanza Suit Again.

John H. Burke, on his own behalf and all other stockholders of the Con. Virginia M. Co., brings suit in the Twenty-third District court against J. C. Flood, J. W. Mackay, J. G. Fair, the Pacific M. & M. Co., and the Con. Virginia M. Co., to compel Flood, Mackay, Fair and the Pacific Mill Co. to account for and restore to the Con. Virginia Co. all moneys paid out for milling the Con. Virginia ore, amounting to $6,000,000; for the tailings, amounting to $20,000,000, and for $15,000, the value of certain lots in Virginia City, conveyed by the Directors of the Con. Virginia M. Co. to to the Pacific Mill Co. on the 7th of January, 1875. Total, $26,015,000. The rights of action is based on sections of the Civil Code of California, which prohibit the trustee from dealing with the Trust Fund for his own profit, or making contracts with himself, as decided in the recent case of Wilbur vs. Lynde, 49 *Cal.*, 292, "That the law will not permit one who acts in a fiduciary capacity to deal with himself in his individual capacity, and that express contracts thus made are contrary to public policy and void."

Commission for Selling a Mine.

W. H. Howland brings suit against I. S. Van Winkle to recover $7,500, commissions as broker for the sale of the "Nevada mine," or the "Soggs mine," so called, which plaintiff alleges he sold on the 7th of August last for $75,000, the defendant agreeing to pay a reasonable commission for such brokerage.

European Mountain-Climbing Railways.

The journal of the Hanover Society of Civil Engineers and Architects, for this year, contains the report of a lecture by one of its members, Mr Grove, on the several mountain railways built in Austria and Switzerland within the past eight years.

The track is made of two channel irons, spaced 5 inches, in which plays the cog-wheel of the engine, 4-inch face, and 4 seconds pitch of cogs. The Wasseralfingen road alone has a 3 2-10 inch pitch. The cogs are shaped as evolutes of a circle, so that a variation in the depth to which they take into the track do not affect their regular action. On the Rorschach-Heisden road the track is elevated above the ties on two stringers, leaving the space open under the rounds of the ladder-like central rail, so that snow may fall through or be pushed through by the cog-wheel. This seems to have worked well, even solid ice having been thus pushed out from between the cogs. The latest roads have the track fastened to the ties by suitable castings instead of by longitudinal stringers.

Switches were at first built after the manner of turntable (are so now on Mt. Washington railway), but have recently been constructed similar to other switches by Mr. Klose, of Rorschach. The circumstances of the cog-rail being elevated above the other rails, simplified the construction of this switch materially. The common rails are switched as ordinarily, and the cog-rail is gradually widened, the rounds being bent at the same time, so as to remain normal to each side-bar at their ends until the rail has attained double its usual width, when it is continued as two separate cog-rails.

Various methods have been devised for enabling the locomotives to work by adhesion of their smooth wheels, as well as by means of their cog-wheel drivers, and by means of either at will. No one of these has been permanently successful, however, so that the proper construction of a double engine of this sort is still a matter of experimental inquiry

Useful Information.

A New Artificial Stone.—We read that a process has been invented by H. G. Hosmer, of Rome, which differs from previous processes in the fact that limestone in the solid state is employed as the base instead of a mixture of plaster and cement. The limestone is worked by any suitable means to the desired form, and is then placed in a boiler furnished with a safety-valve and manometer, so that the pressure therein may be noted and controlled as may be required. The boiler is then filled with pure water at the ordinary temperature, care being taken that there is no mineral deposit introduced with the water, and that the water completely covers the objects placed within the boiler. The boiler is then hermetically sealed, and fire applied, and the water allowed to boil until the manometer indicates 5 degrees of atmospheric pressure if the objects are small, and 6 or 7 degrees of pressure if the objects are large. When the heat reaches the above mentioned point the water is allowed to cool until the pressure indicated by the manometer returns to zero. The water is then taken out of the boiler either by means of a pump or a siphon, and the objects are removed from the boiler preparatory to being placed in the alum or colored bath, various receipes being given for different colors.

Prices of Eastern Railway Stocks.—The following is from an account of an auction sale of railway stock in Philadelphia: "How much for 3,123 shares in the Huntington, Cambria & Indiana?" asked the auctioneer. There was an ominous pause, and nobody seemed inclined to make a venture. "Come, come," pleaded the auctioneer, "give me a lead." "One-eighth of a cent per share," piped a weak voice, and a burst of laughter followed. Then there was another pause, until another auditor went one better and bid a quarter cent. The auctioneer rapped and talked in vain after this, and the quarter cent bidder finally became the purchaser. Four hundred and eighty shares Indiana & Ehenshurg went at three-quarters of a cent; 360 Armstrong & Indiana, 154 Clifford & Wilkesbarre, and 200 shares Gap & Newport were knocked down at one cent; 100 shares of Anderson's Ferry, Waterford & New Haven started at one-quarter of a cent and ran up to four cents, at which figure they went off. The prices of the remainder of the stocks averaged all the way from one and a half cents to $5 per share, the latter being obtained for 1,060 shares in the Perkiomen & Reading.

Furniture Polish.—The following is from the *Journal of Chemistry:* Put three gills of cold-drawn linseed oil into a quart bottle with 16 drachms of aquafortis, and fill up with vinegar. This mixture is invaluable for furniture that has been French polished, but is getting the worse for use, or, it may be, abuse; and also when wood, having been only partially seasoned, the resin rises up through the polish, causing unsightly cracks and spots. This the aquafortis in the mixture eats down, and restores the work to something of its original brightness. To use it, first wash the furniture thoroughly clean with a sponge and lukewarm water, shake the bottle well and rub on the polish, being careful to use only very clean cloths. Old rags do best, as they will not wash after being used with this mixture, and are only fit to be thrown away. For furniture that has never been French polished, nothing is better than the old-fashioned beeswax and turpentine melted together by a gentle heat, and applied with plenty of elbow-grease.

Artificial Manganese.—*Iron* says that artificial pyrolusite has been produced by Mr. J. B. Hannay, of Manchester, in the following way: When manganous nitrate is dissolved in strong nitric acid and warmed and a few chips of potassic chlorate added, there is precipitated in the liquid black oxide of manganese in the form of flat plates, which, when very thin, are of a beautiful purple, but when thicker are of a red color. The whole of the manganese is precipitated in this form, but when the strength of the acid and the temperature are made to vary, the distribution of the plates may be changed. When the acid is very concentrated and the temperature only about 20°, and the mixture allowed to stand for some days, the dioxide of manganese is precipitated in plates (and sometimes needles) radiating from a center, and arranged so that when fractured and viewed with a low microscopic power, they look exactly like natural pyrolusite. The specific gravity is also the same, being 4.935.

Improvement in Bending Timber.—The bending of hard wood, especially beech, is effected at present by means of hot water or steam, a process somewhat costly as regards fuel, and taking a long time. A patent has recently been taken out in Germany by Babse and Haendel for making sieve hoops and like objects by a dry process, more cheaply and in shorter time, from cut wood. Two rollers are used, one above the other, and having less velocity, so that the upper acts by holding back, while the lower extends the wood fibers. When the board, thus bent, leaves the rollers, it is fastened in the mouth of the sieve. The upper roller is fluted, the under one smooth. If two smooth rollers were used a very much greater pressure would be necessary.

Ballooning in the Arctics.—Prof. King, the celebrated æronaut, has just concluded, at Scranton, Pa., a series of experiments with his new balloon gas-generating apparatus. The generator is of cylindrical shape, five feet and a half in diameter, and 10 feet in hight, and Prof. King claims for it a capacity to inflate a balloon of 90,000 or 100,000 of cubic feet volume. The experiments were made at the instance of Capt. Howgate, the well-known polar explorer, with the view of adopting it for service in arctic exploration. When Prof. King first announced his invention, M. de Fouville, the eminent French æronaut, in a series of letters to Capt. Howgate, expressed the opinion that Prof. King's plan was entirely impracticable. Notwithstanding this advice, Capt. Howgate determined upon a test of the apparatus, and sent a special delegate to be present at the Scranton experiments. This gentleman, who has now returned to Washington, reports that they were entirely successful, and Capt. Howgate says that if his colonization plan is carried out the King apparatus will become one of the auxiliaries in the exploration.

Chinese Penalty for Adulterating Tea.—The practice of adulterating tea with willow leaves has been brought under the notice of the Governor of Foochow by the Chamber of Commerce of that place. As the result an official proclamation has been issued threatening the delinquents with severe punishment. Those at the head of the scheme, it recites, are numerous, and any person who proves the guilt of one of them will receive 100 piasters. "Let all," it adds, "tremble and obey."

Trade Position of the United States.—As a remarkable feature in the world's commerce at the present time, it may be noted that the United States is the only country where its exports exceed its imports with the exception of India, which has a small trade balance in its favor. The increase in the importations of Europe is principally in breadstuffs, the United States being the great source of supply for European deficiencies in that line.

Prevention of Incrustation.—We learn from the *Manufacturer and Builder* that the process of Dr. de Haen for preventing incrustation in steam-boilers, consists in the treatment of the feed-water with the proper amount of harid chloride and milk of lime, as determined by quantitative analysis, seems to grow in favor for locomotive and stationary engines, and is to be employed for the 310 boilers of Krupp's steel foundry at Essen.

To Polish Steel.—Mix half a pound of fine emery powder with the same quantity of soft soap, and add a small piece of soda. Simmer this over a slow fire for two hours, to extract all the moisture. Rub on with flannel, and finish with plenty of dry whiting.

Good Health.

Sanitary Funerals.

In an article on this subject in the New York *Independent*, the writer remarks as follows: First of all, every person that dies should have a thorough washing of the whole body. To two quarts of warm water it is best to add one pint of the chlorinated soda of the shops known as Labarroque's solution. A half pound of chloride of lime stirred into the same quantity of water and allowed to settle, and the water poured or strained off, will do as well. A large wad of cotton or a small bag of sawdust mingled with a pound of chloride of lime is well placed under the hips after washing.

The whole process by which the Jews prepared a body for burial may well be imitated in our modern times. The washing was followed by the application of spices to the corpse in the form of ointment or within the folds of linen. Our recent chemical analysis show these spices as not mere odors, but as disenfectants, in their essential oils having the very same combinations that we use less pleasantly. The handaging of the body closely and neatly in these spices up to the head, which was covered separately, served to encase the remains, so that coffins were rarely used, and, if used, were open. The changes which take place in a dead body within three or four days after death are such as diminish any danger from the body itself, and need to be counteracted only as would any other moderate contamination of air.

It is to be remembered, too, that the contagions which attend upon certain diseases are not so apt to be transmitted by a dead body as by the clothes upon it or around it, or by the room which has become infected during the life. If, for instance, a child deceased of scarlet fever has undergone proper disinfecting ablution and bandaging for burial, and is conveyed to a church or other building, we do not believe any case of disease contracted therefrom can be authenticated. We are sorry to have to criticize the action of some health boards in insisting upon private funerals in so many diseases. To lose dear ones and to have city boards advise all people to avoid you but increases the sorrow of the loss. It is a time for sympathy, which cannot be expressed by distance. If it can be shown that there is danger, then surely we bow to the exigency. But if not, we insist, harm is done by too sweeping ordinances. Let us rather mark well the lines of safety. With sanitation of the body within reach and indicated by the laws of a right cleanliness, let it be known that the danger is not in the body that is dead, but in unaired or non-disinfected rooms, garments and surroundings. More good comes to society by such facts than by interdicting attendance. In contagious diseases children may not be exposed to the room, but there is no danger in the properly preserved body.

Charcoal in Dentifrices.

A correspondent, who is a practical dentist of large experience, sends the *Journal of Chemistry* the following note: I notice a paragraph from the *Chemist and Druggist*, referring to the use of different substances for dentrifice, which states that the "microscope pointed out that every particle of charcoal had proved to be a small crystal, which, acting by attrition, was hurtful to the enamel." If attrition or friction were the only objections to the use of it as a dentifrice, I imagine the consequence would not be very harmful; but it is absolutely dangerous on other grounds. Of course its antiseptic properties are not questioned, but the most serious danger arises from its pernicious effects upon the gums and soft tissues. I might add that in extreme cases the alveoli or sockets of the teeth are not exempt from its effects. It may be laid down as an invariable rule that no substance should be used as a dentifrice that contains acids or any ingredients insoluble in the secretions of the mouth. Now with regard to charcoal, the microscope reveals the fact that, no matter how finely pulverized, it is composed of minute angular crystals. These are absolutely insoluble in the mouth, and when used they work up under the free margins of the gums, and the more loose and diseased these are the greater the danger. The little carbon crystals gets imbedded in the soft tissues, acting as a constant source of irritation which is followed by inflammation. A chronic state is reached; the gums become swelled; pus exudes from their margins; and absorption of gums and alveolar processes, with ultimate loss of the teeth, is the sequel. Of course extreme results are produced only by habitual use of the article. I think all observing dental practitioners of any considerable experience will bear me out in the above statements.

Boxing Children's Ears.—The practice of boxing children's ears is a most dangerous one. Professor Stanich, aurist, in a letter to the Timaru *Herald*, says: "As one single instance, in Canterbury I have found no less than four children in one family affected with serious deafness. One of these little ones had the drums of both ears absolutely broken, which means, of course, incurable deafness. The parents assured me that they never struck their children, but that it was in school that the boxing of the ears, which had had so fatal results, had taken place. I understand, also, that more than one schoolmaster in Timaru is in the habit of resorting to this barbarous practice as a means of punishment, and who—unwittingly, no doubt—will be answerable for many a case of deafness in years to come, when their present pupils will have reached manhood or womanhood." When the barbarous practice of beating children in school is resorted to, preferring a charge of assault against the teacher would have a moderating influence. If children are utterly disorderly they should be expelled the school, and the onus of punishment thrown on the parents, who, if they neglect the proper correction of their children, would have the pleasant reflection that the reformatories or training schools would be the places to which incorrigible children would be sent.

Warm and Dry Feet.—Life long discomfort and sudden death, writes a medical man, often comes to children through the inattention or carelessness of the mothers or nurses. A child should never be allowed to go to sleep with cold feet; the thing to be last attended to is to see that the feet are dry and warm. Neglect of this has often resulted in dangerous attacks of croup, diphtheria, or fatal sore throat. Always on coming from school, on entering the house from a visit or errand in rainy, muddy, or damp weather, the child should remove its shoes, and the mother herself should ascertain whether the stockings are in the least damp. If they are, they should be taken off, the feet held before the fire, and rubbed with the hands till perfectly dry, and another pair of stockings and another pair of shoes put on. The reserve shoes and stockings should be kept ready for use on a minute's notice.

How to Kill a Tapeworm in an Hour.—Dr. Karl Bettelheim, of Vienna, narrates, in the *Deutsches Archiv*, a heroic method and nearly sure cure in the short space of time of three quarters of an hour to two hours. It is this: He inserts a tube in the œsophagus, to the stomach, and pours down from 200 to 400 grammes of a very concentrated decoction of pomegranate root, having previously had his patient fast for 24 hours. The worm is stupefied, and passed, head and all, to a certainty; the patient has no sickness of the stomach, and no nauseous swallowing to do; and the drug is cheap.

A Long-Lived Mechanic.—Mr. Richard Rogerson, of Liverpool, is spoken of as a model English workingman. He is 77 years old, and has worked in a foundry for one firm for the last 66 years.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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Russell's Amalgamator, J. Morizio, General Agent, S. F.; Belting and Lacing, H. Royer, S. F.; Delinquent Notice—Summit Mining Co., J. W. Clark, Sec'y, S. F.; Paul's Barrel Process, Almarin B. Paul, S. F.; Assessment Notice—General Allen Silver Mining Co., M. C. Southard, Sec'y, S. F; Vulcan Blasting Powder.

The Week.

The shafts have been eunk, the tunuels have been finished, the drifts have been run, the powder-chambers excavated and charged, and now the reports of tremendous blasts reacb us, telling their tale of "good execution" and vast tracts of gravel prepared for the next season's washing. The ditches are being finished and in all the placer regions the miners are looking confidently toward the time when the rains shall come. In fact from all the mining regions, in and out of California, the news is colored with sanguine hopefulness. Shasta promises an early increase in gold bullion shipments. Silverado has all the buoyancy of youth. Bodie is quietly settling down to the work of developing her many locations, while new claims are weekly recorded. The Comstock shows nothing of special interest this week. The great mines of Eureka seem to be fated. The Richmond reducing works are not yet repaired. Yet here comes news of the shattering of one of the big spur-wbcels in the Eureka Con. mine, which accident must check developmeuts, though it probably will not eeriously affect the prospects of the old dividend-payer. Idaho appreciates the good that may he done a district hy keeping its mines before the world, and her press is energetically furnishing "points" on the possibilities and probabilities of her mining industry. In this particular Colorado ie least backward, and she reaps her reward, when Eastern capital comes pouring in to bond the claims of her impecunious miners. A few weeks ago "Leadville" was the Colorado cry. Now it is "Silver Cliff," and the rush of men to the new chloride find threatens to wane the former, less enticingly named excitement. Arizona is increasing her bullion capacity daily.

Water Assays.

The prospector, as be trudges about some new country, carries along with his frying-pan and coffee-pot a little article that is more necessary to his profession than these, and more characteristic than the hoot-tucked overalls and the slouched hat, the good-natured independence and the hlunt honesty. Without a horn-spoon or its equivalent, his outfit would he incomplete, and where he cannot use a horu-spoon he is not likely long to remain. The horn-spoon or the pan in the hands of a skillful miner is the type of many a concentrator that has cost weeks and and months of some inventor's anxious time. All the motions of the miner as he squats on the hank of a stream and shakes his pan or spoou from side to side, and taps it on the hottom, and scrapes ahout in it with the fingers of the unoccupied hand, have been studied, and attempts have been made to reproduce them in machinery. But though very perfect concentrating machines have been made, it is douhtful if any one of them has the power to "justify," to use a printer's expression, that is found in the original, in the pair of miuer's arms shaking an old horn-spoon.

The prospector owes mucb to this primitive apparatus, or, expressing it more precisely, to the sorting power of water and the differences in specific gravity of the materials he meets with. Yet when the prospector settles down into a regular miner, he forgets what a convenient appliance he has at his hand, even in an old wash-basin and a few hucketfuls of water. An assayer steals into the camp, rigs his tent, or his split-stave shanty, huilds his chimney, arranges his hottles of myeterious laheled fluxes, hangs out his shingle, and pockets fees for doing what, in many cases, the miner might, with the help of his old proepecting companion, accomplish quite as easily himself. In short, a fire assay, or a complex chemical assay, has taken the place of a simple and costless water assay.

Everyone, who has thought at all of the matter, knowe that theoretically at least, it is quite possihle to separate the various constituents of a complex powder, by using merely the sorting power of water. This might even be carried so far as to determining the exact amount of each conetituent of the original powder. And what is theoretically possible, may he realized in practice after the outlay of a little patience. Water assaying is not applicable universally—no other method is—but it may be applied with so many ores, aud is so very simple and cheap, that it is a wonder that it has not come into common use bcfore now, especially as scientific men have worked it up into quite a complete system.

In the last issue of the PRESS, an article was published in which a new form of batea, or gold washer's pan was described, and directions for the use of the pan in general, were detailed. The latter were taken from an English author, and from an article pnbliehed some time ago by a scientiet well known among us. However, perhaps tbe most complete system of water assaying ever prepared, was studied out aud published years ago, by a gentleman of great experience on our coast. In a work, California can claim the honor of, by J. S. Phillips, published in San Francisco, as early as 1869, a systematic account is given of the wide application of the eorting power of water in making qualitative and even quantitative assays. To show the extended applicability of this method, we will take an example from the work in question. A pulverized sample is taken, containing, let it he supposed for the sake of illustration, all of these following substances: Free gold, metallic copper, metallic iron, oxide of tin, eulphuret of iron, red oxide of copper, eulphuret of lead, gray sulphuret of copper, yellow eulphuret of copper, sulphuret of zinc and oxide of iron, associated with their matrices of quartz, clays, feldspars, carbonates of lime or magnesia and others of similar specific gravities and friability. The apparatus needed at the etart is three ordinary saucers and a good supply of clean water. Instead of saucers, almost anything of approximately similar shape may be used; as cups, soup basins, prospecting pans, horns or horn-spoons. A systematic and skillful use of these may result in the separation of very many of the constituents; and the further application of simple tests, will complete a very reliable assay of the eample.

This method of assaying is to be recommended to miners, not only on account of eimplicity of its apparatus, any of which can he picked up about an ordinary mining camp, and its economy, but also because it gives the miner a more correct idea of the exact constitution of his sample than any other method cau give him. An ordinary analyst can tell you the elements in an ore, but in a vast number of cases he can only "*judge*" of the manner in which thoee elements are combined. But in the water assay, the combinations themselve and not the elements, are separated from each other and recognized, furnishing an excellent guide for the subsequent working of the ore, as well as accurate knowledge of the exact percentage contained of any one element that may be sought for.

The water assay demands of the operator a knowledge of the appearance of minerals in a powdered etate. To make it of greatest use to him, the operator must have eome little knowledge of chemistry, hut this applies rather to the final tests than to the water-assaying itself. And whenever the ores to be dealt with are free from that coufusion so common in volcanic regions, "the *chemically* nnednoated prospector and miner has at his fingers' ends an exacting, practical test," of which he may avail himself at will. Mr. Phillips alludes in a great numher of places throughout his work to the value of this method, not only for various discriminations, hut for the actual assaying of many minerals and metals, as galena for per cent. of lead, oxide of tin for per cent. of tin, gold both hy water and water and fire, etc., etc.; and lastly gives a novel and very valuable combined method for a close assay of gold-hearing quartz by hlow-pipe, after water concentration.

He favors treatment in a porcelain vessel, where acids and final drying are required, and where drying only, the miniature gravel miner's pan of about eight inches in diameter, as the wooden "battea" is not adapted for either of these important purposes.

The Gas Inspector's Report.

The Gas Inspector, appointed under an act passed by the last Legislature, made his report to the Board of Supervisors last week, the document presented heing one of great interest to consumers. By a curious mistake, however, tbe Inspector has been liberally ahused hy the daily press of the city, for presumably having made a report more in the interest of the gas company than that of the city he is supposed to represent. This seems still more strange when in reality the report shows the San Francisco Gas Co. in a worse light than any of those with which it ie compared.

The *Call*, *Bulletin*, *Alta* and *Chronicle* ask for the dismissal of the Inepector because "he says gas cannot be made in this city for less thau $3.07 per thousand feet;" and several wise editorials have appeared in those journals, with remarks based on the figures quoted, to show how little the Inspector knew about his hueiness, and how much he deserved to he ousted from his position. This would all be very well if Mr. Bloomfield had ever made any such statement in his report, which, however, he did not, so the criticisms havc all beeu based on false premises.

We do not know Mr. Bloomfield personally, and have no reason for attempting to defend his position, hut we bave read his report with some care and know that he has beeu misrepresented. Probably some careless reporter iu glancing over the report saw the figures $3.07 in that portion where he comments on the fact that in order to be able to pay divideude on excessively watered stock a high price ie charged. These figures, without the comments, then got into the papers, since whicb time the editore of the journals referred to have been pitching into the Gas Inspector, without even troubling themselves to examine the report, or the thought occurring to them that they might be mistakeu and not the Inepector.

The Gas Inspector does *not* say that gas cannot be manufactured in this city for less than $3.07 per thousand. The report distinctly eays that it is not his province to dictate to the Commissionere what shall be the price, regulations and restrictions, etc., but to lay hefore them all the facte and data to assist them in arriving at their conclusion. It then goes on aud takes the market prices of *material* here and ehows that the *cost of producing* 1,000 feet of gas ought not to exceed $1.09, as follows: Coals, $9; labor, $2.25; lime, 54 cents; distribution, $1.80; total, $13.59. From this subtract value of residuals: Coke, $2.76; coal tar, 80 cents; ammoniacal liquor, 20 cents; total, $3.76. Thie leaves $9.83 for carbonizing one ton of coal which produces 9,000 cubic feet of gas; or for 1,000 feet, $1.09.

He then says: "To this cost should be added a fair amount for dividends on the capital stock and for taxes. Now, the greater the amount of capital invested, or claimed to be invested, of course the greater will be the amount required to pay taxes on that capital, and consequently the higher the price to be paid by the consumers." The following extracts from the report will show this more clearly:

"In this case (that of the San Francisco company) having a company which sells 511,922,690 cubic feet per annum, or, in other words, a capital of $19.50 for every thousand feet of gas eold, there would be required the sum of $1.76 on each thousand cubic feet of gas sold to pay a dividend of 9%; and consequently the price of the gas, even with the reduction in the coet of manufacture made as above, would run up to $3.07 per thonsand cubic feet, made as follows:

"Cost of manufacture.....	$1.09
Taxes.....	.22
Amount necessary to pay dividends.....	1.76
Total.....	$3.07

"It will readily be perceived from the above that this high price ie due chiefly to the large sum required to pay dividends. And this is caused by the excessive amount—$19.50—of capital stated per 1,000 feet of gas sold, which, as may he eeen from a preceding tahle, is twice as much as that of the next highest on the list, the New Haven company, and over 13 times that of the Washington Gas company.

"Let us assume, therefore, a company manufacturing gas in this city with a capital per thousand feet of gas sold in about the same ratio (after making due allowance for difference of value here and East) as tbat of the Eastern companies and see what its price would he:

"The New Haven Gas Co. presents the most unfavorable conditions for the consnmers, giving $9.70 as the capital per 1,000 feet of gas sold; hut we will take that, and further make an addition of 20% for difference of values hetween here and the East. We would then have $9.70 + 20% = $11.64, or in round numbers $12 capital for each thousand feet of gas sold (instead of $19.50 as at present). This would give for 511,922,690 cubic feet of gas sold per annum, a capital of $6,143,071, instead of $10,000,000. Our figures would now be as follows:

"Cost of manufacture.....	$ 1.09
Taxes.....	.22
Amount to pay 9% dividend on $12..	1.08
Total.....	$2.39 ₱ 1,000 ft.

"This result is, as stated, based on an assumed case, but is a fair one, when we consider the experience of the other companies cited. These figures are not given as what the results should he, but are presented in order that the Commissioners may have a hasis of comparison to assist them in their considerations.

"A still further reduction, however, could he made in the price of 1,000 feet if the residuals, which form an important item in reducing cost of the gas, were taken in the above estimates, on the hasis of the prices at which they are advertised for sale; viz: Coke, 50 cents per barrel of 2½ bushels, $4.60; coal tar, $4 per harrel, ammoniacal liquor 20 cents, per ton of coal carbonized. This would make $5.86 instead of $3.76 as the amount received for residuals per ton of coal carhonized."

These quotations from Mr. Bloomfield's report will show that the abuse so liberally dealt out to him is entirely unmerited, and that the papers whicb have published it have placed themselves in a ridiculous position hefore the puhlic, which might have been avoided if they had remembered and been guided hy Davy Crockett's oft-quoted remark, "Be eure you're right, then go ahead." There are many points of interest in the Inspector's report to which want of space prevents referring; hut as soon as it is out of the printer's hands we shall quote from it more lihsrally.

Indian District.

This mining district, situated in that intermediate range of mountains south of Mono lake, has beeu designated as the "country for the next rush." The district was organized as early as 1865, hut, like others that have since become noted, it lay idle for years. Lately, however, the merit of the region is coming to light, and a number of locations have been made. A gold and silver belt strike through the district from north to south, the ledges on which are large. On the silver belt is situated the Tower mine, owned by the Comanche company. The ores from this mine are rich; they are reduced at the company's works at Benton, Mono county.

Indian district is about seven miles west and south of Benton. The latter town is not so high as Bodie, and is accessible at all seasons, the Aurora and Lake district road passing through it. Wood and water in eufficient quantities are at band. The new Bodie railroad will add greatly to the importance of the district.

A corporation has recently been formed for the purpose of developing a number of locations, ten of which have been deeded thereto. The company is called the Sultan Hill, and its office is in room 10, Safe Deposit Building. The list of officers is as follows: Henry Hunter, President; Clinton Gurnee, Vice-President; Wm. H. Raymond, S. D. Prescott and E. C. Locke, Trustees; Henry Cluskey, Secretary. Henry Hunter is the active Superintendeut of the V. & T. R. R, a man of means and influence; Messrs. Raymoud and Gurnee are well known in mining circles. Most of the stock set aside for working capital has been taken at Virginia and Carson, and the work of development will be pushed accordingly. Captain Prescott, an experienced miner (the Superiutendent), having gone to the front with the necessary tools aud supplies, prospecting is brisk in Indian district, and it is eafe to predict that by early spring a new excitement will be added to the already celebrated county of Mono.

MR. HENRY G. HANKS, Commissioner from California to the Paris exposition, returned this week, looking well and hearty. Mr. Hanks, who had charge of the collection of Pacific coast minerals, says that the display attracted a great deal of attention, and that he has been ahle to establish a basis for exchange of minerals which, if the State chooses to take advautage of, will be of great value to us. He has collected material for a very interesting report, which, if the necessary fuuds are furnished hy the State, he desires to publish. Mr. Hanks intends resuming his old business again in thie city as soon as he can arrange his laboratory.

S. R. LIPPINCOTT, general agent for Boswell's pure-air heater, cooker and fruit drier, has removed his office from 307 Pine street, to room 4, Sherman Block, 606 Montgomery etreet.

THE VULCAN Powder Co's Works, advertised in this paper, will he reported in a future issue.

ON the 30th of November an industrial exhibition will be opened in Guatemala.

Boswell's Pure Air Heater, Cooker and Fruit Drier.

We have the opportunity of introducing to our readers something new and very interesting in the line of a combined apparatna for heating, cooking, fruit and clothes drying. In fact, the apparatus, which comes to us very highly recommended by those who have used it, centers in itself all the functions of a kitchen range, a heating stove of great capacity, and a domestic drying apparatus. Thus, with the same arrangement that the housewife heats her house, she can not only cook a dinner, but produce large quantities of dried fruit, and in rainy weather can quickly fit her washing for the ironing board without having wet garments hanging round the house all day and night, as now she is often forced to do. A cheap and handy apparatus, which claims to do all these things well, is certainly worthy of examination. In the one combination of a kitchen stove with a fruit drier there is advantage enough to call for attention, because in all our fruit-growing counties there is need for a cheap drying machine which can be run at small expense and without extra help. If the Boswell heater is found the desideratum which is now so much demanded, it will be worth thousands of dollars in every fruit-growing township in our State.

Fig. 1. Exterior of Heater and Cooker.

Because of these high claims, and because these claims are approved by certain Eastern men whose judgment we are bound to respect, we have decided to give the Boswell heater a full illustration in its different features, so that our readers may examine and learn its adaptability to their uses. We shall include a detailed drawing of its plan of construction, upon which great claims are based.

Fig. 1 shows, in reduced size, the external appearance of the combined heater, cooker and drier. It is neat and ornamental, and its exterior finish is graded according to the large or small amount of money which the purchaser wishes to expend upon beauty. It is in brief a handsome piece of block walnut furniture, with glass doors and lights, etc.

Fig. 2 furnishes a detailed drawing of the interior arrangements when the device is used for heating alone, but from it may also be learned the general design by which complete combustion is claimed to be secured.

The following is the description and philosophy furnished by the inventor: In every style of the Boswell heater, the fire-box or the receptacle for fuel is small, and concentrated with a view to economy and durability. The construction of each fire pot is such, that the fuel is concentrated, and thus produces more heat than is possible in any other way. It will be seen in the cut, that attached to the flue of the stove, is a hollow iron prism, *D*, which radiates to its own center, concentrating the disengaged carbon and hydrogen from the fuel of the fire-box, so causing intense molecular motion in the center of the prism and flue, *C*. The flue, *C*, between the stove and prism is perforated at intervals of half an inch entirely around. Thus it is seen that a concentrated jet of superheated oxygen is thrown on every side of the concentrated carbons and hydrogen or the gases and water of the fuel, and so produces complete combustion. In all other methods of heating, three-fourths of the carbon and hydrogen passes off into the chimney unconsumed.

The fire-box and prism are surrounded by what is termed a shield, *F*, (see cut), with a curved top, *NN*, which is made to open and shut easily and steadily. Between the shields and all along the sides of the stove and prism, is a sheet-iron partition, *R*, called a deflector. It has two offices: 1st, it keeps the atmosphere from contact with the heated irons; 2d, it keeps the heat where it can be utilized. The prism and stove are on the same line, hence the heat is confined on a level of four feet, instead of passing directly up the flue, as in the case in other heaters and stoves.

Fig. 3 is an adaptation of the principle for the purpose of heating only. It is in a wooden, in this State, and that is as a fruit drier. From the engraving can be seen the arrangement of the trays. It is claimed that the employment of deflected heat secures much better results than those obtainable by direct radiation. This point is discussed at length in the pamphlets describing the heater, and we must refer the reader to them. The fruit-drying shelves, as shown in the engraving, are 18 by 23 inches; the heater will hold eight tiers, with two shelves in each tier.

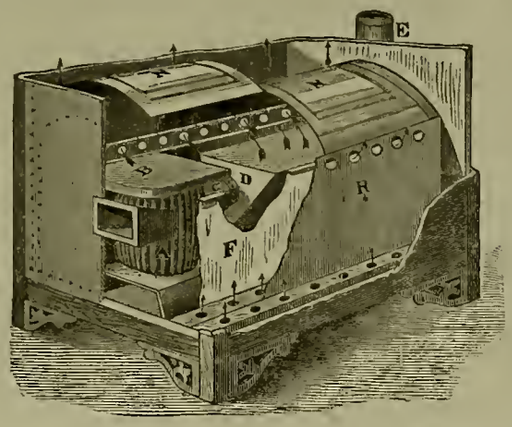

FIG. 2. SECTIONAL VIEW OF ARRANGEMENT FOR DEFLECTED HEAT, ETC.

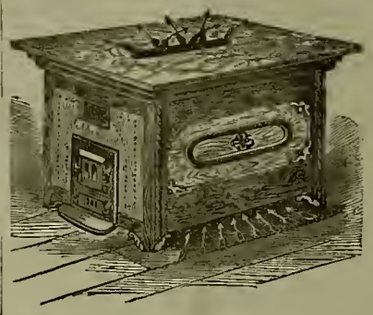

Fig. 3. Exterior of Heater Exclusively

Fig. 5 shows the adaptation of the heater for laundry purposes. The clothes are folded several thicknesses upon each bar, thus one bar is made to hold from three to five shirts, equal to 12 or 20 feet of clothes line. This bar is then placed in the heater, and from five to seven bars can be put in at one time, thus leaving space for the circulation of the rapid currents of heated air. The double currents of deflected heat disengage the vapor with great rapidity, and the steam can be passed up the chimney as fast as it is disengaged, by opening the valve in the escape pipe. Thus the clothes are bleached as well as dried.

Fig. 6 gives a sight of the heater as a baking agency. In baking the superiority of deflected over radiated heat is again claimed. The deflectors are marked *NN*. The effect of deflected heat is said, in brief, to be the only way of thoroughly cooking, and at the same time retain in the fullest degree the natural nutritive qualities of the food.

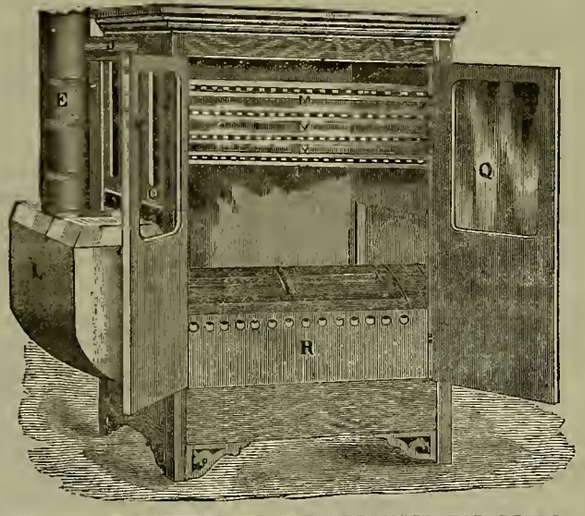

FIG. 4. THE BOSWELL HEATER ARRANGED FOR DRYING.

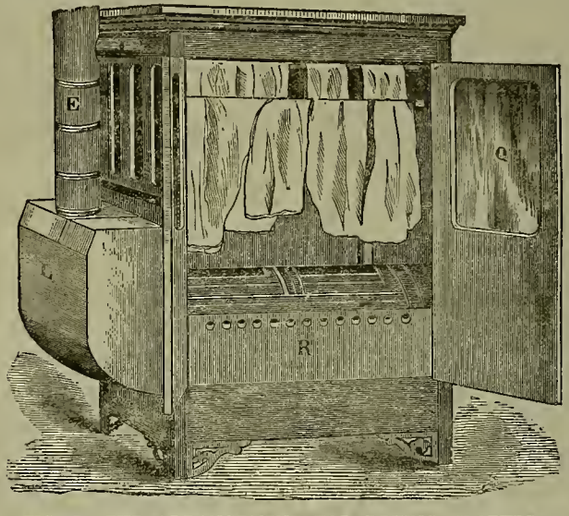

FIG. 5. THE ARRANGEMENT FOR DRYING CLOTHES.

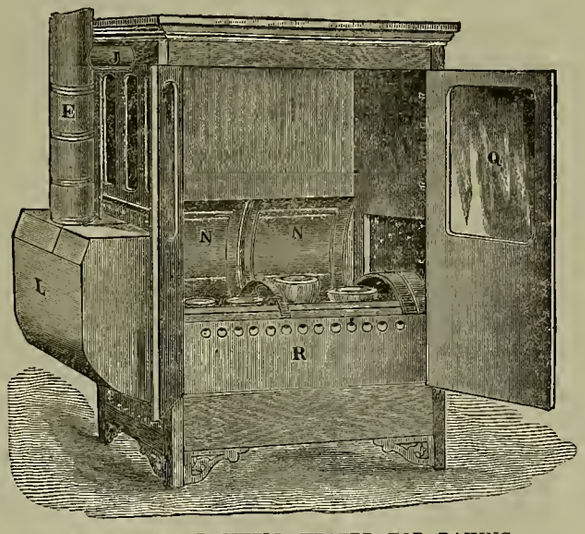

FIG. 6. THE BOSWELL HEATER FOR BAKING.

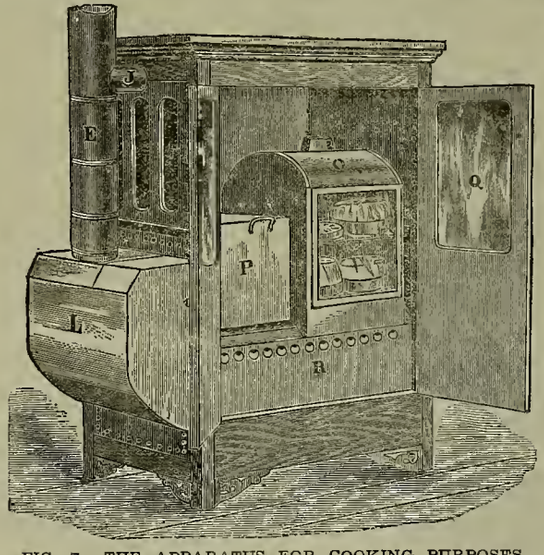

FIG. 7. THE APPARATUS FOR COOKING PURPOSES.

At Fig. 7 the heater appears in full operation as a kitchen range. *O* is the baker, with its different dishes all baking without imparting flavors to each other. *P* is the wash boiler; *E*, the main pipe; *J*, the crosspipe; *Q*, the glass door. The baker, *O*, has a glass door in front. It is claimed that the heater economizes time, labor and fuel, and avoids exposure to heat in cooking, as well as in baking. The person cooking is protected from the fire by the shield and deflector. Steam and odors produced in cooking can be passed up the flue. The kitchen utensils are made of pressed and tinned iron, and are much lighter in handling and can be more easily kept clean, and will last just as long as large, heavy iron pots and kettles. There are no stove lids to lift, and, therefore, no coal soot settles upon your utensils, and there is no danger of having dresses and aprons

In all other methods of heating, three-fourths of the carbon and hydrogen passes off into the chimney unconsumed.

The fire-box and prism are surrounded by what is termed a shield, *F*, (see cut), with a curved top, *NN*, which is made to open and shut easily and steadily. Between the shields and all along the sides of the stove and prism, is a sheet-iron partition, *R*, called a deflector. It has two offices: 1st, it keeps the atmosphere from contact with the heated irons; 2d, it keeps the heat

soiled during culinary operations.

Thus we have shown the Boswell heater, cooker and fruit drier in some of its prominent relations to domestic economy. How well it answers the claims made for it we cannot perhaps do better than cite the experience of Dr. R. T. Trall, of Florence Hights, New Jersey, in his article in the *Science of Health Monthly Magazine*. Dr. Trall wrote as follows:

"When we read the circular of Mr. Boswell, setting forth the merits of his invention, and the various kinds and wonderful amounts of work it would do, we were skeptical. If not too good to be true, we thought it was claiming altogether too much for any one machine which was ever contrived or that can be imagined, and a simple and cheap affair, at that! But on being assured by Dr. D. C. Moore, of Salem, Ohio, who had one of the machines in use, and who had the testimonials of several other parties who had tested and adopted it, that it was all that it claimed to be, we at once procured it. We have now thoroughly tested it, and can conscientiously corroborate all that has been said or pretended in its favor.

"The hygienic principle of the machine consists in the arrangement by which the heat can be deflected through the cooking part and then passed off to the chimney flue; or, by turning a valve, the heat can be used again in warming the room during cold weather; while, by consuming the smoke, the fuel is economized and all contamination of the atmosphere of the room prevented. The surplus heat can also be used again in warming rooms above or adjacent. The proprietor, therefore, does not exaggerate, when he says the saving of fuel during the cold months of the year will equal the cost of the machine.

"In drying clothes or fruit, in heating flat irons, and for heating water or boiling, a more convenient or economical apparatus we are unable to conceive; and for drying fruit or clothes it renders us independent of sunshine or stormy weather. The quality of fruit, which is dried very rapidly, seems to be perfect, and the quality of nearly everything cooked in it is as good as the material employed admits, while many things which are baked or roasted are better than it is possible to make them in common stoves or ranges. In a word, the machine is *just what every family needs.*"

Prof. J. Lawrence Smith, Louisville, Ky., writes:

"The first two weeks I tested its capacity for cooking and washing at the same time for my family, which may be considered equal to an ordinary sized family. I weighed the coal that was used during these two weeks, which amounted to an average of 35 pounds each day (nearly one and one-half buckets of ordinary size) for the cooking, washing and ironing combined. With this same coal the water in the boiler was heated in a most satisfactory manner, furnishing all the water required for washing, bathing, etc. A smaller quantity of coal would have sufficed for the cooking alone.

"As regards cooking, every variety of it has been tried, as boiling, roasting, baking, broiling, frying, etc., and it accomplishes them all in a very satisfactory manner, and that without heating the kitchen as an open range does, or even to a disagreeable degree of temperature. [Written in August, 1877.] I at first apprehended that the broiling would be defective, for I always broiled over a charcoal fire, but my experience with it in this regard makes it no longer desirable to return to the charcoal fire. I have also dried fruit and okra at the same time that the cooking was going on, and with ordinary care find that it does this excellently.

"I have witnessed baking of meat, of bread and of cake at the same time without interfering with each other, or affecting the respective flavors of the different dishes.

"I am satisfied that this cooker accomplishes its manifold results better than any single kitchen arrangement I have ever seen."

We are assured that these estimates of the heater is being rapidly approved, and that at the East, the Boswell heater is coming to be considered as necessary in the household as a sewing machine. It has taken the first premium at all the State fairs in the United States.

The heaters which are sold in this State are of California manufacture. Any farther information which may be desired concerning them may be had by applying to or addressing S. R. Lippincott, Sherman Block, 606, Room No. 4, Montgomery St., San Francisco.

RESTORING BONE BLACK.—A continuous and economical apparatus for revivifying bone black has been constructed by M. Blaise. The used black is thrown into a receptacle of brick through which many smoke tubes pass. The waste gases from the furnace proper pass through them and are thus utilized to dry the used black. The dry black is charged into vertical retorts of enameled terra cotta which hold in their center perforated tubes to carry off the gaseous products of calcination. After 20 minutes' exposure to a cherry-heat the black is allowed to drop into the lower extension of the retorts, where it cools gradually, a fresh charge meanwhile going into the retort just emptied.

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which is placed on every bottle of WORCESTERSHIRE SAUCE, and without which none is genuine.

Ask for LEA & PERRINS' Sauce, and see Name on Wrapper, Label, Bottle and Stopper. Wholesale and for Export by the Proprietors, Worcester; Crosse and Blackwell, London, &c., &c.; and by Grocers and Oilmen throughout the World.

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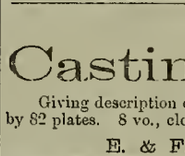

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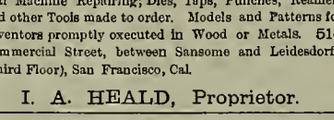

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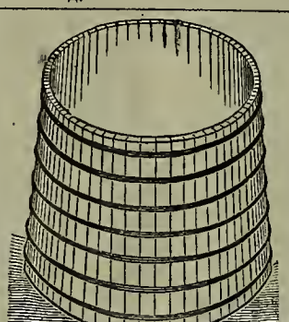

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Also on the river, looks out under shady trees and over green lawns, with a Grand View in a Direct Line of the Yosemite Falls, 2,634 Feet High.

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Continued from page 277.

vein, and which as the workmen advance to the eastward is becoming exceedingly bard and bad to work. At the bottom of the sump, 30 feet below the station, in cutting for the sills of the last two sets of timber the same rich character of sulphuret and chloride ore was encountered as has heretofore been described so often. In fact there was not a single favorable feature of the fine ore formation which has characterized the vein since the incline passed the 2000 level wanting. Every indication points to the development of a valuable deposit. Opening the 2100 station has also been commenced, and is making fair progress. The porphyry at that point also becomes very hard as soon as the face of the ore vein is left.

CALIFORNIA.—Daily yield, 300 tons of ore. The main north drift ou the 1650 level has been connected with winze No. 6, passing the entire distence during the week through low grade ore. No work is now being done on the 1600 level. A good supply of wood and other winter material is now on hand and more is being received.

SILVER HILL.—Sinking the main incline is making the best of progress, the bottom still in hard blasting rock. As soon as sufficient depth is attained for a sump, opening the 1100 level will be commenced. The drift south is advancing in quartz and vein material of a fine make, aud which often shows assays of considerable value.

SOLID SILVER.—A station will at once be opened at the bottom of the winze for a drift east to the ledge which it will reach in about 30 feet.

UTAH.—Sinking the main incline is making good progress, the bottom in good blasting ground. A goodly supply of wood and other winter necessaries are being laid in.

SUCCOR.—Sinking the main shaft has been resumed and is making good progress, the rock in the bottom blasting out well and the flow of water continuing light. Work has also beeu resumed iu the drifts and crosscuts on the 1050 level.

OVERMAN.—The erection of the hoisting engine and other machinery at the new shaft is going steadily forward, and will be completed so as to get up steam inside of three or four days more. The framing and erection of the main building is going rapidly ahead. At the old shaft the south drift on the 1600 level has connected with the north drift on the same level from the Caledonia, giviug a much-needed circulation of pure air to that depth. The north drift on the 1600 level is making good progress, but is running in the country rock on the west side of the ore vein.

NORTH CON. VIRGINIA.—The yard and surroundings of tbe hoisting works begin to put on a business look that promises well for the future.

CALEDONIA.—The connection witb Overman will greatly facilitate the work iu all parts of the miue on the 1600 level. The east drift on this level is steadily advancing, the face in porphyry that blasts well.

BEST & BELCHER.—The north drift on the 1900 level from the Gould & Curry has 85 feet yet to run to connect with tbe south drift from the joint Con. Virginia winze.

GOULD & CURRY.—Sinking the new shaft has been retarded somewhat during the week by a change of hoisting engiues becoming necessary. This change will be completed in a day or two more.

OPHIR.—There is but little cbauge to note of any of the prospecting drifts on the 2100 and 2000 levels. The formation in the face of the main north drift on the 2000 level is getting softer, and is interspersed at intervals with streaks of quartz carrying small veins of ore which sometimes assay as high as $40 per ton.

JULIA.—The flow of water is gradually receding aud the entire 2000 level becoming drier. The south lateral drift on the 2000 level is being steadily advanced, the face still in a fine, lively character of vein formation.

ALTA.—The winze below the 1450 level is still in quartz and ore which shows a steady improvement. The east drift on the 1550 level is being pushed rapidly forward to reach the main ore veio at that point.

HALE & NORCROSS.—The 2100 level will be in a condition to permit of the resumption of work in that portion of the mine in a day or two more. The east drift on the 2000 level is being pushed ahead at the very rapid rate of eight feet per day.

MEXICAN.—Sinkiug the joint winze oo the line of the Union Con. is going vigorously ahead, the bottom still in very hard blasting rock. During the first part of the week it was necessary to clean out the drifts and repair the track. Everything is now in good working order. The flow of water from the Union Con. is gradually subsiding. Part is still being taken up by the Sierra Nevada pumps.

UNION CON.—The flow of water from the east drift ou the 1600 level, at noon to-day was reduced to 10 inches. Siuking the joint winze on the Mexican line has been resumed and is making fair progress, considering the extreme hardness of the rock penetrated.

SAVAGE.—The 2100 level is again drained, and work is progressing favorably at all points. The west crosscut on this level is steadily advanciog, the face is still in quartz and low grade ore. This ore assays from $5 to $10 per ton. The north winze below the 2000 level has reached the 2100, at which point a station is being cut out preparatory to crosscutting.

YELLOW JACKET.—On the 2400 level of the old mine the north drift is now in 338 feet; in porpbyry and quartz. The crosscut west from this drift has been discontinued. The new shaft is down 1876 feet, with the bottom in very favorable working ground at present.

CON. VIRGINIA.—The main south drift on the 1950 level is in low grade ore. Crosscut No. 3 on this level is in low grade ore. The east drift from the south end of the ore stopes on the 1300 level has been chenged to nearly a southeast course, and is following a streak of good looking quartz and low grade ore which is running in that direction. Daily yield of ore, 180 tons.

NORTH BONANZA AND FLOWERY.—The east crosscut run in the ore vein from the bottom of the wiuze in the old North Bonanza workings has penetrated a vein ten feet in width of free milling ore, the average assays of which run from $35 to $55 per ton.

BELCHER.—The south drift on the 2360 level is making good progress, the face having day before yesterday cut through the west clay wall of the ore vein, encountering a strong flow of water. In order to avoid this flow of water the course of the drift has been changed more to the westward. No change of importance in either of the crosscuts on this level.

TROJAN.—The average assay value of ore extracted is $34 per ton. The ore stopes on the second station level are showing a steady improvement. The upraise from the north drift on that level is up 52 feet, the face still in quartz carrying occasional spots of ore.

CON. IMPERIAL.—The south winze below the 2400 level is in a fine character of quartz which frequently assays from $5 to $8 per ton.

JUSTICE.—The east crosscuts Nos. 4 and 5 on the 1300 level are still in quartz and ore. Sinking No. 1 winze below the 1300 level is making the best of headway, the bottom still in quartz showiug spots of fine ore. The north drifts on the 1150 and 1225 levels are each developing good ore.

SUTRO TUNNEL.—Good, steady advancement continues to be made in the south lateral-branch, running toward the Julia shaft.

BULLION.—The west crosscut on tbe 2000 level is steadily advancing, the face in soft vein material. The new Cameron pump is handling the water in the main incline very easily.

COLORADO.

MINERAL CITY.—San Juan *Prospector*, Oct. 19: The vein upon the McClure lode, owned by Burrows & Larson, is one of the largest in the section, being 22 feet wide. The vein of the Napoleon extension, owned by Larson & King, is two and one-half feet wide but shows very rich ore, a mill test giving from 96 to 119 ozs. to the ton, and since that time the ore has increased in richness. The specimen in our possession shows sulphurets, gray copper and silver glance, intermingled with hut little quartz. A vein of what is called talc bas been discovered in that vicinity, carrying both gold and silver.

LEADVILLE.—A Denver *Tribune* reporter obtained from Senator Chaffee the following with regard to Leadville: There are eight or ten mines there capable of producing from $50,000 to $60,000 per day, and if the camp had railroad facilities I have no doubt that ten million dollars, or more than all the rest of the State, could be produced in the next twelve months. I really believe that the Little Pittsburg, the Little Chief, the New Discovery, the Winnemuc, the Dives, the Carboniferous aud tbe Crysalite, only one buuch of mines and lying contiguous, are really capable of producing a million a month. New discoveries are being made every day, and the area is constantly increasing. There are four smelting works and as many sampling works, and all of them are loaded with ore. Cheap transportation only is wantiug to make the California or Leadville miuing district the richest and most prosperous in the United States. Coke used in smelting now costs in Leadville from $32 to $36 per ton, aud the freight on ores by the way of Colorado Springs is $23 per ton. Still, borne down by this terrible expense, the product of the Leadville mines amounts to about $20,000 per day.

IDAHO.

GRANITE CREEK.—The quartz mines at Granite creek are hound to create an excitement, hnt not for a year yet. There are several valuable mines iu the camp apart from the Mouumental, which is all that has been represented. The Phil. Sheridan, Rattler, Bonaparte, Morning Glory are all good ledges and in an advanced state of development. It is not thought here among prospectors and miners that Portland capital will do much towards bringing the camp out. Beagle Bros. of Pendleton, have struck a ledge within the past few days which equals in richness the rock found at Yankee Fork, some of it assaying $300 in silver and $200 in gold. It is two miles from the Mouumental and advantageously situated. Cabell Bros. are shipping rock from their mine to San Francisco. Most of the rock from the district will require roasting. This will be but a small item in the cost of reduction, as there is abundance of fuel. In fact the whole face of the country is covered with timber. There are some small gold seams found, and ore from these veins is being worked by arastrar process. Two arastrars are running. Twelve ounces of bullion were cleaned up as a result of 600 pounds of Beagle Bros'. rock. Robinsonville ie an old placer mining camp 12 miles from Granite creek.

SAN DIEGO shipped, on Oct. 25th, 1,500 cases and 30 barrels of honey.

Continued from page 273.

the San Teodoro sbaft has cut tbe veins of Sen Pedro y San Diego, which have been followed for a length of about 130 meters. They have proved to be always very regular and very rich. The crosscuts have not yet reached the two other veins, which have, however, been found by small sbafts sunk from the ninth level.

Let us now recapitulate this somewhat dry monograph. We see the veins, not very regular as far as the sixth level, take a simplicity greater and greater as we descend. The two veins San Francisco and San Nicholas, first distinctly separate, approach gradually until they nearly blend in the ninth level. The southern vein of San Pedro y San Diego, seems also to approach the other united pair, and there is reason to fear that in the future, it is true still distant, the three branches will come to he united in a single one whose exploitation would be very difficult.

Another observation. The length of tho crosscut, which starting from San Aquilino, at the western extremity of the deposit, diminished from level to level.

It is in short:

	Meters.
At the 5th level	100
At the 6th level	80
At the 7th level	60
At the 8th level	25
At the 9th level	0

If, on the other hand, we make through the sbaft San Miguel, to the east of the deposit, a section perpendicular to the veins, we see the latter cut the section, at distences constently decreasing:

	Meters.
At the 5th level	35
At tbe 6th level	10
At the 7th level	10
At the 8th level	5
At the 9th level	0

The three veins of Almaden present, therefore, the form of tbree columns of ore, nearly parallel to each other, situated in a plane essentially vertical, inclined in these planes about 10° from the vertical and enlerging from the top to the bottom in a nearly continuous manner. The width at the same time increases as the deptb.

It now remains, in order to be able to arrive at an exact idea of the future of the mines, to examine the distribution in the vein of the rich parts. Custom has led the miners of Almaden to divide tbe ore into rich ore, medium ore, and poor ore. Witbout makiug these distinctions absolute, and being formed only upon the aspect of the ore, we can say that they call poor ore that which conteins from 1% to 7% or 8% of mercury; medium that which contains from 8% to 18% or 20%; and, finally, rich ore, that which contains more than 20%, reaching as high sometimes as 80% to 85%.

The plan of the fifth level, where the exploitation has been for a long time finished, shows nothing in regard to the richness;* that of the sixth level shows where poor ore was found with some massive bodiee of medium ore at the extremity of the San Francisco and San Nicholas. At the seventh level the rich ore appears. It predominates at the eighth in the whole vein of the San Pedro y San Diego; at this level the rich and medium ore is ahout as abundant as the poor ore in the Sen Francisco and San Nicholas.

The ninth level furniebee nearly exclnsively rich ore in the San Pedro y San Diego; also in the greater part of the San Nicholas. The San Francisco givee everywhere medium ore only. Finally the part known as the San Pedro y San Diego, at the 10th level, is richer than anything found beretofore. The ore formed, as I have said, by a white impregnated sendstone, presents a magnificent red vermilion color of a perfect uniformity.

In the same time that the richness augments in depth, it increases at each level from east to west; the veins are generally cut abruptly at the west, and become gradually poorer to the east aud end by passing insensibly into a barren quartzite.

We see, therefore, that in regard to the richness as well as in width and in length, the veins of Almaden increase more and more in measure as we descend from the snrface.

*We bad to renounce the reproduction of the indicated division in the plans we have given. The small scale adopted would not bave enabled us to make it clear.

[To be Continued.]

BULLION SHIPMENTS.—Ontario, Oct. 18th, $5,443 71; 21st, $3,009.59; 22d, $2,811.03; 23d, $5,818.52. Germania, Oct. 18th, $4,500; Silver Reef, Oct. $5,844.49; 22d, $2,902 18; 24th, $5,067.65; Butte, Oct. 21st, $13,899.17; Extra, Oct. 26th, $4,740; Indian Queen, Oct. 21st, $3.043.55; Grand Prize, Oct. 21st, $1,-110.39; Jefferson, Oct. 21st, $3,225.48; 25th, $1,878.26; Standard, Oct. 22d, $17,117.77; Northern Belle, Oct. 21st, $3,138.64; 23d, $3,254.12; 26th, $4,060.03; Hillside, Oct. 24th, $5,800; 28th, $5,802.50; Raymond & Ely, Oct. 16th, $2,534.66; 26th, $2,504.12; Bodie, Oct. 22d, $11,005.88; Navajo, Oct. 28th, $7,400; Manhattan, Oct. 26th, $12,000; Christy, Oct. 28th, $5,534; Belmont, Oct. 23d, $11,354; Oriental, Oct. 28th, $2;484.25; Tyho Con. Oct. 23d, $3,672.33; 25th, $3,704.81; Independence, Oct. 19th, $16,500.

IT is hinted that Secretary Sherman will recommend a limitation of the coinage of silver dollars, or increase the amonnt of silver in them so that they will be equal in value to gold.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch from Washington. D. C.

FOR THE WEEK ENDING OCTOBER 15TH, 1878.

EXCAVATING MACHINES—James T. Dongine, S. F.
DOOR KNOB ATTACHMENTS—Job F. Peacock, Reno, Nev.
STEAM CYLINDER LUBRICATORS—Nicholas Selbert, S. F.
HORSE-POWERS—Chas. H. Baker, S. F.
VEHICLE SPRINGS—Horace R. Huie, Livermore, Cal.
SPRING BEDS—Ambrose J. Lattin, S. F.
PEACH PEARERS—Wm. S. Plummer, East Portland, Ogn.
PLOWS—Christian Myers, Napa, Cal.
CIGARS AND SMOKING AND CHEWING TOBACCO—Trademark—Engelbrecbt, Fox & Co., S. F. (2.)

——Tbs patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of special mention:

DOOR KNOB.—J. F. Peacock, Reno, Nev.—Dated October 15th, 1878. This improvement in door knobs consists in forming a hollow in the knob in the form of an eccentric or cam, with an enlargement on its inner end; into which hollow is inserted an eccentric or cam-shaped shank, having its head enlarged in a screw shape. On inserting this sbank into the correspondingly shaped recess, and turning it half round, the screw-shaped beed turns into the enlargement in the inner end of the recess, and the whole outer surface of the shank is brought forcibly in coutact with the similarly cam-shaped inner surface of the recess, so as to keep the shank in position; hot metal being also poured by appropriate means into the interstices in the recess, and assisting in holding the shank in place. The shank is also received in an eccentric or cam shape, to correspond to the eccentric-shaped sheft which connects the two knobs on opposite sides of the door. By inserting this eccentric shaft in the recess in the shank, and twisting it firmly into position, a cold weld joint, as it were, is mede, bolding the shaft in place, eo that knobs fitted with the device may be pleced on any sized thicknese of doors without the use of screws in any part.

VEHICLE SPRING.—H. R. Huie, San Leandro.—Dated October 15th, 1878. The improvement consists in the formation of an endless steel epring in which an upper and lower portion extend from front to reer axles, and the uniting ende are curves of circles or nearly so. The weight of the vehicle is continually supported by the upper leaf of the spring and a brace extending from one to tbe other at the center so that the weight is equally supported by the upper and lower leaves of each of these endless side springs.

HORSE POWER.—Charles H. Baker, San Francisco.—Dated October 15th, 1878. This machine we described and illustrated in our issue of April 27th, under tbe name of the "Miners' and Builders' Horse Power." The power is a very convenient one, inasmucb as the motion of the winding drum is regulated by the operator without his having to be near the horse, or without having to stop the horse. It is more particularly intended for hoisting purposes, and is arranged so as to be very convenient for mining purposes. It is made and sold by Reynolde, Rix & Co., Nos. 18 and 20 Fremont street.

BED BOTTOM.—A. J. Lattin, S. F.—Dated Oct. 15th, 1878. This invention relates to certain improvements in the construction of slat spring beds, being especially applicable to Mr. Lattin's bed patented December 5th, 1876, and it consists in a novel mode of securing the elats by transverse bars, connected with the frame, so that the flat and coiled springs shall act more perfectly in unison, and the tension of the slat springs shall be increased. It further consists in an improved method of eecuring the coiled springs to the frame, making the bed more perfect than before.

AMALGAMATOR.—J. H. Hobart, Oakland and J. T. Best, San Francisco.—Dated Septem ber 10th, 1878. The invention relatee to cer tain improvements in that class of amalgama tors in which the ore, sand, pulp or tailings are allowed to pass through a feed pipe and become discharged and distributed within and beneath a body of mercury within a tank, and for which a patent was issued to J. H. Hobart and C. H. Stward, May 21st, 1874. It consists in a novel combination of apparatue and in the employment of certain streams of water which are discharged into the apparatus at different points so as to loosen up the sand and prevent ite becoming hard and caked, and choking up the appa

ratns. It also consists in iotroducing a body of saud into a distrihutiug tank with an excess of water, which excess of water is drained off ioto storage tanks, while an excess of sand is drawn from the tank and passed through the mercury chamber and over the riffles, and the excess of water is employed as before described to loosen up and prevent the sand from choking or becoming massed. With this invention large quantities of sand may he treated at the same time. The auriferious black sands of the ocean beaches of California and Oregon are, from their great specific gravity, apt to pack in places so as to clog auy apparatus for treating them, and this has been the principal cause of failure in the employment of machines for separating the gold, in addition to the extreme fineness of the gold; hut in this machine the inventors have provided supplemented streams of water at all points where packing is liable to occur, so as to prevent it. By the methods employed the sands are passed through the mass of mercury so that no light, floating particles of gold can escape the mercnry and a very thorough amalgamation is effected, while, at the samc time, no loss of mercury occurs by their being carried up and out by the mechanical eutanglement with the mass of heavy sand, which is always ready to separate from the water aud settle, packing very solidly when left quiet for a moment. This machiue is in practical operation on the beach sands.

Oil Cook Stove Lamps.—Henry L. Honse, S. F.—Dated Sept. 24th, 1878. This invention relates to improvements in that class of cook stoves and lamps which are intended to employ oil as a fuel, the improvements being based ou a patent granted to the same inventor March 5th, 1878. The present improvements consist first in a novel construction of the oil reservoir, by which it is possible to separate the great bulk of oil from that which is being used hy the wicks and to feed it to the wicks or thin sheets hy gravitation, while at the same time hy the action of a peculiar downwardly moving current of air caused hy the draft which it afterwards supplies this sheet of oil is kept constantly cool. A wick receiver is made in the bottom of the reservoir below the wick tohes which rest upon the hottom, and the oil is fed into these sunken spaces at each end so as to supply the wicks. The inventiou further consists in the application of an extension hot plate and removahle hot shelves around the base of the heater or stove proper, so that any waste or radiant heat is utilized at this point as well as at the top of the apparatus; and in certain other details of construction difficult to clearly describe without the aid of engravings.

News in Brief.

Edison has been seriously ill.

Nevada wool is coming into Winnemucca.

Turkish paper money is at a most alarming discouut.

A Prussian 4% loan of 60,000,000 marks has been negotiated.

Sheep herders in Montana refuse $2.50 a head for their stock.

Spain seem to be anticipating a general European war.

The insurgeot Bulgarians aim to exterminate the Turks.

An attempt has been made to assassinate the King of Spain.

Bayard Taylor has submitted to a dangerons surgical operatiou.

The volcano of Memotombo, Nicaragna, has shown signs of activity.

The Oregon Agricultural Society will lose about $12,000 hy the State fair.

Napa valley, it is estimated, will produce 1,721,000 gallons of wine this season.

The corn yield this year of 51 counties in Ohio is estimated at 63,865,000 bushels.

There are prospects of an immense crop of orauges at Old San Bernardiuo this seasou.

One hundred and fifty Cheyennes with 140 horses and mules were captured Oct. 22d.

The official estimate required for the Postal Service the uext fiscal year aggregates $36,551,900.

On the anniversary of the death of Harry Meiggs, a solemn requiem mass was suug in Lima.

A fire at Fort Whipple, near Prescott, Arizona, will cost the Goverument from $8,000 to $10,000.

The insurrection against the Turks is spreading in Bulgaria. The Eastern problem is not solved yet.

It is stated that 17½% more skilled workmen were employed at New York in Octoher, than during the same month last year.

Denmark has for mauy years supplied canued butter to South America. The same industry is to be commenced in this country.

The new freight regulations of the Union and Central Pacific railroads, will gain from four to 11 days for California importers.

French Cabinet Councils are discussing the gravity of the situation hetween England and Afghanistan, and the state of affairs in Turkey.

Thirty-seven prisoners now confined in the State Prison at San Quentin will be liberated during November, 24 being restored citizenship.

Jackson county, Oregon, wool growers, during the week ending Oct. 19th, sold about 50,000 pounds of wool at Roseburg for 10 cents per pound.

The rubher husiness of Nicaragua has greatly diminished, partly on account of the restrictions and imposts made hy the Costa Rican government.

A destructive prairie fire has traversed from 15 to 20 counties in Dakota, hetween Jim river and the Missouri river. The destruction of property is large.

The Chinese Minister sees no reason why the use of puro tea, which is cheaper thau that artificially colored, should not he used hy us more extensively.

Edwin Forrest, Mono couoty, died from the effects of the amputation of his leg, made necessary by the explosiou of a box of giant powder caps in his pocket.

Shipping pampas plumes is a new industry of Santa Barbara. One man has sold 40,000 this season to San Francisco and the East, netting him $4,000.

On the morning of Oct. 23d, a frightful hurricane swept along the region between the Atlantic and Alleghanies, damaging property to the amonnt of millions.

Fresh attractions are constantly added to Woodward's Gardens, among which is Prof. Gruber's great educator, the Zoographicon. Each department increases daily, and the Pavilion performances are more popular than ever. All new novelties find a place at this wonderful resort. Prices remain as usual.

For Printing Materials, the publishers of this pape patronize Marder, Luse & Co., Pacific Type Foundry and Printers' Supply Warehouse, 532 Clay street, San Francisco, Cal. Send them a stamp for specimen sheet, and say advertised in this paper.

Examine the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.94. Lewis C. Grover, President; L. Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

Model Maker and Machinist.—I. A. Heald, No 514 Commercial St., San Francisco, (fourth floor).

METALS.

[WHOLESALE.

WEDNESDAY M., October 30, 1878.

Iron.—	
American Pig, soft, ton	25 00 @26 50
Scotch Pig, ton	25 00 @26 50
American White Pig, ton	25 00 @— —
Oregon Pig, ton	26 50 @— —
Refined Bar	2¾@ 3
Horse Shoes, keg	5 00 @— —
Nail Rod	—@ 7½
Norway, according to thickness	6¾@ 7
Copper.—	
Sheathing, lb	34 @ 35
Sheathing, Yellow	19 @ 20
Sheathing, Old Yellow	— @—
Bolts	24 @—
Composition Nails	24 @—
Composition Bolts	24 @—
Steel.—	
English Cast, lb	16 @ 17
Black Diamond, ordinary sizes	16 @— —
Drill	16 @ 17
Flat Bar	16 @ 19
Plow Steel	8 @ 12½
Tin Plates.—	
10x14 I C Charcoal	8½@ 9
10x14 I C Coke	7 @ 7½
Banca Tin	18 @— 20
Australian	15½@ 17
Zinc.—	
By the Cask	9 @— —
Zinc, Sheet 7x3 ft. 7 to 10, lb, less than cask	9½@— 10
Nails.—	
Assorted sizes	2 80@3 00

LUMBER.

WEONESDAY M., October 30, 1878.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE RETAIL PRICE.	
Rough, M	13 00	Rough, M	18 00
Refuse	9 00	Fencing	18 00
Clear	23 00	Flooring and Step	28 00
Clear Refuse	13 00	Narrow	30 00
Rustic	23 50	2d quality	25 00
Refuse	18 00	Laths	3 50
Surfaced	20 00	Furring, lineal ft	¼
Refuse	14 00	**REDWOOD.** RETAIL PRICE.	
Flooring	20 00	Rough, M	18 00
Refuse	12 00	Refuse	14 00
Beaded Flooring	23 00	Pickets, Rough	15 00
Refuse	13 00	Pointed	16 00
Half-inch Siding	16 00	Fancy	22 50
Refuse	14 00	Siding	20 50
Half-inch Surfaced	20 00	Surfaced & Long Beaded	30 00
Refuse	14 00	Flooring	30 00
Half-inch Battens	16 00	Refuse	22 50
Pickets, Rough	11 00	Half-inch Surfaced	30 00
Rough, Pointed	12 50	Rustic, No. 1	30 00
Fancy, Pointed	18 00	Battens, lineal ft	
Shingles	1 75	Shingles M	2 00

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by Sutro & Co.]

San Francisco, October 30, 3 p. m.

Legal Tenders in S. F., 11 a.m., 99½@99¾. Silver, 2@1½. Gold in New York, 100¾.

Gold Bars, 890@910. Silver Bars, 8@22 ₱ cent. discount.

Exchange on New York, ½% on London bankers, 49¼@49¾. Commercial, 50; Paris, five francs ₱ dollar; Mexican dollars, 89½@90½.

London Consols, 94 5-16; Bonds, 106¾ ex coupon

Quicksilver in S. F., by the flask, $ to. 41@41½c.

Signal Service Meteorological Report.

Week Ending October 29, 1878.

HIGHEST AND LOWEST BAROMETER.

Oct 23	Oct 24	Oct 25	Oct 26	Oct 27	Oct 28	Oct 29
30.06	30.02	29.98	30.10	30.17	30.10	30.01
29.96	29.94	29.93	30.01	30.08	30.00	29.96

MAXIMUM AND MINIMUM THERMOMETER.

74	76	72.5	72	73	71.5	63
61	62	57	56	57	54.5	55

MEAN DAILY HUMIDITY.

59	57	41	38	42	47	64

PREVAILING WIND.

W	N	N	N	NW	NW	N

WIND—MILES TRAVELED.

124	123	63	52	80	90	111

STATE OF WEATHER.

Fair.	Clear.	Clear.	Clear.	Clear.	Clear.	Clear.

RAINFALL IN TWENTY-FOUR HOURS.

Total rain during the season, from July 1, 1878, 1.83 in.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

General Robert Allen Silver Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Pinal County, Arizona.

Notice is hereby given that at a meeting of the Board of Directors, held on the 29th day of October, 1878, an assessment of twenty-five (25) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin to the Secretary of the Company.

Any stock upon which this assessment shall remain unpaid on the second day of December, A. D., 1878, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the second day of January, 1879, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

M. C. SOUTHARD, Sec'y.

Office, No. 411½ California street, Room 11, San Francisco, California.

Keystone Quartz Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Sierra county, California.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 6) levied on the thirtieth day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Am't.
Carolan, James, Trustee	59	200	100 00
Hall & Charles, Trustees	08	1248	624 00

And in accordance with law, and an order of the Board of Directors, made on the thirtieth day of August, 1878, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the office of the Company, No. 201 Sansome street, corner of Pine, San Francisco, California, on the twenty-eighth day of October, 1878, at the hour of 12 o'clock M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

LOUIS VESARIA, Sec'y.

Office, No. 201 Sansome street, corner of Pine, San Francisco, California.

Mount Jefferson Milling and Mining Co.—Location of principal place of business, San Francisco, California. Location of works, Garrote Mining District, Tuolumne County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the seventeenth day of October, 1878, an assessment (No. 5)of five (5c.) cents per share was levied upon capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, Room 6, 318 Pine St., San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the twenty-fifth (25th) day of November, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Tuesday, the seventeenth (17th) day of December, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK, Sec'y.

Office, Room 6, No. 318 Pine St., San Francisco Cal.

New Bessel Gold Mining Company.—Principal place of business, 610 Merchant street, San Francisco. Location of works, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 24th day of September, 1878, an assessment of five (5) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary of the Company.

Any stock upon which this assessment shall remain unpaid on the 4th day of November, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on the 18th day of November, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. D. F. LEGAYE, Sec'y.

Office 610 Merchant street, San Francisco, Cal.

Orion Mining Company.—Location of Principal place of business, San Francisco, California. Location of works, Iowa Hill, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the fifth day of September, 1878, an assessment (No. 3,) of seventy-five (75) cents per share was levied upon the capital stock of the corporation, payable immediately in U. S. gold coin, to the Secretary, at the office of the Company, 28 Sansome Street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the fifth day of November, A. D., 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the 20th day of November, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

P. CONKLIN, Sec'y.

Office, No. 28 Sansome Street (up stairs), San Francisco, Cal.

Summit Mining Company.—Location of Principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, Cal.

Notice.—There are delinquent upon the following described stock, on account of assessment (No. 5,) levied on the 16th day of September, A. D., 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
C Lehmann, Trustee	200	5	$ 25
C Lehmann, Trustee	201	5	25
C Lehmann, Trustee	202	5	25
C Lehmann, Trustee	203	5	25
C Lehmann, Trustee	2 4	5	25
T Scotland	13	6,250	312 50
F B Whiting	28	200	10 00

And in accordance with law, and an order of the Board of Directors, made on the tenth day of September, A. D., 1878, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, on Tuesday, the nineteenth day of November, A. D., 1878, at the hour of two o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

J. W. CLARK, Sec'y.

Office, Room 6, No. 318 Pine Street, San Francisco, Cal.

The California Fruit Growing Association.—Location of principal place of business, San Francisco, California. Location of property, El Dorado County, California.

Notice is hereby given, that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 9) of three ($3) dollars per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, No. 641 Sacramento street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 30th day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Monday, the 21st day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco, Cal.

POSTPONEMENT.—At a meeting of the Board of Directors of the California Fruit Growing Association, held September 23d, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till Saturday, the 26th day of October, 1878, and the day of sale of delinquent stock is hereby postponed to Friday, the 22d day of November, 1878. D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco.

POSTPONEMENT.—At a meeting of the Board of Directors held on the Nineteenth day of October, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till November 30th, 1878, and the day of sale of delinquent stock is hereby postponed to December 21st, 1878.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento Street, San Francisco, Cal.

Vigorit Powder Company.—Location of principal place of business, City and County of San Francisco, California. Location of works, California City, Marin County, State of California.

Notice.—There are delinquent upon the following described stock, on account of assessment (No 1) levied on the first day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. of Cert.	No. Shares	Amount
Louis McLaue, Trustee	30	437½	$218 75
Louis McLaue, Trustee	32	½ of 875	218 75
G W Grayson, Trustee	62	1312½	656 25
H H Shinn, Trustee	91	400	200 00
H H Shinn, Trustee	92	400	200 00
H H Shinn, Trustee	93	400	200 00
H H Shinn, Trustee	94	112½	56 25

And in accordance with law, and an order of the Board of Directors, made on the First day of August, 1878, so many shares of each parcel of stock as may be necessary will be sold at public auction, at the office of the Company, Room No. 1, 100 California street, on Wednesday, the second day of October, 1878, at the hour of 2 o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale. JAS. W. BAKER, Sec'y.

Office, No. 100 California street, Room I, San Francisco, California.

POSTPONEMENT.—By an order of the Board of Directors made on the First day of October, 1878, the above sale is postponed until Monday, October 21st, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

POSTPONEMENT.—By an order of the Board of Directors made on the Eighteenth day of October, 1878, the above sale is postponed until Friday, November 1st, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

CERTIFICATE OF PARTNERSHIP.

The undersigned, having formed a partnership to carry on the business of General Publishers under the firm name and style of Dewey & Co., Publishers, this certifies that the principal place of business of said partnership is situated at 202 Sansome street, in the city of San Francisco, State of California; and that Alfred T. Dewey, residing in the city of Oakland, State of California, and Warren B. Ewer, residing in the city of San Francisco, State of California, are all the members of said partnership.

ALFRED T. DEWEY.
W. B. EWER.

State of California, } ss.
City and County of San Francisco, }

On this second day of October, in the year one thousand eight hundred and seventy-eight, before me, Chas. E. Kelley, a Notary Public in and for the said city and county, personally appeared Alfred T. Dewey and W. B. Ewer, known to me to be the persons whose names are subscribed to the witbin instrument, and they acknowledge to me that they executed the same.

In witness whereof, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written. CHAS. E. KELLEY,
[Seal.] Notary Public.

Endorsed—Filed October 7th, 1878.
THOS. H. REYNOLDS, County Clerk.
By J. WHALEN, Deputy Clerk.

CERTIFICATE OF PATNERSHIP.

The undersigned, having formed a partnership to carry on the business of Patent Agents under the firm name and style of Dewey & Co., Patent Agents, this certifies that the principal place of business of said partnership is situated at 202 Sansome street, in the city of San Francisco, State of California; and that Alfred T. Dewey, residing in the city of Oakland, State of California, and Warren B. Ewer, residing in the city of San Francisco, State of California, and George H. Strong, residing in the city of Oakland, State of California, are all the members of said partnership.

ALFRED T. DEWEY,
W. B. EWER,
GEO. H. STRONG.

State of California, } ss.
City and County of San Francisco, }

On this second day of October, one thousand eight hundred and seventy-eight, before me, Chas. E. Kelley, a Notary Public in and for the said city and county, personally appeared Alfred T. Dewey, W. B. Ewer, and George H. Strong, known to me to be the persons whose names are subscribed to the within instrument, and they acknowledged to me that they executed the same.

In witness whereof, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written. CHAS. E. KELLEY,
[Seal.] Notary Public.

Endorsed—Filed October 7th, 1878.
THOS. H. REYNOLDS, County Clerk.
By J. WHALEN, Deputy Clerk.

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Watsonville, July 29th, 1878,

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W. T. Easterday.

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THOS. PENDERGAST. HENRY S. SMITH.

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Flour Mill Machinery, Saw Mill Engines and Boilers, Dredging Machinery, Oil Well Retorts, Powder Mill Machinery, Water Wheels.

Engines and Boilers of all kinds, either for use on Steamboats and made in accordance with the Act of Congress regulating the same, or for use on land. Water Pipe, Pump or Air Column, Fish Tanks for Salmon Canneries of every description.

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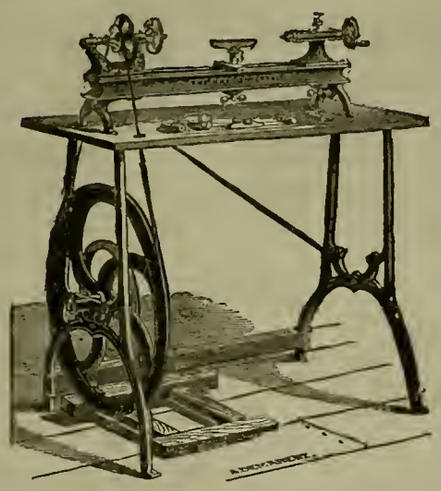

This Lathe will turn a piece of Wood or Metal 12 inches long and 6 inches in diameter.

It can be used with equal advantage for Drilling, Polishing. Sawing, etc. The length of bed is 24 inches; the spindle is made of steel, has a conical bearing, and can be tightened as it wears. The bed, head, tail-stocks and cone pulley are of cast iron and the centers of steel. The following pieces are furnished with the lathe: 2 T rests, 1 face-plate, 2 plain centers, 1 spur ce ter for wood, 1 plain drill-chuck, 1 drill-pad, and 1 center left blank to turn down as a fitting for a universal chuck. The bench weighs 81 pounds, is made of iron, with a black walnut top, and has a driving-wheel measuring 22 inches in diameter, with three grooves for changes of speed.

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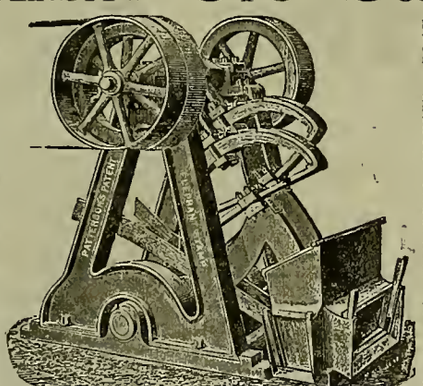
Elephant Ore Stamp.

We beg to call your attention to this engraving representing the Elephant Ore Stamp. The advantages claimed for this Stamp are as follows:

CAPABILITIES.—The "Elephant" is capable of crushing as much stuff as a 12-Stamp Battery of the present system, having crushed as high as 14 tons of tough copper ore in one hour, through a No. 4 punched screen. The undersigned, however, will guarantee 20 tons per day of ordinary quartz through the same size screen.

WEAR.—The "Elephant" having only two pairs, Shoe and Dies, the wear in this instance is equal to one-sixth of a 12-Stamp Battery. There being no Cam Tappets, Cam Shafts or Guides, the consequent wear on these parts is done away with; the leather thorough-



brace, uniting the lever with the spring, would only require replacing at most, once a year.

POWER.—The "Elephant" only requires a seven horse-power engine to drive it, where a 12-Stamp Battery would require from 18 to 20 horse power.

PORTABILITY.—The entire Battery, including Mortar, will weigh about six tons, thereby causing an immense saving in the way of freight to such places as Arizona, Mexico, Carihoo and Bodie. As no part of the machine weighs more than 1,800 lbs., the handling of the machine is comparatively easy, and in places where it would be necessary to pack the machine on mules, it could be easily made in pieces not to weigh over three hundred pounds.

The above engraving shows the Machine in exactly the position it would be placed in a mine; the reader will therefore see that all wood work is done away with, and that once the Machine is on the ground it will take but a few days to set it up and have it in full working order.

The "Elephant" can be seen working every day from 2 to 4 P. M. at No. 342 Main St, near Harrison, San Francisco For particulars, apply to

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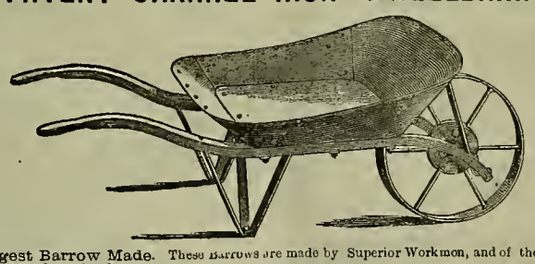

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Iron Cut, Punched, and Formed for making pipe on ground, where required. All kinds of tools supplied for making pipe. Estimates given when required. Are prepared for coating all size of pipes with a composition of Coal Tar and Asphaltum.

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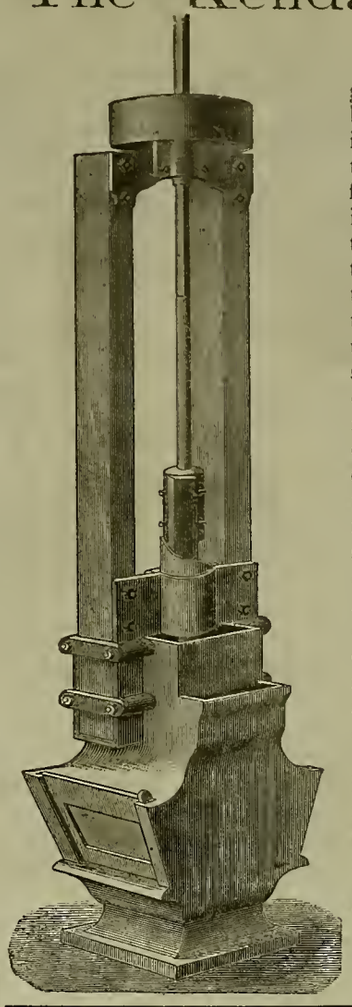
The Kendall Battery.

STEPHEN KENDALL, Patentee.



This Battery embraces the only genuine improvement that has ever been made in the process of reducing ores. The frame is all secured to the mortar, so that no extra framework is required. The stamp is rotated by a horizontal pulley on the top of the frame, and raised by the cam which is set horizontally on the girt timber. The upper end of the stem is made square, and works up through the pulley When the stamp falls it crushes and grinds the ore fine by the continual rotary motion. The mortar has three discharge openings, and is adapted to either wet or dry crushing. A mill with an 800-pound stamp will crush five tons of average ore per day, shipping weight, 4,000 lbs., and requires about five horse-power. A 1 600 lb. stamp mill is in process of construction, which will give a capacity equal to any five-stamp mill. Several of them are now in successful operation in various parts of the country. For PROSPECTING PURPOSES this mill has no equal, as it can be set up and moved with such facility and operated at so small an expense. Address for further information,

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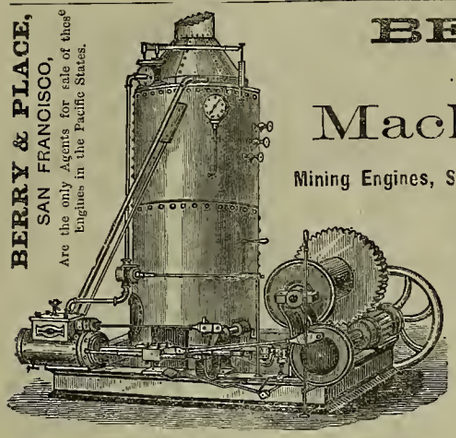

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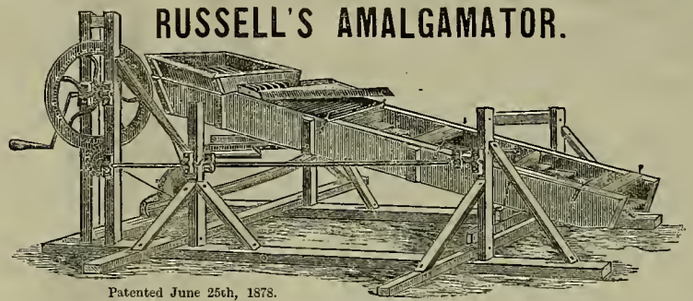

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Has been Thoroughly Tested and given Complete Satisfaction.

The entire Lining, Hanging Plates, Riffles and Boxes Amalgamated

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Capacity, 30 to 60 tons per day, according to size. For further particulars apply to

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Stronger, Better and Safer than any other High Explosive.

Judson Powder

IS NOW USED IN ALL LARGE HYDRAULIC CLAIMS.

It breaks more ground, pulverizes it better, saves time and money, and is superseding the ordinary powder wherever it is tried. ☞Triple Force Caps and all Grades of Fuse.

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VOLUME XXXVII Number 19.

Artesian Wells.—No. 5.

Cost of Outfit.

The cost of the tools may bo heat determined by sending for the catalogue of somo manufacturer. In a catalogue before us, the prices are as follows:

Pod augers, varying in size from 4-inch to 11-inch, vary in price from $16 to $38. Cast steel twist augers, sizes 2, 2½, 3, etc., up to 6-inch, cost respectivcly $9, $11, $13, $14, $16, $18, $20, $22 and $24. A galvanized sand pump, 4½-inch in diamcter, costs $19; 5½-inch, $21; 6½-inch, $23; 7½-inch, $27; 8½-inch, $33; 9½-inch, $37. The screw cnupling, witb straps for fastening them to woodeu rods, cost $12 a pair; without straps, $6. Reamers cost $10 or $12; shoes, ahout $5; wrenches, $1.50; tbe block and straps for forcing the pipes, $11; an iron ring with chains as described above would cost more. Steel rings for the lower end of the pipe, as above, cost 75 cents per foot. Windlass and cranks, with barrel, $15. Lever for turning iron rods, $13; to turn square poles, $3; block and sheave, $5. Cast-steel rock drills, of the following sizes, 2-inch, 2½, 3, 4, 5, 6, 7, 7½ and 8, cost respectively $8, $10, $12, $13, $15. $16, $20, $22, $23 This is the prics list of only one house in San Francisco.

Artesian pipe is mads in the following sizes:

Double black sheet iron: 6, 7, 8 and 11 inch, costing respectively, 58 cents, 62 cents, 70 cents, and $1.22 per joint of two feet.

Galvanized, single, with collars: 6, 7, 8, 11, 12 aud 13 inches; cost: $1.38, $1.57, $1.60, $2.-50, $3.15 aud $3.45 per joint of two feet.

From these pricc lists the cost of the outfit for a well of given diameter and depth can be approximately calculated.

A complete ontbit of tools for boring wells of any of the ordinary sizes can be ohtained for from $400 to $600. It will certainly pay farmers to club together, buy complete apparatus and use it by turns.

A Philadelphia hnuse is introducing well-horing apparatus nn this coast. It is interesting to look over their catalogue.

In the catalogue referred to, under the head of "horing rig for earth, soft rock and loose stones," the following articles are mentioned: One auger (any size under 20 inches); six coup-lings, cnough for 70-foot well, witb improved safety pins; one set of derrick trimmings; one pair boring wrenches, 6 feet long, with 1¼-inch gas-pips handles, made light and strong, to turn the auger hy hand-power; 70 feet, 1⅜-inch square iron shafting, with couplings fitted and attached; four wood fenders or wheels, to attach to each bar of shafting to keep the auger perpendicular and in the center of the well; one 7-inch wood drum; reamers, 30 or 48 inches. All this costs $141. There are various extras catalogued; also a complete machine for horing to greater depths.

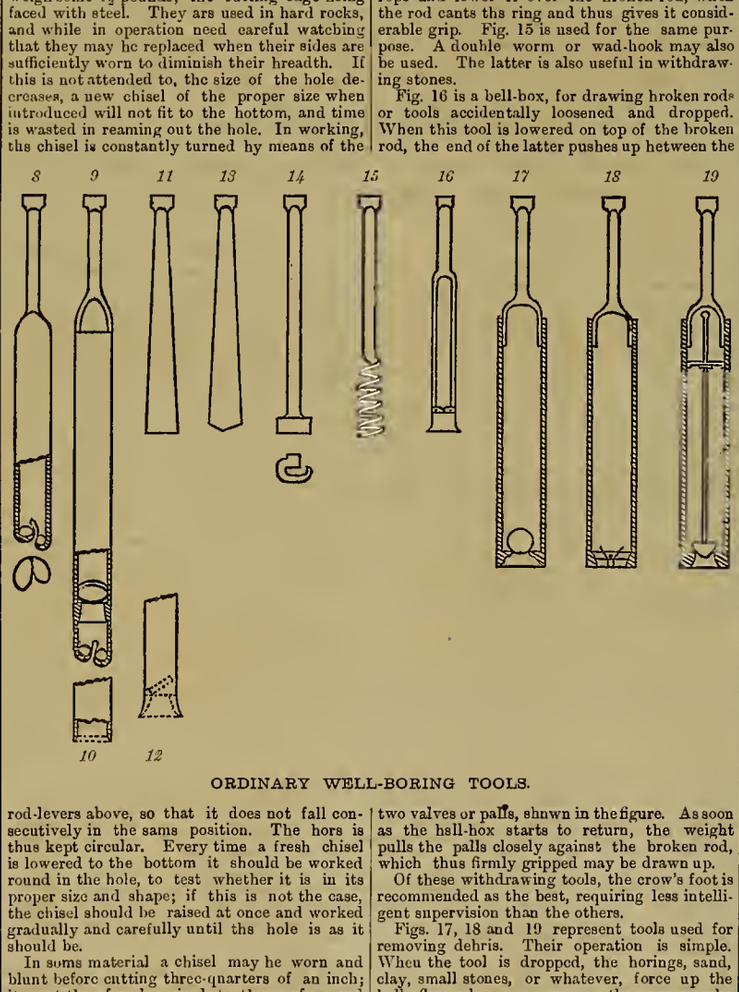
We are indebted for information to Ellis & Lennon, 53 Beale street, Francis Smith & Co., 130 Beale street, San Francisco. and to Charles D. Pierce, 4,206 Elm Avenue, Philadelphia, Pa.

Description of Tools.

The tools mentioned in the last article are comparatively modern. Well-boring as it was introduced into Europe, perhaps from China, was accomplished hy means of a drill attached to the end of a rope, for making the hole, and buckets or shell-pumps for removing the debris. This method is seldom used now, the ropes being superseded by rods, and the drills, where possible, by augers.

Figs. 8 to 19 will convey some idea of the construction and mode of operation of some of the tools used. They, as well as the following descriptions, are mostly taken from Spon's "Practice of Sinking and Boring Wells." Fig. 8 is the common earth auger, three feet long, the lower two-thirds being cylindrical. The bottom is partially closed by the lips, and there is an opening a little way up one side for the admission of soft or bruised material. Augers are only used for soft rock, clay and sand; and their shape is varied to suit the nature of the strata met with, being open and cylindrical for clays having a certain degree of cohesion; conical, and sometimes closed, in quicksands. Augers are sometimes made as long as 10 feet. The shell is made from 3 to 3½ feet long, of nearly the same shape as the common auger, sometimes closed to the hottom, Figs. 10 and 12—when they are sand-pumps rather than augers—or with a nose, Fig. 9; in sither case there is a clack or valve insido to retain horings of a soft nature, or prevent them from being washed out in a wet hole. The augers are frequently if not generally semi-cylindrical only. Stiff, putty-like material will mold itself into such augers and may he drawn to the surface without the aid of a valve, or of any special tool fnr recovering the horings.

Figs. 11 and 13 are chisels, the former flat, the latter V-shaped. These chisels are made from wrought iron, and when small are usually 18 inches long, 2½ inches extreme breadth, and weigh some 4½ pounds; the cutting edge heing faced with steel. They ars used in hard rocks, and while in operation need careful watching that they may he replaced when their sides are sufficiently worn to diminish their hreadth. If this is not attended to, the size of the hole decreases, a new chisel of the proper size when introduced will not fit to the hottom, and time is wasted in reaming out the hole. In working, the chisel is constantly turned hy means of the rod-levers above, so that it does not fall consecutively in the sams position. The hors is thus kept circular. Every time a fresh chisel is lowered to the bottom it should be worked round in the hole, to test whether it is in its proper size and shape; if this is not the case, the chisel should be raised at once and worked gradually and carefully until ths hole is as it should be.



ORDINARY WELL-BORING TOOLS.

In soms material a chisel may he worn and blunt before cutting three-quarters of an inch; it must therefore be raised to the surface and examined frequently. In other material ths wear may not be so great.

For tempering boring chisels Spon gives the following sets of directions: 1. Heat the chisel to a blood-red heat, and thsn hammer it until nearly cold; again, heat it to a blood red and quench as quickly as possible in 3 gallons of water in which is dissolved 2 ounces of oil of vitriol, 2 ounces of soda and one-half ounce of saltpeter, or 2 ounces of sal ammoniac, 2 ounces of spirit of niter, 1 ounce of oil of vitriol, the chisel to remain in the liquor until it is cold.

2. To 3 gallons of water add 3 ounces of spirit of niter, 3 ouuces of spirits of hartshorn, 3 ounces of white vitriol, 3 ounces sal ammouiac, 3 ounces alum, 6 ounces of salt, with a double handful of hoof parings, the chisel to he heated to a dark cherry red.

Drills are used of other shapes than tbose in the figurss. Ths cutting edgs nf some is shaped like a T; of others, like a Z; of still others, like an S.

Figs. 14, 15 and 16 prssent soms of the least complex "accident tools." Fig. 14 is a "crow's foot." It is used when the boring rods have hroken in the hors-hole, for the purposs of extracting that portion remaining in the hole. It is of the same length, and, at the foot, of ths same hreadth, as the chissls. When the rods have hroken, the part above the fracture is drawn out of the hore-hole and the crow's foot screwed on in place of the broken piece; when this is lowered dnwn upon the broken rod, hy careful twisting the tos is caussd to grip the broken piece with snfficient force to allow the portion below the fracture to be drawn np. A rough expedient is to fasten a metal ring to a rope and lower it over the broken rod, when the rod cants ths ring and thus gives it considerable grip. Fig. 15 is used for the same purpose. A double worm or wad-hook may also be used. The latter is also useful in withdrawing stones.

Fig. 16 is a bell-box, for drawing hroken rods or tools accidentally loosened and dropped. When this tool is lowered on top of the broken rod, the end of the latter pushes up hetween the two valves or palls, shnwn in the figure. As soon as the hsll-hox starts to return, the weight pulls the palls closely against the broken rod, which thus firmly gripped may be drawn up.

Of these withdrawing tools, the crow's foot is recommended as the best, requiring less intelligent supervision than the others.

Figs. 17, 18 and 19 represent tools used for removing debris. Their operation is simple. When the tool is dropped, the horings, sand, clay, small stones, or whatever, force up the hall, flap-valves, or cone, as the case may be (see Figs.) and enter the shell of the tool. But having once entered they cannot return, thsir own weight helping to keep down the valves. Thus confined, the horings are drawn to the surface.

We call attention to correspondence in another column on "Artesian Wells in the San Joaquin Valley."

Two gunhoats are ahout to sail from Buenos Ayers for Patagonia, to determine proper sites for erection of lighthousss. Thers is a suspicion in Chile that this is not the true object of the cruise.

On the evening of Oct. 6th, an earthquake destroyed several villages of Salvador. At time of latest advices, an eruption of the volcano Santa Ana was feared.

A Circle of Agricultural and Mining Counties.

Ths puhlishers of the Marysville *Appeal* bave issued a directory for Yuha, Sutter, Colnsa, Butts, Tehama, Placer and Nevada counties. They have "diverged from the heaten paths of directories, and encompassed a new and original plan." The object of the publishers has heen "not only to give the names and addresses of husiness and professional residents, hut also to include every hona fide resident land owner, with numher nf acres to which title has been acquired." A hrief descriptive sketch of each place mentioned is given. The names are arranged alphahetically undsr their respective postoffice addresses.

The result of the publishsrs labors is a book of great interest, not only to husiness nien as the name "Directory" might lead one at first to suppose, hut to all who ars inquiring into the resources of a new and atractivs country. Ths sketches of the counties themselves and of the cities, towns and villages dotting them, force upon the reader a realization of the resonrces and industries of this part of northern California. Nearly every cluster of houses that has merited description further than its location and postoffice address, is recorded as the center of vast grain fields, of heautiful orchards, of a valuable timber section, or the depot of supplies for great placer, or quartz-ledge mining camps. In many respects the counties treated nf are representative of northern California; in some respects, of the whole Stats. Thers is Yuba hoasting of gold hearing gravel-heds and quartz-leads and valuahle for its forests of pine; luxuriating in orchards of peaches, oranges, grapes and almonds, aud in never failing-crops of the small grains. Sutter, with its historical name, occupying a fertile section in the center of the Sacramento valley, and sending grain and fruit to market. Colusa, noted for its grazing and cattle-raising indnstries, for its farm of 57,-000 acres, "perhaps the greatest wheat farm owned hy a single individual upon the continsnt," yet having room in its mountains for quicksilver, copper, sulphur and petroleum. Butte, home of the placer miner, yet with fertile and productive valleys. Tehama, once a prosperous mining county, hut with the attention nf its people now turned to cattle-raising and wnol-growing and lumhering. Placsr, with gold in placers and in ladgss, with granite and coal and pottery clay; with prospective vineyards and orchards. Nevada, the mining county, *par excellence*, with millions of home capital already invssted, and foreign capital "on the way;" its foothills "peculiarly adapted to the growth of fruits and cersals."

The hook, hesides serving all the purposes nf any directory, will no douht prove of great henefit to the counties favored, by attracting the attention of outsiders to them. On this account, as wsll as on account of the gsueral convenience of the work, we suggest to the publishers that they continne their lahors intn other counties.

Mining and Water Rights.—The Committee of Mining in the Constitutional Convention consists of Messrs. Mark R. C. Pulliam, W. J. Tinnin, James E. Hale, Jas. H. Keys, R. M. Lampson, L. F. Jones, Jno. F. McNutt, Samuel B. Burt, J. M. Strong, Patrick T. Dawling and Jno. McCoy. On water and water rights: W. J. Tinnin, Mark R. C. Pulliam, James H. Keys, Josiah Boucher, Jos. C. Brown, J. A. Filcher, Thomas McConnell, Henry W. Smith, David Lewis, Rush McComas, John Walker, Thos. H. Estey, G. W. Hunter, E. P. Soule, Rufus Shocmaker, J. M. Strong. These gentlemen may be addressed at Sacramento.

Jute on Fire.—In a bale of jute butts thrown into a cutter in the paper mill of Wilkinson Brothers & Co., in Birmingham, Nov. 3d, was a piece of iron, which, coming in contact with the knives, ignited the jute. The resulting fire hurned up $200,000 worth of property, and threw 100 persons out of employment.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—EDS.

Artesian Wells in San Joaquin Valley.

EDITORS PRESS:—You have requested me to send such items as can he gathered in tbis part of the State on artesian wells, a topic of iuterest and profit now throughout California. Your very valuahle articles lately on such wells in San Francisco have been quite a surprise to many of your readers. Few outside of the city knew tbat a single flowing well had been obtained within its limits, and now, since they learn through your useful sketches and illustrations, that many fine flowing wells already exist there at less depths than 200 feet, while others hring pure, soft water near the surface, thousande in the country who like to see justice done, are rejoicing with your citizens that a means has at last heen found to make a grasping water monopoly more reasonable in its demands. In this, as in many other instances, dame Nature has beeu kinder to the people of California than many of her own citizens have been.

I regret to report that while many large flowing wells have already been obtained iu Merced county, along the Merced and San Joaquin rivers, Bear creek, the Mariposa and Cbowchilla, at depths usually less than 300 feet. as already mentioned in your columns, hut little bas heen done iu this direction in Tulare and Fresno counties.

The fiue flowing well, eight inches in diameter, hored lately by the railroad company on its lands near Tipton, about 300 feet deep and with a flow of some 80,000 gallons every 24 hours, and three with a small flow of water near Lemoore, are the only ones I can hear of in all this region. I may mentiou in tbis connection that the first flowing well between the Merced and Tuolumne rivers has lately heen hored near Turlock, my old home, at a point hetween there aud Hill's Ferry, a few miles east of the Joaquin and north of the Merced. I bave not been able, as yet, to procure farther facts than that a fine flow of good water was obtained there at a depth hetween 300 and 400 feet.

Here I shall give your readers such items as I bave secured about

Three Flowing Wells on One Ranch

Near Lemoore—the only ones in all this Mussel Slough country. They have heen bored during the last four years ou the fine stock ranch of John R. Heinlen, about a mile west of towu.

One near his dwelling, used for household purposes, is 150 feet deep, and commenced flowing at about 85 feet, with little or no increase in flow at greater depths. A second one, near his slaughter house aud railroad switch, is 200 feet deep and began flowing at ahout 90 feet. The third in his pasture ahout a quarter of a mile northwest of the first, is 400 feet deep and hegan flowing at 150 feet. The latter is a seven-inch hore, tbe others smaller.

The water in all is soft, and pleasant drinking water, varying in temperature from 68° to 72° Fahr. The flow from each is small, hut Mr. Heinlen informs me that the amount is steadily increasing in the deeper well.

The Strata Passed Through

In the 150-feet well were as follows: 1, surface soil, 14 feet; 2, sand, 10 feet; 3, hlue clay, 60 feet; 4, gray sandstone, 6 or 8 inches. After passing the latter, a small flow was obtained. Tben they hored alternately through sand and clay, varying in thickness from 2 to 5 feet.

In the 400-feet well the horing was almost all through sand. This gave much trouhle, as the bore was constantly filling up. So much pumping had to he done that Mr. H. iuforms me there was about 2,000 feet of work done to gain the depth of 400 feet.

Wells near Hanford.

Plans are uow heing discussed for testing the depth at which artesian water can he had near Hanford. It is proposed for several neighbors to make up a purse to hore a well on the place of some one of them—not a railroad quarter. If unsuccessful, the loss will he horne in common; if successful, the owner of the land will pay the expenses. In view of what has already heen developed so far by all attempts in San Joaquin valley, it is, no doubt, safe to assume that there is

An Artesian Belt,

Extending from 5 to 10 miles or more east of lower Kern river, Tulare lake, lower King's river, Fish slough, Fresno slough and the Sau Joaquin river, say for some 300 miles along this line of drainage, where flowiug wells can be ohtained at depths varying from 100 feet or less to 400 feet, in most localities; espccially near all water-courses.

This helt may extend a short distance west of the same water line, as well as throughout Sacramento valley, within similar limits east and west of Sacramento river. As a general rule, the farther east of this belt you go, thc deeper you have to hore for flowing wells.

Certainly the many successcs thc past year in securing the hest of flowing wells will be a great stimulus to testing the matter thoroughly within the next year or two, along the entire artesian helt here indicated, as well as in our coast counties. J. W. A. WRIGHT.

Hanford, Oct. 29th, 1878.

Mariposa County Mines.

EDITORS PRESS:—Having returned from a brief visit to Mariposa county, it affords me great pleasure to report to you a few items concerning the following mines that I visited while there: The Martin, Wallen and Vanderita are mines that havo heen worked for a number of years, and they have never heen ahle to pay running expenses from tbe mines until they fell iuto the hunds of Joshua Hendy, Esq., well known to all old "California miners." Under the management of Mr. Hendy these mines have become hullion-producing, and are yielding largely and lucratively to the lucky owners.

The C. W. Thomas Mine

Was the next one that I visited, and is under the direct supervision of C. W. Thomas, a thoroughly educated miner in all its branches; and capitalists who are interested in mines would do well to pattern after his manner of working a mine if they wisb to be successful.

The Mary Harrison, Potosi, Melvina and Mahoney.

These mines are the property of Seth Cook & Co., and I consider it the best paying property in the State. This is another proof that when mines are worked by competent parties they can be made to pay; but managed hy incompetent parties, who have uo end to subserve other than their own interests, it is a safe conclusion that the mine or mines will go to destruction. No matter how rich the mine may be, or how much cash may he expended, the result will invariably he the same.

Hasloe or Funk.

This mine bas been badly managed. But it has fallen into the hands of one of our best known mining engineers, and by scientific management this will be another evidence of the richness of the great Mariposa mother lode.

Texas, Champion, Gold Hill, Indian Gulch, Last Chance, Crown Lode, Adelaide, Anderson, Crown Peck, Dead Broke, Lone Pino, Pino Blanco and McAlpin are all situated on the mineral zone or helt, which is known as the great "Mariposa Mother Lode." It is possible for any one of these mines to ho a honanza equal in extent and richness to those of our Comstock mines, and it is a certainty that within tbe territory of these locations, with a small amount of capital properly handled, would give as great if not greater results.

W. ROSE,
Mining and Mechanical Engineer.

Locating a Mining Claim.

EDITORS PRESS:—I have seen it stated several times, undouhtedly in accordance with the tenor of the law, that a prospector should do sufficient work on his "find" to determine, approximately, the course of his vein *before* making his location.

Under the old system it was only needful to place a notice at tbc point of discovery claiming so many feet on each side of such notice, or rather in each of two opposite directions therefrom, "following the course of the vein," whatever that course might provo to be, with so many feet of ground on each side of the vein according to local law.

The utmost approach to precision that was usually attempted in these notices was to say "in a northerly and southerly," or "northeasterly and southwesterly direction," meaning broadly somewhere ahout that, as indicated hy the words "following the course of the vein," which were seldom or never omitted.

But the present law requires that the coruers of the claim shall he distinctly marked on making a location, and in order to do this it is needful to know pretty correctly the exact course of the vein hefore locating, which in some cases will require considerahle work and consequently time.

Now, the question arises, who or what is to protect the prospector while he is making this preliminary investigation? In remote and little known districts there might he no difficulty, hut where, as now in Bodie, hundreds of men are on tbe hills looking for a chauce to make a location, it would never do to go fooling ahout a rich strike during sevcral weeks, or even days or hours before making a location. Others would he digging holes all round and might strike ou the same or other veins within the limits of the intended claim, so that by the time the first finder was ready to mark his corners, he would he likely to find that there was nothing left for him to take without encroaching on prior locations.

On the other hand, if the finder of a vein which is not readily traceable ou tbc surface of the ground were to make a location hastily, he would he very likely to err in the course to the extent of many degrees, and then not only might his claim cover more or less than the 1,500 feet of the vein itself that the law allows him to take, but it would also be impossible to conform to the law in regard to the width of his claim, which must be so many feet (not more than 300 nor less than 25) "on *each side of the center* of the veiu." This is only one of several defects, if defect it he, in the law regulating mining, and the muddle is heing aggravated by decisions which are directly in conflict with the law itself.

I refer particularly to a case which occurred, I think, in Arizona, where it was decided that a relocation was valid which had heen made *before* the expiration of a year from the date of first location, although the original locator was on the ground working, the ground of the decision heing that it was then too late for him to *finish* the required amount of work within the year.

This decision was absurd for two reasons. In the first place, though the law requires that $100 worth of work shall be done in each year, it does not specify any particular portion of the year in which it shall he done. If wages are $4 per day it would take one man 25 days to do the work, hut 25 men could do it in one day (making a road, for instance), 50 men in half a day, and so on, or the particular kind of work done might he worth a good deal more tban $4 a day to the man. Who then shall say what length of time is required to do a huudred dollars worth of work? Secondly, the law specifically and distinctly provides that even after the title to a claim has lapsed, that is, after the prescribed year has passed without the required work being done, if the locator goes to work before a relocation has actually heen made his right is revived and his title becomes as good as though he had not failed to fulfill the requirement of law. How then could he possibly he deprived of his claim when he had begun to do the work, not only before the expiration of the year, hut, if I remember right, before the relocation was attempted. I may he wrong as to the last point. Perhaps the relocation was pretended before he arrived on the ground to work; it is immaterial; a relocation attempted before the expiration of the term prescribed hy law, *could* not he valid, aud before a valid relocation could he made the man was at work, thereby putting a har to any such proceeding.

C. H. A.

Benton, Mono County, Oct. 19th.

Rebellious Miners.

EDITORS PRESS:—I observe, in your issue of Octoher 19th, an article hy Mr. Melville Attwood, which I read with pleasure, from the fact I was glad to see tbat some one was trying to enlighten our American gold miners on the question of gold saving, many of whom reason from the fact tbat, as tbey cannot save on an average over 30%, that, *ergo*, it must he "rebellious." Now the fact is, it is the mill man himself who is the rebellious feature of the operation. He seeks first not to comply with; and, seoondly, to override an unconquerahle law of nature, viz., gravity, and is determined that an atom of gold the size of the point of the finest camhric needle must resist the pressure of 2 to 4 inches of running water, and hecause it does not it is "rebellious" gold—rebellious, from the fact that it does not obey his wish or will. I have becn 15 years preaching the senselessness of this doctrine, and hy the issuance of 10,000 pamphlets (at my own expense). The present harbarous way of treating the precious metals will, in due time, become fully apparent. I now appreciate the fact that there is growing a greater interest on the subject of

Mineralization of Gold.

Nature has given us *gold*—simply gold—neither "rebellious" nor "rusty," though possihly in some instances dirty gold, until man goes to handle it, and which is as yielding as could he desired, when man will fully comply with Nature's simple laws, to gather it in. Of course I accept the fact of gold heing often enveloped hy, aud extensively associated with the baser metals, and which make it intractahle, without the use of fire; not hy way of "mineralizing" it, hut that the metals with which it is associated may the more cheaply, readily and thoroughly he made to yield up their treasure. And here allow me to say, that the gold thus enveloped hy the baser metals is infinitely finer than when free of them; so that gold in "sulphurets," speaking practically, requires not only skillful handling, hut great care in amalgamation.

The fact that the great wealth of our gold mines is in what I will term atomic gold, was settled in my mind long ago, and hy more than a thousand experiments, running hack for 20 years; and did the gold miners of California hut fully realize the wealth they monthly wash away hy their rough treatment of this atomic gold, they would accept the fact with joy that they had eo much more wealth within their possession. In my many experiments I have solved the problem, that the per cent. of gold to he ohtained (admitting full compliance in amalgamating with natural law), is in the per cent. of reduction of the matrix. If you reluce tbe ore to an impalpahle powder, and thus release this atomic gold, from 90% to 95% is ohtainahle; hut if you only rcduce to a moderate degree of fineness, the amount of this atomic gold wasted is beyond helief of any one who has not closely investigated. You cannot get at tbe pea, without breaking the pod; neither can you overcome the law of gravity, to amalgamate it even when released.

The atomic character of gold is finely illustrated hy specimens which can he seen at my office, room 20, Safe Deposit huilding. Gold so fine that, in distilled water, it will not all settle in 20 minutes. The Sacramento river, hy actual tests of its "muddy water," is passing down and pouring into the ocean millions piled on millions yearly of this atomic gold.

I have not time to write all I would like on this subject, but will send my pamphlet, free, to any reader of the PRESS, and will content myself with the few ideas carelessly thrown forth, hoping that our miners will embrace the following proposition, as offered hy Mr. Attwood, who says:

"In the first place, I would suggest to any mine adventurer, or superintendent, working lodes, which they think contain *rebellious gold ores*, or mineralized gold, that the hest argument they can use would be *facts*, in the shape of ten or fifteen pound samples of the veinstone, say, in pieces of onc or two inches square, reprcsenting, of course, quantity. They can forward sucb samples to this society free of expense (owing to the liberality of Wells, Fargo & Co.), and, when received, I will get a committee appointed to examine and report on them."

Our mill men have all to gain hy the information they will receive—coming as it will from the State Geological Society, which will guard well its opinions, deductions and advice—iuvestigate. ALMARIN B. PAUL.

San Francisco, Oct. 30th, 1878.

Amazon Consolidated Mining Company.

This mine, located at Devil's Gate, Lyon county, Nevada, is heing developed conjointly with the Glasgow, by a vertical shaft now sunk to a depth of 430 feet. This is a two-compartment ehaft, and well timbered througbout. Over it have been erected steam hoisting works with capacity to do the lifting and pumping to a depth of 1,500 feet. Powerful pumping gear, extensive huildiug shops, with full supply of tools, etc., have heeu provided, everything in and about tbe mine heing of a suhstantial kind, and in first-class order. The length of drifts run, nearly all timhered, amount to nearly 500 feet. The lode, of which this mine forms a section, is one of the most remarkable ever opened up in wcstern Nevada. Geologically speaking, it is the acme of perfection, of great thickness and surface exposure; it stands hetween its nearly upright walls like a piece of masonry. The linings of the walls cousist of a heavy clay selvage, often more than a foot in thickness, which, separating the vein matter from the country rock, admits of the former being easily broken down and removed, thereby greatly reducing the cost of ore extraction. These walle are not only well lined, hut tbey present, wherever uncovered, smooth, regular and unbroken faces, denoting here one of tbe best marked and well preserved fissures in nature. In the fracture and filling of this fissure powerful dynamic and magnetic agencies have been at work, and if it shall fail to he hoth persistent and fertile, nature will fail to have fully effected an obvious purpose. But this will not happen—there are ore hodies in this fracture. They may lie deep, hut they will he found somewbere below in great power. Already much ore of medium grade has heen developed in tbis mine. At the depth of 100 feet in main shaft, a cross drift has heen run easterly 54 feet to the hanging wall of the vein. From here a drift was run to foot wall, 55 feet, showiug a large amount of low-grade ore. Lateral drifts were run each way 35 feet, and a winze sunk 60 fect, the ore not showing improvement. Sinking main shaft was continued until the 200-foot level was reached. At this depth a shaft penetrated vein. From this station drifts were run each way on the vein, one north 65 feet, and one south 24 feet. The ore at this level shows great improvement, hut is hadly hroken and mixed with vein material. The walls are of smooth, blue clay and well defined. Sinking of the main shaft was then resumed, and at the depth of 300 feet, much water was encountered. From this point a cross drift was run westerly 35 feet to east or foot wall of the vein. Lateral drifts were run each way 100 feet; south drift showing ore in hunches the entire distance. The drift north toward the Glasgow ground cut a line streak of ore two feet in thickness, giving good assays aud entirely free from worthless vein material. This ore is on the line between Amazon and Glasgow mines. A winze was sunk on this vein 20 feet, and found to widen as it went down, water coming in such quantity as to impede work. Sinking main shaft was again resumed, and at a depth of near 400 feet a stream of water was found that drove the miners out of the shaft, and necessitated the putting in of the present pumping machinery. This occurred nearly two years ago, hut tho mine being then owned mostly hy men of small means, they were unable, after putting in the new machinery, to resume active operations, wherefore work for a long time was intermitted. Recently the mine has gone into other and financially ahler hands, who will uow pnsh its exploration with system and vigor.—*Pacific Coast Mining Review for 1878.*

WITH a view to promoting the development of the mining industries of Honduras, an engineer has been appointed to examine and report upon the mineralogical wealth of tbe country.

IT is said that it costs the Sierra Nevada company $20 to send a visitor down to foot of the incline.

GOLD in paying quantities has been fonnd in southern Chile.

GOLD in small quantities has been discovered on a Peunsylvania farm.

MECHANICAL PROGRESS.

Getting a Shaft in the Lathe.

J. J. Grant writes for the *American Machinist* his method of preparing a shaft for turning. Although he in the main describes the steps and precautions which good machinists usually observe, there are some points of practice which it will be worth while to read about and experiment with: As the centering of a shaft, or piece of work, is the first operation, and as all subsequent operations are dependent on the centers, it is, of course, necessary that they should be as perfect as possible. In the first place, *never* turn a piece of work, no matter how short the job, without drilling and countersinking the centers, as the lathe, or male centers, retain their accuracy for a much longer time than when work is done on them without being so so made ready.

To center a piece of work properly it should be, if a long shaft, straightened as near as possible with the eye, which may be done either with a sledge or under a screw press, then with center punch, prick as near as possible, and only deep enough to hold on the centers; it can then either be revolved and marked with chalk on the full side, and drawn with the center punch, or it may be "square centered;" which is done by having a center ground square, leaving four cutting edges.

Care should be taken to put the square center into the tail stock of the lathe, so as to present two cutting edges to the front. A "crotch" tool made in the form of a V at the end of a common lathe tool, having an opening large enough to take in the shaft, is then clamped into the tool post, and set so that the center of the V is on a level with the lathe centers.

The shaft should be revolved at a speed as fast as practicable, say from 50 to 300 per minute, according to the size. The crotch tool should be forced against the revolving shaft, and, at the same time, the square center must be gradually worked in, care being taken not to make the center too large before the shaft has become true. A little practice will enable a beginner to center a shaft true and quickly.

Never drill or ream a center too large or out of proportion with the work, as nothing looks worse to a mechanic than to see centers in a piece of work one-half its diameter.

The size of center drills for different diameters of shafts should be about as follows: ¼ in. to ½ in., inclusive, 1-32; ⅝ in. to 1 in., inclusive, 1-20; 1¼ in. to 3 in., inclusive, ¼; 3½ in. and above, 5-32. The largest or outside diameter of the countersink should be about three times the diameter of the drills, but these proportions must, of course, be inversed if the shaft is to run on centers, and not in journal boxes.

Having now centered the shaft, the next operation is to straighten it. There are various appliances for this purpose, but the best is a screw press, made to traverse the bed of the lathe, and in the best make having wedge blocks with a V on the top that can be raised, and also moved close together, or far apart, as the crook in the shaft is short or long.

Now, while the shaft is revolving, mark the full side with a piece of chalk every three or four inches for the full length, as by so doing you get the proper place to begin. Sometimes it should be bent more than is necessary to bring the exact spot true, as when the full side or crooks are on opposite sides, when by bending the other crooks it will bring it back.

It is always necessary to loosen the centers when using the press; the wedges should only be brought to bear and not forced under the shaft too tight. To become an expert at this part of the work requires long practice, and can only be attained by closely noticing the effect of each blow or strain of the sledge or press upon each part of the shaft. I have seen a shaft, when pronounced finished by a good hand, run as true as a turned shaft.

When we have the shaft properly straightened, it must be squared true with a side tool, and the centers re-reamed with the square center, care being taken to have the center *exactly* 60° angle. Drill the centers with the proper sized drill only about one-eighth inch deep, and the shaft is ready for the next operation, which is turning.

Driving Nails with a Gun.—Respecting an implement on view at the Wellington Industrial exhibition, the New Zealand *Times* says: "One of the most simple, and at the same time most ingenious implements on view at the exhibition is an invention of a young man in this city, a Mr. F. Falkner. It is called a 'nail gun,' and is used for nailing down flooring boards. We have seen the implement in use, and as far as we are able to judge it is quicker in its work and insures greater cleanliness than hand nailing could do. The apparatus is not unlike a gun in shape, and is about the same length. It is kept in position with the foot and knee, and the nail to be placed (point down) in an aperture at the top of the concern. It slides down to the bottom and then the operator draws up a rod, and by one downward stroke of this the nail is cleanly driven into the boards beneath. A practiced hand, by this simple contrivance, could do the work of half a dozen men. We believe that Mr. Falkner is now improving upon his invention, and is making a 'nail gun' which will be self-feeding. We have no doubt that when the implement comes to be generally known it will be brought into general use."

The English Steel Ship.

It seems that the steel ship built by the British government is a success, and the London *Times* says that "whatever doubts may have been entertained with respect to the speed performances of the *Iris*, steel dispatch vessel, were conclusively set at rest by the long and varied trial to which she was subjected on the measured mile in Stokes bay. She was proved to be not only the quickest ship in the navy, but the quickest ship afloat, having surpassed the highest speed realized by the *Lightning*, torpedo vessel, and even outstripped the most sanguine expectations of Mr. Barnaby, her designer." We read that the *Iris* was in every respect an essentially experimental craft. There was nothing resembling her in the service with reference to the proportion of midship section to length, the extreme fineness of her entrance and run, and the ratio of her enormous horse power to displacement; and as a result there were only very imperfect data to guide the Constructive Department as to her probable performances from the actual performances of previously existing ships. The ship was trimmed by ballast and coal to 15 feet 8 inches forward and 20 feet 6 inches aft, which was near about her load line; and the new experimental four-bladed screws were 16 feet 3 inches in diameter, and had a pitch of 20 feet. The blades were smoothed to prevent friction, and conical caps had been tapped into the bosses over the nuts which secure the screws to the shafts for the purpose of preventing the wave which has been found to follow a bluff ending, whereby the resistance against which the ship has to contend in passing through the water is augmented. The result of the trial was in every respect more than satisfactory. Four full-power runs were made on the mile with the following surprising results: Steam at engines, 62 lbs.; vacuum, 27 inches; revolutions, 96 starboard and 98 port; horse power, 7,734.85; speed of vessel, 18.572 knots. The engines thus developed fully 700 horses more than the contract, while the ship realized two knots in excess of the speed obtained from the larger screws, and fully a knot more than the Constructive Department anticipated to get out of her.

A Drill for Square Holes.

Certainly a drill to bore square holes is an interesting machine. The *Iron Age* finds that such a device was exhibited at Paris. The inventor is named Hall and he drills a square hole in metals or other substances with a rotary motion in one operation. For this purpose he employs a three-sided drill, either flat or fluted which, in cross-section, is of the form of an equilateral triangle. He makes the bottom or cutting edges of the drill perfectly flat, and three in number, each cutting edge extending from one of the outer corners to the center of the triangle. A special drill chuck, forming part of the invention, is provided, and attached to the lower end of the drilling spindle. The chuck is constructed in such a manner as to admit of the drill traveling automatically in a horizontal plane some little distance. This is rendered necessary by the peculiar movement of the cutting edges of the drill, which does not operate or rotate on a fixed central point, but diverges somewhat in proportion to the size of the hole. Near to the lower end or cutting edges of the drill is fixed rigidly a metal guide bar or plate. The guide bar is provided with a square hole similar to the hole it is required to drill, the dimensions of the three sides of the drill being such that the distance from the base to the apex of the triangle, which such three sides form, is the same as of the sides of the square hole it is required to drill. The triangular drill for drilling dead square holes may also be used without the self-adjusting drill chuck in any ordinary chuck, when the substance operated upon is not very heavy nor stationary; then, instead of the lateral movement of the drill, such lateral movement will be communicated by the drill to the substance operated upon.

Revival.—The *National Car Builder* for October says: There are unmistakable indications from various quarters of a gratifying revival in the business of car building. The activity is not sudden or spasmodic, but a gradual and healthy recovery from the extreme depression which followed the great collapse of five years ago. The regular manufacturers and many of the principal road shops are quite busy with new work—mostly freight cars. Considering how the great leading lines, as well as those of secondary importance, have been compelled to starve this class of car stock for the past two years, it is not surprising that extensive renewals have become necessary in order to meet the demands of an increasing traffic.

Cannon Lifters.—For disembarking very heavy guns at foreign stations, it is proposed by English engineers to employ lofty sheers, and the work will devolve upon the force of Royal Artillery in the nearest garrison. *Iron* says: A pair of sheer legs, 80 feet long and each 2 feet 6 inches in diameter, was purchased and brought to the Royal Arsenal, Woolwich, during the preparations of last spring, and it was intended to employ them in the first instance for mounting the guns at Languard Fort, opposite Harwich, but a large party of artillerymen have this week erected them on the wharf at the Royal Arsenal, Woolwich.

SCIENTIFIC PROGRESS.

Determination of Sulphur in Coke.

The sulphur in coke, says *Iron*, is usually determined, either by boiling with nitric acid and potassic nitrate, or by fusing with potassic nitrate, sodic carbonate and salt. The fact that boiling nitric acid and aqua regia and potassic chlorate gave results considerably below those obtained by fusion, has induced Mr. W. A. Bradbury to make numerous experiments, from which he concludes that a large amount of sulphur in coal may exist in organic combination. The sulphur in coke is generally supposed to exist as sulphide of iron; but he thinks that the sulphur can exist in another state of combination. He observes that only small quantities of sulphuretted hydrogen are evolved on treating with dilute hydrochloric acid; also that all the iron in the coke is dissolved out by dilute acid, thus proving the absence of both protosulphide and bisulphide of iron. Only a trace of sulphur, as sulphate, exists in them. It would, therefore, appear to be in organic combination. The amount dissolved out by acids is considerably lower than that obtained by fusion. That the same result is not always obtained when using the acid process, is shown by Crossley (Crookes' "Select Methods in Analysis"), who draws attention to the fact that boiling nitric acid gives results considerably below those obtained by fusion. He came to the conclusion that it was not that some of the sulphur was not oxidized, but that it was lost by volatilization on evaporating to dryness. By adding a little niter to the solution before evaporating to dryness to fix the sulphuric acid formed, he obtained results as accurate as those obtained by fusion. But Mr. Bradbury holds that Crossley's conclusion does not hold for all cokes, as by using different weights of coke and different amounts of acid, the same result can be obtained for the same coke, although the result is far below its real value. On fusing the residual coke after treating with acid, sulphur enough to make the amount equal to that obtained by fusion is obtained, thus showing that the acid has not oxidized all the sulphur existing in coke.

Anthropology, Archæology and Ethnology.—These fields of investigation interest many of our readers, and to them we announce that the *American Antiquarian*, a new magazine devoted to anthropology, archæology and ethnology, proposes to open its pages for contributions on the following topics: 1. The traditions of the flood, creation, tree and serpent, first ancestor, migrations, culture-hero, etc., extant among the uncivilized races of the world. 2. The aboriginal languages of America, their structure, affinities and peculiarities. 3. Aboriginal customs, burials, marriages, feasts and initiatory rites. 4. Tribal organization, the totem system, tribal signs and names, the system of consanguinity, the comparison to the patriarchal system. 5. Aboriginal Religions—the belief in Divinity, the system of religion, whether shamanism, animism, sabæanism, or the worship of the heavenly bodies, the worship of fire, ancestor-worship, idolatry, and the peculiarities of each. 6. The evidences of preceding population, earthworks, shell heaps, mines and inscriptions. 7. Archæological relics, symbols, ornaments—especially the symbols of the cross, serpent, tree, phallic symbol, and hieroglyphics, styles of architecture, or other tokens of pre-historic people. The editor of the *Antiquarian* is Rev. S. D. Peet, of Unionville, Ohio. We presume much valuable information on these points could be collected on this coast.

Volatilization of Arsenious Acid.—In chemical treatises there appear contradictory statements concerning the temperature at which arsenious acid gives off vapor. According to Thenard, volatilization begins at a cherry-red heat; according to Berzelius, if heated in open vessels, it softens and begins to sublime at incipient redness. In the *Encyclopedie Chimique* it is said to soften and sublime under an ordinary pressure at 200° C. Wurtz gives the same degree, but without mentioning the softening. According to Watts it begins to sublime at 218° C., and according to Wormley at 190° C. The author finds that it volatilizes at much lower temperatures, especially when assisted by the evaporation of a liquid in which it is contained. Under these circumstances it is more or less volatile at temperatures ranging from 100° to 150°.

A New Electric Battery.—A new battery is described by Ponci, an Italian electrician, which is said to be novel and of great simplicity. It consists of a glass jar and a porous vessel, the latter filled with a solution of ferrous chloride, and having an iron plate as a pole. The outer solution is of ferric chloride, with a carbon plate as a pole. Both solutions should be made up to a strength of 35° Baume. The electro-motive force is said to be nine-tenths of a Daniell cell.

Ancient Records.—Mr. Magnusson has returned from Sweden and Finland, says the *Athenæum*, with a harvest of Runic Calendars. He has brought back photographs of 265 Runic staves, and books on wood and bone and horn, abounding in a variety of types as to the form of the runes and the mark-days' emblems, and no less various as to the terms by which the year commences.

Persistence of Images on the Retina.—It will be remembered, says *Iron*, that about the beginning of last year, Dr. Boll threw some new light on the structure of the retina by the discovery of a substance of purple color in the last retinal layer, in which a portion of the "rods" is engaged. It had escaped notice before, because of its very rapid disappearance on the action of light. Dr. Boll felt himself warranted in saying that the formation of images on the retina was a veritable photography. Subsequently Dr. Kuhne discovered the organ by which this purple is incessantly reproduced—viz., the mosaic layer, or hexagonal epithelium of the choroid, which, therefore, it has been proposed to call the retinal epithelium. M. Giraud Teulon in a recent report, calls attention to some modifications in theory required by the unlooked-for physiological function referred to. Thus as regards the persistence of positive images (*i. e.*, the continuance of the sensation after the impression that produced it), the simple fact of chemical decoloration of the retinal purple by the light, involving a certain time for its reconstitution, by the secreting action of the mosaic layer, gives a sufficient account of the phenomenon. Then, as to accidental negative images and their successive phases of coloration, the photo-chemical theory replaces Young's perfectly arbitrary explanation, based on three supposed different kinds of fibers, by a similar one, which is this: A given monochromatic light chemically alters, in a constant and uniform way, the retinal purple which it encounters. Now, the rod, or primitive nerve-element has its base immersed in the bath formed of this substance. We have only, then, to suppose in this element the power of feeling, in a different way the intimate contact of different media, exactly as the *papillæ* of the nerves of special sensibility (like those of smell and taste, for example) appreciate or carry to the sensorium stimulations as varied as is the nature of the liquids or effluvia which come to them. When the primary cause, the luminous object, is withdrawn, the nerve-fiber, according to the progress of the reconstitution of the purple, announces by successive testimonies the gradual renewal of the normal hath.

Prize for an Essay on Hydrophobia.—A prize of £100 for an essay on hydrophobia, its nature, prevention and treatment, has been offered by Mr. V. F. Bennet Stanford, M. P. to be awarded by the Royal College of Physicians of London. The questions which are thought by the college specially to require investigation are: The origin and history of outbreaks of rabies, particularly in the United Kingdon and its dependences. The best mode of preventiou of rabies. The characteristics of rabies during life, and the anatomical and chemical changes which are associated with the disease in its successive stages, particularly in its commencement. The origin of hydrophobia in man. The chemical and anatomical morbid changes observed in the subjects of the disease, with special reference to those having their seat in the organs of the nervous system, and in the salivary glands. The symptoms of the disease, particularly of its early stage, as illustrated in well-observed cases. The diagnosis of the disease in doubtful cases, from conditions more or less resembling it. The alleged prolonged latency of the malady. The efficacy of the various remedies and modes of preventing the disease which have been proposed, and what plan of treatment, whether prophylatic or curative, it would be most desirable to recommend for future trial.

Estimation of Iron as Ferric Oxide.—Mr. Sergius Kern, M. E., writes to the *Chemical News* touching the collection of the hydrated ferric oxide, and gives notice of the method used by himself, as it has been remarked that in certain laboratories this flocky precipitate is collected on paper filters—a very tiresome operation. In order to collect this precipitate, a thin platinum funnel is used. The tube of the funnel is closed by asbestos wool, previously ignited and weighed. The solution is next filtered, the precipitate washed. The funnel is then placed on a sand-bath, and when the precipitate is dry the bottom part of the funnel tube is closed by means of a platinum stopper, and the whole is next ignited and weighed. Knowing the weight of the asbestos and of the funnel, the weight of the ferric oxide may be calculated. In this way the weight of many flocky precipitates in a dry state may be estimated in a quick and convenient manner.

Microscopic Measurement.—During the month of August there was held a National Microscopic Congress at Indianapolis, Indiana, and it was there decided that the 1-100 m m should be the unit for microscope measurement in this country hereafter, in place of the 1-1000 of an inch in common use. In accordance with a resolution passed by the Congress, the New York Microscopical Society is taking steps to secure a true division of the m m for a standard.

Entomological.—Entomologists will be interested in knowing that a good report of the proceedings of the entomological section of the late meeting of the American Association for the Advancement of Science may be found in the *Canadian Entomologist*, London, Ontario. This little journal is bringing out many valuable and original papers upon its special branch of natural science, and should receive the support of entomologists on this side of the line.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending Oct. 17.	Week Ending Oct. 24.	Week Ending Oct. 31.	Week Ending Nov. 7.
Alpha	16½ 12½	15½ 13	15½ 13¾	15½ 13
Alta	16 11	16 12½	15 12½	14½ 12½
Andes	1 50c	90c 75c	75c 50c	1½ 50c
Alps	90c ..	75c ..	.. ..	80c ..
Argenta	5½ ..	8½ 6	7½ 6	7½ 7
Atlantic	90c 80c	90c 8 c 1.10	1 1	1.30 1
Aurora Tunnel	3 1½	1½ 90c	2½ 1	1 70c
Baltimore Con	3 2½	3½ 2½	3 2½	3 2½
Belcher	10 7½	9¾ 7½	8½ 8½	7½ 7½
Belmont	4 2½	3½ 2½	2.65 1.70	2½ 2½
Best & Belcher	27½ 20	27 21½	25 22½	26 23
Bullion	15½ 9½	12½ 11½	15 11½	14½ 11½
Bechtel	2½ 1.40	1.40 1.20	1.35 1½	1 90c
Belle Isle	45c 40c	45c 30c	60c 50c	50c 40c
Bodie	21 16½	19½ 18	21 19½	20 17½
Benton	8½ 6	9 6¾	7¾ 7	7½ 6¾
Bulwer	20 17	18 14½	17 16½	16½ 16
Boyle	.. ..	.. ..	.. ..	.. ..
Black Hawk	1½ 1	2.10 1.05	1½ 1	1 1
Belvidere	2 1½	2 1½	1.80 1	1½ ..
Booker	1.40 90c	1½ 1	1½ 1	2 1.10
Caledonia	5 3½	5½ 4½	5½ 3½	5½ 4.60
California	1.35 1½	1½ 1½	1½ 1½	1½ 1½
Challenge	2.20 1½	2 1.60	1.90 1.05	2 1½
Chollar-Potosi	60 47	64 55	63 58½	61 58
Comanche	.. ..	.. ..	.. ..	.. ..
Confidence	12.57 9½	11½ 9½	11 10	11½ 10
Con Imperial	1.40 1.05	1.40 1.20	1.35 1	1.35 1½
Con Virginia	14½ 11½	13¾ 11½	12 11½	13½ 11½
Crown Point	10 7½	11½ 9½	11½ 10	11 9½
Con Washoe	.. ..	2.60 2½	1.95 1.90	2 1½
Champion	1.80 1½	50c ..	1½ 1½	1½ 50c
Concordia	.. ..	.. ..	.. ..	.. ..
Dayton	.. ..	.. ..	.. ..	.. ..
DeFrees	25c 20c	20c 10c	20c ..	20c 15c
Dancy	.. ..	.. ..	.. ..	.. ..
Day	50c 40c	80c 30c	85c 70c	70c 60c
Eureka Con	45 44	43 36	39 33	35 33½
Exchequer	6¾ 4½	6¾ 5½	6¾ 5¾	7¾ 6
Endowment	1.30 1	90c 60c	95c 70c	85c 50c
Gen Thomas	.. ..	.. ..	.. ..	.. ..
Grand Prize	5.55 4½	7½ 5½	6½ 6½	8½ 6¾
Gila	45c 40c	40c 30c	40c ..	20c ..
Golden Chariot	15c ..	1½ 35c	50c 15c	50c 25c
Golden Terra	.. ..	.. ..	.. ..	4½ 4½
Goodshaw	1 75c	90c 80c	75c 50c	65c 60c
Gould & Curry	20½ 15	18 14½	18 15¾	18½ 16¾
Hale & Norcross	30½ 21	25½ 20½	25 23½	24½ 22½
Hillside	5½ 4½	4 3½	4 3½	4 3½
Highbridge	1.90 1½	2 1.70	2.40 1.95	2.65 2.20
Homestake	.. ..	10 9	.. ..	10 ..
Hussey	50c 30c	85c 30c	35c 25c	60c 40c
Independent	3½ 3.10	3½ 1.95	2.60 2	2½ 2.40
Julia	7½ 6½	7 6½	7 6½	6½ 5½
Justice	10 8	9½ 8	9½ 8½	8½ 7½
Jackson	10½ 9	10 8	10 9	8½ 8
Joe Sastes	.. ..	.. ..	.. ..	.. ..
K K Con	.. ..	.. ..	.. ..	.. ..
Kentuck	8½ 4½	8 6	7½ 6½	8½ 7½
Kossuth	30c 25c	35c 20c	30c 25c	30c 25c
Keystone	.. ..	.. ..	.. ..	.. ..
Lady Bryan	3½ 1½	3½ 1½	3½ 2.90	3½ 2½
Lady Wash	2½ 2½	2½ 2½	3 2	2½ 2½
Leopard	1.10 70c	1.40 75c	1 60c	90c 66c
Leviathan	1 65c	1 80c	1 80c	95c 85c
Leeds	2 1.40	1.90 1½	2 1½	2 1½
Lee	.. ..	.. ..	.. ..	.. ..
May Belle	5c ..	50c ..	40c ..	60c 40c
Modoc	20c 10c	60c 10c	55c 50c	55c 50c
Manhattan	6¾ 3	4 3¾	3¾ 3½	3½ 3½
Martin White	8 ..	10 9½	10 ..	9½ 9½
McClinton	75c 50c	75c 60c	75c 60c	75c 60c
Meadow Valley	25c ..	40c 30c	.. ..	50c 45c
Mexican	77½ 46	65 56	63¾ 56½	76½ 67½
Mides	.. ..	.. ..	.. ..	.. ..
Morning Star	5 3	3½ 3	3½ ..	3½ 3
North Con Virginia	8½ 6¾	8 7	8¾ 7½	12½ 10
New York	2.20 1.60	2 1½	1.80 1½	1½ 1.30
Northern Belle	10 9½	11 9½	10½ 10½	10½ 10½
New Coso	40c ..	.. ..	.. ..	.. ..
Navajo	1½ 80c	80c 50c	1 90c	85c 60c
Occidental	1 ..	1 75c	.. ..	.. ..
Ophir	62 40	55½ 45	51 40½	58½ 51
Oriental	1½ 95c	3 1	1½ 95c	1.05 40c
Overman	26½ 20	27½ 23	27 24½	28 24
Panther	.. ..	.. ..	.. ..	.. ..
Phenix	.. ..	4½ ..	4 3½	.. ..
Phil Sheridan	2 70c	1½ 1	1½ 1	1½ 1
Prospect	40c ..	20c ..	.. ..	.. ..
Raymond & Ely	6 4	5½ 5	6½ 6	11 6½
Richer	2½ 1	1½ ..	1½ 1½	1½ 1
Rock Island	.. ..	.. ..	50c ..	.. ..
Rye Patch	.. ..	.. ..	2 2	.. ..
Rough & Ready	4 3½	3¾ 2½	1 1	2½ 2
Savage	24½ 17	26 19½	24½ 22	23 18½
Seg Belcher	39 33	35 ..	.. ..	.. ..
Sierra Nevada	210 135	195 161	190 163	200 182
Silver Hill	3.30 2½	2.85 21	3½ 2.15	3½ 2½
Silver King	16½ 16	17 15	18 ..	15 ..
Silver Prize	10c ..	10c ..	.. ..	5c ..
Suocor	1.85 75c	1.65 1	1½ 1.10	1.30 95c
Summit	2 1.80	1.90 1½	1½ 1½	1.40 1
Scorpion	7½ 5½	6 2½	5 4½	4½ 2½
Solid Silver	2½ 1.90	2½ 2	2 1½	1.40 1
South Bodie	90c 60c	80c 60c	60c ..	50c 40c
South Standard	65c 50c	60c 50c	60c 50c	50c 40c
Star	75c 60c	75c 60c	75c 55c	70c 50c
St. Louis	1 80c	80c 50c	80c 50c	1 90c
Syndicate	2 ..	2½ ..	3½ 2	2 ..
Tioga Con	3½ 2½	3½ 2	2½ 2	2½ 1½
Tiptop	2 1½	1½ 1.40	1.40 1.30	1.40 1
Trojan	40c 35c	30c 25c	30c 25c	25c 25c
Union Con	184 129	162 140	160 143	161 148
Utah	39 22	32 27½	36 31½	45 34
Vermont Con	8 6½	6½ 5½	6 5½	5½ 5½
Ward	1.80 1½	1.60 1.40	1.50 1.30	1½ 1
Wells-Fargo	70c 20c	70c 45c	60c 45c	55c 55c
Woodville	65c 45c	60c 50c	60c 40c	50c 40c
White Cloud	.. ..	.. ..	.. ..	.. ..
Yellow Jacket	33 21	27½ 21	23½ 21½	25 22½

Sales at S. F. Stock Exchange.

Friday A. M., Nov. 1.

430 Alta ..... 13@13⅛
30 Alpha 14½
650 Atlantic ..... 1@1.20
300 Andes 75c
70 Best & Belcher 24½
1210 Bullion ..... 14@14½
640 Belcher ..... 3@3⅛
30 Benton 21
175 Baltimore Con 2½
360 Con Virginia ..... 12½@12⅝
190 California ..... 11@11⅛
200 Chollar ..... 60@60½
270 Crown Point ..... 10½@10⅝
740 Con Imperial 1.30
475 Caledonia ..... 4.85@5
140 Confidence ..... 10¾@10½
340 Challenge 2
630 Dardanelles 1
673 Exchequer ..... 6¾@6⅞
440 Gould & Curry ..... 17½@17⅝
450 Hale & Nor ..... 23@23⅛
465 Justice ..... 8@8⅛
575 Julia ..... 6½@6⅝
495 Kentuck ..... 7@7⅛
750 Kossuth ..... 3¼@3½
100 Lady Wash 3¼
200 Leviathan ..... 85@90c
200 Lady Bryan 2.90
2850 Mexican ..... 67½@69
50 Morning Star 3½
250 N Sierra Nevada 20c
85 N Con Vir ..... 10@10⅛
260 New York ..... 1.70@1.60
210 Overman 28½
1670 Ophir ..... 51@53
475 Orleans 3.15
1280 Phil Sheridan 1.20
50 Rough & Ready 2½
200 Solid Silver 1
300 Succor 1.30
220 Sierra Nevada ..... 182@189
405 Savage ..... 23@22½
850 Senator ..... 40@30c
240 Scorpion 4½
1300 Trojan ..... 25@30c

Monday A. M., Nov. 4.

495 Alta ..... 12½@13
145 Alpha ..... 15@15½
1720 Andes ..... 1.10@1⅛
500 Atlantic ..... 1@1.10
500 Brilliant 1½
420 Best & Belcher ..... 26@25½
335 Belcher ..... 6½@5⅞
220 Benton 7
570 Bullion ..... 14@15⅛
20 Baltimore Con 2½
205 California ..... 11@11⅛
360 Con Virginia ..... 12½@12⅝
175 Chollar ..... 60@58
315 Crown Point ..... 10¾@10
1825 Con Imperial ..... 1.35@1.30
70 Confidence 11¼
210 Caledonia ..... 5@5⅛
60 Challenge 1½
345 Exchequer ..... 6½@6⅝
20 Fairfax 4
1085 Gould & Curry ..... 18¾@18⅝
325 Hale & Nor ..... 24½@24⅝
370 Justice ..... 8¾@8½
555 Julia ..... 6½@6⅝
720 Kentuck ..... 7¼@8⅛
250 Kossuth 30c
945 Lady Bryan ..... 3@2.60
80 Morning Star 3
1960 Mexican ..... 74½@76½
700 New York ..... 1½@1.40
350 North Sierra Nev 15c
480 N Bonanza ..... 75@70c
170 Niagara 50c
1315 Ophir ..... 57@58½
155 Overman 28½
1110 Phil Sheridan ..... 1.20@1.
500 Seuator 50c
560 Savage ..... 22@21½
310 Silver Hill ..... 3@3.10
385 Sierra Nevada ..... 191@193
40 Succor 1.30
650 Solid Silver 1
300 Trojan ..... 50@45c
210 Utah 43
265 Union Con ..... 155@152½
270 Vermont ..... 5½@5¾
1430 Wells-Fargo ..... 80@85c
240 Ward ..... 1.30@1⅛
100 Woodville 50c
805 Yellow Jacket ..... 24½@23

AFTERNOON SESSION.

320 Argenta ..... 7½@7⅝
300 Alhion 2
160 Aurora T 1
805 Bodie ..... 18@17½
330 Bulwer ..... 16@16½
100 Bechtel 1
895 Belmont ..... 2½@2.45
255 Booker ..... 1.60@1½
300 Belle Isle ..... 40@45c
355 Belvidere 1½
300 Black Hawk ..... 1@1
400 Champion 50c
900 C Pacific ..... 3½@3
400 Chieftain 10c
710 Dudley 1½
1050 DeFrees ..... 15@20c
275 Eureka Con ..... 34@33½
355 Endowment ..... 60@50c
500 Golden Terra 4½
920 Grand Prize ..... 8½@8
575 Goodshaw ..... 60@65c
700 Golden Chariot ..... 35@25c
450 Hamburg 1.90
500 Hussey 50c
500 Hillside 4
1560 Highbridge ..... 2½@2.65
500 Indian Queen 1
2310 Independence ..... 2½@2.40
50 Jackson 81
500 Leeds 1.95
320 Modoc 50c
790 Manhattan ..... 3.60@3½
785 Mono ..... 5@5½
70 Martin White 9½
50 McClinton ..... 75@70c
540 May Belle ..... 40@50c
25 Northern Belle 10c
1200 Navajo ..... 86@70c
760 Oriental ..... 95@1
1450 Paradise ..... 1.10@1⅛
1070 Raymond & Ely ..... 10@11
250 Richer 11
300 Rustler 1
750 Red Cloud ..... 2½@2.60
100 S Bodie 50c
50 Syndicate 2
200 Summit 1½
100 Sitting Bull 90c
330 Alta ..... 12½@13
100 South Standard 50c
500 Tiptop ..... 1½@1.30
315 Tioga Con ..... 2.40@2½
100 Trojan 50c

Tuesday A. M., Nov. 5.

230 Alpha ..... 12½@13
230 Alta ..... 12½@13
745 Andes ..... 1.10@1
790 Atlantic ..... 1½@1.30
175 Best & Belcher ..... 23½@23
790 Belcher ..... 7½@8
1495 Belvidere ..... 1@1⅛
500 Brilliant 1½
360 Benton ..... 6½@6¾
255 California ..... 11½@11⅝
795 Con Virginia ..... 12@12½
1830 Con Imperial ..... 1½@1.40
180 Confidence ..... 11@11⅛
790 Caledonia ..... 4@4.60
830 Crown Point ..... 9½@9¾
500 Challenge ..... 1.30@1.25
25 Confidence ..... 10½@11
680 Challenge 1½
795 Exchequer ..... 6½@6¾
225 Fairfax 4½
1435 Mexican ..... 71@70½
50 Morning Star 3
730 N Sierra Nevada 15c
140 New York ..... 1.40@1½
140 N Con Virginia 11
1650 N Bonanza 75c
200 Niagara 50c
100 Navajo 70c
200 Overman ..... 24½@24
295 Phil Sheridan 1.20
640 Succor 1.10
265 Sierra Nevada ..... 165@182
455 Silver Hill ..... 2½@3
1515 Savage ..... 18½@18¾
200 Senator 35c
200 St Louis ..... 90c@1
1690 Solid Silver 1
300 Trojan ..... 50@45c
100 Union Con ..... 148@149
500 Utah ..... 38@39
366 Ward ..... 1@1.05
870 Wells-Fargo 60c
110 Woodville ..... 40@50c
70 Washoe Con 1½
1020 Yellow Jacket ..... 23½@23

AFTERNOON SESSION.

200 Argenta 7½
250 Aurora T 75c
150 Alps 80c
715 Belmont ..... 2.35@2½
160 Bechtel 1
325 Bodie ..... 17½@18
415 Booker ..... 90c@1
850 Belle Isle 45c
100 Belvidere 1½
280 Bulwer ..... 16@16½
210 Champion 75c
100 Coso Con 20c
790 C Pacific ..... 3½@3¾
800 DeFrees 20c
50 Day 70c
200 Dudley ..... 1½@2
65 Eureka Con ..... 34½@34
50 Endowment 60c
30 Gila 20c
830 Grand Prize ..... 8½@8¾
200 Goodshaw 65c
585 Hillside 4
600 Highbridge 2½
200 Hussey ..... 40@45c
100 Indian Queen 1
1160 Independence ..... 2½@2.40
320 Jackson ..... 8½@8¾
525 Leeds 1.95
430 Martin White ..... 9½@9¾
290 Mono ..... 5½@5
290 Manhattan ..... 3.60@3¾
850 Meadow Valley ..... 50@45c
135 Modoc ..... 50@55c
385 McClinton 60c
275 May Belle ..... 40@50c
110 Northern Belle ..... 10½@10¾
1450 Navajo ..... 75@70c
300 Oriental 90c
1905 Paradise ..... 95c@1.10
790 Raymond & Ely ..... 9½@10
1 Rustler 1
1000 Red Cloud ..... 2½@2.60
100 Rustler 1
20 Star 60c
5 Standard 37
340 Summit 1½
250 Sitting Bull 85c
50 Syndicate 2
400 S Bodie ..... 50@40c
240 S Standard 50c
160 Silver Prize 5c
350 Tuscarora 5c
625 Tiptop ..... 1.30@1.40
825 Tioga Con ..... 2.10@2

Wed'sday A. M., Nov. 6.

660 Alta ..... 12½@13
200 Alpha 14½
1000 Andes ..... 1.10@1⅛
170 Best & Belcher 24
1750 Baltimore Con ..... 3@2
590 Bullion ..... 12½@12¾
630 Belcher ..... 7½@8
310 Caledonia ..... 4.90@4½
3430 Con Imperial ..... 1.30@1⅜
455 California ..... 11½@11¾
840 Con Virginia ..... 12½@12⅝
140 Confidence 11
70 Chollar 59
70 Crown Point ..... 9½@9¾
1830 Challenge ..... 1.60@1.55
450 Dardanelles 1
500 Fairfax 4½
195 Gould & Curry ..... 17½@17⅝
470 Hale & Nor ..... 23½@23¾
490 Justice ..... 8½@8⅝
760 Julia ..... 5½@5¾
335 Kentuck ..... 7½@8
900 Kossuth 25c
600 Leviathan ..... 90c@1
280 Lady Bryan ..... 2.90@3
75 Lady Wash 2½
1050 Mexican ..... 71½@72½
320 New York 1.30
1075 North Con Vir ..... 10½@10¾
2265 N Bonanza ..... 74½@71
1355 Ophir ..... 55@56
225 Overman ..... 25½@26½
50 Phil Sheridan 1
100 Rough & Ready 2
325 St Louis ..... 95c@1
735 Sierra Nevada ..... 198@200
505 Savage ..... 20½@20⅝
50 Succor 95c
685 Silver Hill ..... 2½@2.80
100 Senator 45c
260 Scorpion ..... 2½@2.60
225 Manhattan 3½
450 Meadow Valley 45c
515 Mono ..... 5½@5¾
1050 Wells-Fargo ..... 45c@50c
100 May Belle 60c
45 Northern Belle 10½
1130 Navajo ..... 70@60c
800 Oriental ..... 50@40c
Paradise ....
575 Raymond & Ely ..... 9@9½
1700 Red Cloud ..... 3½@4
230 Richer ..... 1@1½
200 S Bodie 60c
100 Summit 1
85 Sitting Bull 85c
210 Tioga ..... 2@1½
400 Tuscarora 5c
700 Tiptop ..... 1.30@1.40

SALES OF LAST WEEK AND THIS COMPARED

Thursday A.M., Oct. 31. Thursd'y A. M., Nov. 7.

375 Andes ..... 1@1.10
120 Alpha ..... 15@15½
170 Alta ..... 13½@13¾
50 Best & Belcher 25c
765 Belcher ..... 8@8½
365 Bullion ..... 13¾@13⅞
670 Baltimore Con 3
510 Benton 7
960 California ..... 12½@13
2085 Con Virginia ..... 13@13¼
2570 Highbridge ..... 2.40@2½
120 Hamburg 2
1200 Independence ..... 2½@2.60
500 Indian Queen 1
100 Jackson ..... 9½@9¾
100 Leopard 1.90
225 Leeds ..... 2@1½
600 Modoc 50c
130 Manhattan ..... 3.60@3½
75 Martin White 9½
450 May Belle ..... 40@50c
300 McClinton 65c
450 Mono ..... 6@5½
230 Northern Belle 10½
1555 Navajo ..... 70@60c
1850 Oriental ..... 1.00@1
2300 Paradise ..... 1.60@1½
900 Raymond & Ely 6¾
50 Rustler 75c
2000 New Coso 5c
400 Star 60c
200 Silver Prize 5c
50 Sitting Bull 1
1200 Summit ..... 1.40@1½
200 S Bodie 50c
180 Tioga Con ..... 2½@2
1340 Sierra Nevada ..... 180@190
1530 Silver Hill ..... 3@3½
600 Senator ..... 30c@60c
670 Solid Silver ..... 1@1½
130 Scorpion ..... 4½@4
250 Santiago 1
380 Trojan ..... 25@30c
465 Union Con ..... 157@160
150 Utah 34½

AFTERNOON SESSION.

600 Aurora T 1
1030 Argenta ..... 6¼@7
830 Belmont ..... 2½@2⅝
795 Black Hawk ..... 1@1⅛
115 Bodie ..... 20½@20⅝
200 Bulwer ..... 17@16½
50 Bechtel 1
1200 Belle Isle 50c
600 Belvidere ..... 1½@1.55
250 Booker ..... 1@1.05
600 Coso 20c
815 C Pacific ..... 2½@3
50 Chieftain 10c
130 Day ..... 70@75c
325 Eureka Con ..... 35@34
540 Endowment 55c
985 Grand Prize ..... 6½@6¾
125 Gila 35c
1650 Goodshaw ..... 60@65c
300 Golden Chariot ..... 30@45c
730 Hussey ..... 25@30c
100 Gila 35c
500 Golden Terra ..... 4@4½
50 Hamburg 1½
550 Hussey ..... 50@55c
300 Hillside 4
470 Highbridge ..... 2@2.10
150 Ida 25c
580 Independence ..... 2½@2.40
150 Indian Queen 1
65 Jackson ..... 8¾@8½
200 Leopard ..... 1.70@1.75
590 Mono ..... 5½@5⅝
40 Manhattan 3½
25 M White 9½
700 Modoc ..... 50@55c
1150 May Belle ..... 50@60c
100 Meadow Valley 30c
820 McClinton ..... 70@75c
2000 New Coso 5c
200 Navajo 60c
100 Northern Belle 10½
1 570 Oriental ..... 50@60c
1075 Paradise ..... 1.10@1⅛
670 Raymond & Ely ..... 8½@9
200 Rye Patch 1
790 Red Cloud ..... 3½@4
140 Sierra Nevada ..... 180@190
1530 Silver Hill ..... 3@3½
600 Senator ..... 30c@60c
1000 S Bodie ..... 70@80c
600 Star ..... 50@55c
100 Sitting Bull 40c
550 Tiptop 1½
1340 Tioga Con ..... 2@2.20
655 White Cloud ..... 1@1½

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in Mining and Scientific Press and other S. F. Journals

ASSESSMENTS—STOCKS ON THE LISTS OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business
Andes S M Co	Nevada	11	25	Oct 1	Nov 8	Nov 30	M Landers	309 Montgomery st
Belcher S M Co	Nevada	16	1 00	Oct 8	Nov 12	Dec 3	J Crockett	203 Bush st
Bechtel G M Co	California	3	25	Nov 5	Dec 11	Dec 30	W H Lent	327 Pine st
Concordia M Co	California	1	10	Oct 31	Dec 5	Dec 26	G A Holden	310 Pine st
Crown Point G & S M Co	Nevada	35	1 00	Sept 13	Oct 23	Nov 13	James Newlands	203 Bush st
Caledonia S M Co	Nevada	24	50	Sept 16	Oct 21	Nov 11	R Wegener	414 California st
Day S M Co	Nevada	2	25	Sept 19	Oct 22	Nov 18	J W Pew	310 Pine st
De Frees M & M Co	Nevada	8	15	Oct 25	Dec 2	Dec 23	T E Atkinson	310 Pine st
Equitable T & M Co	Utah	19	05	Nov 7	Dec 9	Dec 28	S Healy	45 Merchant's Ex
Ei Tesoro S M Co	Lower California	6	25	Oct 21	Nov 29	Dec 17	W H Hickering	214 Sansome st
Europa M Co	Nevada	7	06	Sept 26	Oct 28	Nov 25	J L Fields	240 Montgomery st
Gila Con M Co	Arizona	3	03	Oct 17	Nov 18	Dec 10	W J Pettigrew	419 California st
Gen Lee S M Co	Arizona	3	25	Oct 19	Dec 3	Dec 31	T E Atkinson	3-0 Pine st
Golden Chariot M Co	Idaho	23	25	Oct 9	Nov 11	Nov 28	J T McGeoghehan	318 Pine st
Hussey Con G & S M Co	Nevada	6	25	Oct 1	Nov 5	Nov 27	R H Brown	327 Pine st
Julia Con M Co	Nevada	7	1 00	Nov 1	Dec 6	Dec 23	A Noel	[419 California st
Leopard M Co	Nevada	8	50	Oct 15	Nov 19	Dec 11	R H Brown	327 Pine st
McCrackin Con M Co	Arizona	2	50	Oct 22	Dec 6	Jan 6	H Aug Whiting	211 Sansome st
Manhattan S M Co	Nevada	1	1 00	Oct 12	Nov 15	Dec 5	J Crockett	203 Bush st
Nevada S M Co	Nevada	56	3 00	Oct 22	Nov 27	Dec 18	W W Stetson	309 Montgomery st
Ophir S M Co	Nevada	34	1 00	Nov 5	Dec 10	Dec 30	O L McCoy	203 Bush st
Real Del Monte M Co	Nevada	4	1 00	Oct 15	Nov 25	Jan 6	C V Hauhhard	312 California st
Raymond & Ely M Co	Nevada	9		Oct 21	Nov 23	Dec 17	J W Pew	310 Pine st
Sierra Nevada S M Co	Nevada	56	3 00	Oct 22	Nov 27	Dec 18	W W Stetson	309 Montg'y st
Succor M & M Co	Nevada	20	50	Oct 12	Nov 15	Dec 3	W H Watson	302 Montgomery st
Tioga Con M Co	California	3	20	Oct 10	Nov 13	Dec 3	W H Lent	327 Pine st
Utah S M Co	Nevada	22	1 00	Oct 15	Nov 20	Dec 9	G C Pratt	309 Montgomery st
Yellow Jacket S M Co	Nevada	30	1 00	Sept 12	Oct 15	Nov 14	James Newlands	203 Bush st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Arizona-Utah G & S M Co	Arizona	03	Sept 10	Nov 9	Dec 14	O H Spencer	408 California st
Armand G & S M Co	California	1	25	Sept 24	Nov 4	Dec 2	J L Fields	240 Montgomery st
Carnado Bay C M Co	California	1	10	Oct 24	Nov 21	Dec 20	A M Crane	636 Washington st
Colorado G & S M Co	Nevada	1	25	Oct 18	Nov 22	Dec 12	C E Wetmore	419 California st
Dudley M Co	California	1	25	Nov 1	Dec 5	Jan 6	E C Masten	22 Nevada Block
Gen Roht Allen S M Co	Arizona		25	Oct 29	Dec 2	Jan 2	M C Southard	411½ California st
Hackberry M & M Co	Arizona	2	1 00	Sept 24	Oct 24	Nov 11	E B Partridge	306 Clay st
Jupiter M Co	California	1	10	Oct 17	Nov 21	Dec 12	E C Masten	22 Nevada Block
Monarch M Co	California	1	50	Oct 31	Dec 9	Dec 30	B R Zantzinger	[302 Montgomery st
Maybelle Con M Co	California	1	15	Oct 31	Dec 5	Dec 26	G A Holden	310 Pine st
Mayflower Gravel M Co	California	1	15	Oct 13	Nov 18	Dec 2	J Morinio	328 Montgomery st
Modock Con M Co	Nevada	6	50	Sept 18	Oct 21	Nov 11	J W Pew	310 Pine st
Moore's Flat B G M Co	California	8	25	Oct 7	Nov 11	Nov 30	J M Buffington	309 California st
Mount Jefferson M & M Co	California	5	05	Oct 17	Nov 25	Dec 17	W Clark	318 Pine st
Mineral Fork M & S Co	Utah	1	02	Oct 31	Dec 7	Dec 30	Otto Metchke	328 Montgomery st
New Basel G M Co	California		05	Sept 24	Nov 4	Nov 18	D F LeGaye	610 Merchant st
North Carsoo S M Co	Nevada	7	15	Sept 27	Oct 30	Nov 16	J W Morgan	318 Pine st
Nevada Gravel M Co	California	4	05	Oct 10	Nov 16	Dec 4	J Pentecost	511 California st
Orion M Co	California	3	75	Sept 5	Nov 5	Nov 20	P Conklin	23 Sansome st
St Louis M Co	Nevada	1	15	Sept 26	Oct 31	Nov 20	W E Dean	2-3 Bush st
Silver Hill M Co	Nevada	4	50	Sept 30	Nov 1	Nov 25	W E Dean	203 Bush st
Summit M Co	California	5	05	Sept 10	Oct 22	Nov 19	J W Clark	318 Pine st
South Standard M Co	California	3	20	Nov 5	Dec 10	Dec 31	O A Sankey	331 Montgomery st
Selby Hill M Co	California	1	10	Sept 10	Oct 30	Nov 16	H A Whiting	211 Sansome st
S F Sulphur M Co	Nevada		10	Sept 8	Oct 15	Nov 12	P P McLaren	310 Pine st
S F Petroleum Co	California	4	30	Oct 5	Nov 12	Dec 5	Wendell Easton	22 Montgomery st
Star King S M Co	Nevada	15	20	Oct 16	Nov 21	Dec 10	H P Bush	27 Merchants' Ex
Tiger M Co	Arizona	2	1 00	Oct 21	Dec 10	Jan 20	W H Lent	327 Pine st

MEETINGS TO BE HELD.

Name of Company.	Location.	Secretary.	Office in S. F.	Meetino.	Date
Concordia G & S M Co		L F Holz	605 Clay st	Annual	Nov 12
Equity M & M Co		R Brown	202 Sansome st	—	Nov 14
Hope Con M & M Co		J Speabt	—	Annual	Nov 12
Harrisburg S M Co	Utah	J W Pew	310 Pine st	Annual	Nov 12
Hamburg M Co	Neavda	D A Jennings	401 California st	Annual	Nov 12
Lodi M Co		W K McGrew	20 Safe Deposit Build	Special	Nov 11
Mortimer M Co		D A Jennings	401 California st	Annual	Nov 12
Napa Con Q M Co	California	W W Parrish	428 Monty'y st	Annual	Nov 13
Peck M Co	Arizona	L B Jewell	—	Annual	Nov 21
Red Hill H M & W Co	California	—	20 Safe Deposit Build	Special	Nov 16
Toquerville M Co	Utah	J W Pew	310 Pine st	Annual	Nov 13

LATEST DIVIDENDS—WITHIN THREE MONTHS

Name of Company.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Bodie G M Co	California	W H Lent	327 Pine st	2 00	Oct 14
Bodie G M Co	California	W M Lent	309 Montgomery st	3 00	Sept 14
Bodie G M Co	California	W M Lent	309 Montgomery st	5 00	Aug 31
Bodie G M Co	California	Wm M Lent	309 Montgomery st	3 00	Aug 14
Californis M Co	Washoe	C P Gordon	Nevada Block	1 00	Aug 15
Excelsior W & M Co	California	G P Thurston	315 California st		Oct 15
Eureka Con M Co	Nevada	W W Traylor	37 Nevada Block	3 00	Sept 20
Eureka Con M Co	Nevada	W W Traylor	37 Nevada Block	3 00	Sept 20
Eureka Con M Co	Nevada	W W Traylor	37 Nevada Block	3 00	Sept 20
Excelsior W & M Co	California	G P Thurston	315 California st	—	Sept 16
Excelsior W & M Co		Geo P Thurstor	315 California st		Aug 13
Independence M Co	Nevada	R H Brown	327 Pine st	25	Sept 20
Independence M Co	Nevada	R H Brown	327 Pine st	25	Aug 20
Indian Queen M & M Co	California	A K Durhrow	69 Nevada Block	25	Oct 11
Independence M Co	Nevada	R H Brown	327 Pine st	25	Oct 21
New York Hill G M Co		F J Herrmann	418 Kearny st	25	Oct 24
New York Hill G & S M Co		F J Herrmann	418 Kearny st	25	Sept 30
Napa Con M Co

Pacific Board—Latest Sales.

Wed'sday A. M., Nov. 6.		10 Union Con	.150
70 Alta	.13½@13¾	50 Wash	.11
200 Atlantic	.1.40	550 Wells-Fargo	.73@70c
20 Best & Belcher	.23½@23¾	10 Yellow Jacket	.23½
155 Bullion	.12½@12¾	AFTERNOON SESSION.	
320 Belcher	.3	20 Alta	.13¾
180 California	.11¾	270 Andes	.1
200 Crown Point	.10	45 Belcher	.3
150 Con Imperial	.1.30	10 Bodie	.18½
190 Con Virginia	.12½@12¾	300 Bullion	.12½@12¾
70 Caledonia	.4.90	100 California	.12½
170 Exchequer	.8½	50 Con Virginia	.13¾
185 Gould & Curry	.17½@17¾	30 Caledonia	.4.90
50 Hale & Nor	.22½	20 Confidence	.11
90 Julia	.5½@5¾	50 Con Imperial	.1.30
80 Justice	.8½	30 Crown Point	.10¼@10
10 Kentuck	.8	90 Exchequer	.9@9½
50 Leviathan	.1	50 Goodshaw	.85c
195 Mexican	.7¼@7½	20 Julia	.5¾
850 Mackey	.1¼@1½	130 Justice	.8½@8
20 New York	.1½	90 Mexican	.7½@7¾
100 N Bonanza	.1.20	50 Mono	.5
200 N Sierra Nevada	.12½c	70 Ophir	.53¾@53½
320 Ophir	.52¾@53	10 Raymond & Ely	.9½
130 Savage	.12½@20	10 Savage	.20½
20 Sierra Nevada	.185	20 Silver Hill	.3
110 Silver Hill	.2.65	800 Tuscarora	.5c
430 Solid Silver	.1	100 Ward	.1.15@1.20
20 Trojan	.55c	30 Yellow Jacket	.23½@24

California Board—Latest Sales.

Wed'sday A. M., Nov. 6.		200 Wash Bon	.20c
120 Atlantic	.1.30	170 Wells-Fargo	.70c
375 Atlanta	.25@45c	20 Yellow Jacket	.23½
80 Alta	.13@13¼	AFTERNOON SESSION.	
50 Alexander	.3½@3¾	150 Andes	.1.10
100 Brilliant	.50@50c	475 Atlanta	.50@50c
90 Belcher	.3½@3¾	40 Alexander	.3½@3¾
80 Best & Belcher	.23¾@23½	90 Alpha	.14@14½
30 Bullion	.12¾@13	80 Alta	.13¾@13¾
40 Caledonia	.4.90	140 Arcenta	.7
70 California	.11½@11¾	95 Belcher	.3@3½
30 Con Virginia	.12½@12¾	75 Bullion	.12½@12¾
70 Crown Point	.9½@9¾	90 Crown Point	.10
40 Chollar	.60	110 Caledonia	.4.90@4.95
100 Con Imperial	.1.35	45 California	.12¾
150 Exchequer	.6½@6¾	55 Con Virginia	.13¾@13½
50 Fairfax	.4½	350 Con Imperial	.1.27½@1.30
300 Globe	.4c	2500 Cosmopolitan	.45c
40 Gould & Curry	.17¼@17½	1215 Coso Con	.18@15c
90 Hale & Norcross	.22½@22¾	150 Endowment	.65c
95 Julia	.5@5½	50 Exchequer	.6¾
20 Justice	.7½	50 Gould & Curry	.17½@17¾
20 Kentuck	.7	45 Hale & Nor	.22½@22¾
500 Lee	.35c	95 Julia	.5@5½
20 Mexican	.70½	130 Justice	.8½@8¾
100 Mackey	.1½	200 Lee	.25c
200 Monumental	.8c	45 Mexican	.70½@70¾
150 Mint	.25c	200 N Sierra Nevada	.11c
50 Ophir	.54½@54	400 Newark	.50@52½c
30 Overman	.25¾@25½	40 Ophir	.55@55½
410 Pictou	.25c	1100 Senator	.30c
40 Savage	.20½@20½	30 Savage	.20½@20½
40 Sierra Nevada	.185@185½	40 Sierra Nevada	.185@185½
100 Trojan	.45c	240 Santiago	.1½
2150 Tiger	.83c	120 Trenton	.2½
1000 Twin Peaks	.7c	450 Tiger	.8.c
1300 Trenton	.2½	100 U Flag	.5o
30 Utah	.38½@38¾	30 Utah	.39½
40 Union	.150@151	40 Union Con	.151
200 Union Flag	.6c	70 Yellow Jacket	.23¾@24¼

Mining Share Market.

While mining operations are displaying activity on a ecale entirely unprecedcnted, the market is rather slow and quict, showing the truth of the maxim that the market is not the mine. Perhaps the election has had something to do with the inactivity of the market. Perhaps it is the lack of news from the mines. However that may he, there has certeinly heeu scercely a ripplo during the last week, and the hrokers are reported as smashing eech other's hats and kicking each other's hooks abont the Board-room, in short, trying to find some amusemont to console them for the want of husiness.

The Skae-Flood compromise ie still an uncertainty. The truth prohahly is that no one knows the truth. No great strikee have heen reported during the week, hut work on new claims, and location-making have not languished. It is noticeahle, and is prohahly due to the approach of winter, that the numher of companies incorporated is considerahly less than has been the rule for months hack. It is also worthy of note, that the locations reported as made, are ahout as usual for Bodie, are rather small for tho Comstock, and are increasing in other districts. This is a very favorable sign. It augure the hirth of a refreshing epirit of independence, and may he construed into an argument in favor of real increase in onr mining resources. If a mine is located in an excited region and in close proximity to one that is ahsorhing the market, it may be suspected that a stock joh is intended, with sympathy to hack it. But a mine started in a comparatively isolated locality, must have merits, if it is expected to succeed. If Tom is a good mine and sells high above par, South Tom, Douhle Tom, Original Tom, may all he viewed with suspicion. Whereas, whether Tom he good or not, Dick may he worthy in its own right, and without suspicion, at lcast attaching to its name.

Crevice Mining Company.—The annual mecting of the stockholders of this company was held at their office, 414 California street, on Monday, the 4th inst. The following gentlemen were elected to serve as directors for the ensuing year: E. D. Wheeler, J. W. Winter, Philip Hinkle, Wm. H. Sharp and John A. Chandler. E. D. Wheeler was elected Presidcnt, and Wm. P. Guminer, Secretary. This mine ie located in Gold Hill mining district, Nevada, east of the Yellow Jacket and Crown and adjoining the Homestead on the south. Work has been resumed and we understand it is the intention of the company to open up their mine as rapidly as possihle.

Land Decision.—The Secretary of the Interior has affirmed the decision of the Commissioner in the case of G. W. Davis vs. James Sinclair, involving the title to land near Humboldt bay, giving the land to Davis on the ground of abandonment by Sinclair.

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

CALIFORNIA.

ALPINE.

The Last Item.—The Alpine *Chronicle* has made its last appearance in Alpine county. We hops soon to welcomo it hailing from Bodie. We understand that work will bs rssumed upon ths Mountain No. 1 minc next spring, and that the tunnel will he steadily pushed until tho ledge is struck. This is considered a good mine; $90,000 bave beeu expended on it. The upper tunuel is 400 feet, and tho lower, 1,200 feet below the croppings, and is 1,864 feet in length. Assays from the upper tunnel, 200 feet helow cropping, showed $120 per ton.

AMADOR.

Enterprise and New Hope.—*Ledger*, Nov. 2: Everything has taken a fresh spurt around tbis letsly decaying camp. A saloon, two or three dwelling houses, and a fsw Chinese shantics, aro all that is left of Enterpriss; hut the handful of scttlers begin to feel the kindlings of a new hope that prospsrous days are yet in store. The Pelican, Maguire, Vaughn, Enterprise, and a lot of other locetions, offer an inviting fiald for capitalists. Near hy is the Cosumnes river, with vast hanks of gold-bearing gravel. A poor man cannot work thess mines profitahly. There are a numher of good gravel mines hsre, which if judiciously worked would surrender from $9 to $10 per day over and ebove expenses. The Red Benk, Diving Bell, Big Bank, R. Summer's & Co.'s claims, aro working with fair results.

Items.—The Empire quartz mine is running a full force of men. The ors-hody is from 6 to 7 feet wide, and will certainly yield over $4 per ton—a sum sufficient to leave a margin of profit. Ths California mine, sold lately hy the Sheriff for $1,412.85, amount of judgment and costs, may soon pay off all debts and resums work. R. Stewart is still at work getting his mill at Volcano in good shape for pounding the gold out of Downs' rock. New buildings are going up, on the strength of the Centennial mine. A San Francisco party has offered to put up hoisting works and a five-stamp mill on the Comet, for one-half interest in the mine. The Chicago, Fort Johns, and California Boy locetions are at a standstill. Rumor says the latter will he started up shortly. The Penusylvania is sinking slowly, while its neighhor, the Gover, improves perceptihly. The Monterichard still suits its owncrs.

BUTTE.

The English Company's Mine.—Cherokee *National:* This mine, situated at Badger's hill, ahout a mile from Cherokee, is the only mine in this vicinity in full working order at present. There is a hank of solid gravel 160 feet in hight. The surfece, which washee freely, is worked off to the depth of 75 feet or more, then powder drifts are run in on the hedrock, and the hottom which is mostly hlue gravel, is loosened hy powder preparatory to washing. Ahout 500 miners' inches of water are used at present, which is conveyed from Camp Ravine to a suhstantial reservoir. Two monitors are used, and from 12 to 15 men are employed. The debris tunnel to the middle Yuha is half a mile in length. John Quick is Superintendeut. The mine is owned hy a company of six or eight, most of whom work in the mine. They are being richly repaid for their lahor and enterprise, as this is one of the hest paying mines on the ridge.

Better than Lumber and Grain.—Oroville *Mercury*, Nov. 1: While the prospect in the lumbering and farming husiness is and has heen auything hut flattering, the same cannot he said of the mines. They have yielded in some instances very well. The largest mine in the county ie owned hy the Spring Valley M. Co. and has exceeded anything hitherto done. The Hendricks claim has paid well. The Powers mine, just across the river, has kept up a continual supply of gold throughout the year. It has yielded nearly douhle the amount of any former year. Other and smaller claims have yielded an average of $40,000 per mouth since the rain ceased to fall in the spring.

CALAVERAS.

Valentine Ownership Settled.—*Chronicle*, Nov. 2: It is apparent that the Valentiue mine tronhles are ahout at an end and that the question of ownership can he considered definitely settled. A late dispatch from Washington says that the Secretary of the Interior has refused the application of W. H. Knight for a recoosideration of the Secretary's decision, made June 13th last, which rejected the claims of Knight and A. Lacy for the Mosquito mine. Since then A. Lacy has made application for the Valentine quartz mine, covering alleged undisputed premises, and this, the Commissioner alleges, must he allowed to stand.

Upper Country Mining Mites.—The Champion mill at Wcst Point is constantly in motion. Additional batteries will soon he set at work. Good rock is heing taken from the mine. The Granite mill has been compelled to shut down for lack of watsr. At Mosquito the Banner is in full and successful operation. Rock continues of that good quality that makes the Banner the "peer" of any mine in the npper country. The work of taking out rock has been commenced at the Rebecca.

EL DORADO.

Rich Strike at Kelsey.—*Mountain Democrat*, Nov. 2: It is very rich. One of the owners is now here, and he is constantly plied with offers of $5 to $50 for pieces of the ore. One man picked up from tbs dump, in small nuggets, over $75 in less than 20 minutes. One nugget was found to-day, almost purs gold, which weighs seven and one-fourth ounces. Several others, nearly as rich, have been taken out since yesterday, besids a large quantity of ore that will probably go up in the hundreds per ton. Altogether, it is the richest striko that has heeu made in the mine, which proves that it is improving with depth. The owners ars so well pleased with their prospect that they are going to put up their mill immediately. Meu are now grading a sits and the stamps will he running in 15 days. The arastra is running night and day, but its capacity is not sufficient to work a titlie of the rich ors that is now coming out.

MONO.

Bodie.—*Standard*, Oct. 30: Ths ledge in the hottom of the Bruce winze looks well, and the ore is fine. The Gildea looks well in hoth drifts, particularly in the south. Ths ledge in the face of the Brucs south drift is looking well and yielding fine ore, and looks even better in raising on it in the south end. The general appearance of the mine is very favorable. The mill is running steadily on the ores and everything is working well.

Mono.—The shaft is being suuk very rapidly, a progress of 34 feet having been made during the past week; total depth, 200 feet. The formation is looking very favorahle. At 250 feet a station will he cut out, and crosscutting commenced east and west. The ground in the bottom is easy working. The new engine, which is of sufficient size and strength to carry the shaft to a depth of 1,500 feet, is working splendidly. Ths hoisting works are nearly completed, want of lumber retarding the work. The tiuher for the guides to ths cages, which is of Oregon pine, is heing reccived.

Humboldt.—Ths water has come in so strong es to hccome unmanageable with the pressnt appliances, and work has been stoppsd until the company shall decide as to the mode of removing it. At the time the water was struck the shaft was down 150 feet. The west crosscut was in a distance of 75 feet from the hottom of the shaft, in a very favorahle formation, indicating the approach of a ledge. The east crosscut was in 45 feet, in a formation of decomposed porphyry and quartz. Superintendent Howard will go to San Francisco in a few deys to ohtain machincry for the purpose of resuming work.

True Ten.—Situated on the western slope of Silver hill, hetween the South Standard and Mono and Cross. The shaft is now down 105 feet. Two ledges have heen encountered, hoth of which look first rate, one dipping to the west and the other to the east. At 100 feet a crosscut has heen started west for the purpose of intersecting the True Ten ledge.

Standard.—The mein shaft has hecn sunk during the week nine feet; total depth, 727 feet. The ground has improved very much since last report. The north drift, 300 level, is in 497 feet; progress during the past week, 17 feet. The south drift on the West Standard ledge is in 60 feet from the crosscut. The ledge is two feet wide of very good ore. Tbe stopes continue to look well.

Rustler.—The shaft is now down 158 feet, and still working with a windlass. New hoisting works will he erected at once. The gallows frame is on the ground, and the engine and machinery is on the way hetween here and Carson. The formation is exceedingly good, heing of porphyry with occasional seams of quartz. The location of this mine, adjoining the Bodie, makes it one of the most promising properties in the district.

Syndicate.—The west crosscut from the end of the tunnel, which is 1,550 feet long, is in 85 feet. The rock is hard, showing occasional small strata of quartz. From the east crosscut, which is in ahout 200 feet from the main tunnel, a drift is heing run south in vein formation which looks very favorahle. The mill is running steadily on ore from the Bodie.

Sitting Bull.—The shaft is down 152 feet; progress during the week, 10 feet. The ledge continues ahout the same width and quality of ore as at last report, heing ahout two and one-half feet wide and assaying from $60 to $80 per ton. A new vertical shaft has heen commenced which will intersect the vein, according to survey, at a depth of ahout 117 feet.

Chieftain.—Vein in the winze at the bottom looks as well as usual. Was ohliged to discontinue work in winze, and resumed work on the 85 level of main shaft to make connection for air. Everything working well.

Exelsior.—Making preparations to commence work on this mine, which adjoins the Richer on the north, and will sink main shaft on the same.

South Bodie.—Progress made during past week 22 feet; total depth in main shaft 222 feet. Ground in the bottom getting harder, with quartz streaks. Machinery working well, and all about the mine in perfsct order.

Republic Con.—Crosscut is heing run on the 100 level to interseot the ledge. It is now in 23 feet from the shaft. It will be remembered that assays from ore from near the surface in this mine went $64 per ton.

Orient.—On 100 level a crosscut has been started east and west to open up the veins out in the shaft while sinking.

Bodie Tunnel.—Now in 550 feet. A new contract has heen let on the tunnel to run 100 fset further. Faes is in porphyry.

Charter Oak.—Still sinking in passihle ground for ledge. Will sink 250 fset hefore crosscutting, at which point should cut ledge of the Con. Pacific Co.

Tioga.—Ths new engins is in position. The hoisting works are nearly enclosed.

Bechtel.—Ths east crosscut, on the 700 level, is in 118 feet. The west crosscut is in 114 feet. The south drift has attained a length of 96 feet. There is no particular change to note in the mine.

Keystone.—Work on this claim, which adjoins the Nooaday on tho north, is ahout to he resumed.

Leo.—Still sinking in the shaft, and making good progrsss. The formation is very promising.

Red Cloud Con.—Ths main east crosscut has now attained a total length of 384 feet, and the west crosscut from ths north drift 86 feet. Ground is heing graded for the new hoisting works.

California.—The shaft is down 132 feet; crosscutting cast and west will he commenced in a few days.

Ledges.—The Maryland hes a fine 4-foot vein. The McClinton has a ledge at lcast 2 feet wide, good milling ore. Tne Universlty has a 3-foot ledge. A Bulwer ledge is 2½ feet wide of very rich oro. The Noonday has a 4½-foot ledge of $30 to $40 ore. A Summit ledge is 3 feet wids and looks well. At 86 feet in the White Cloud shaft a stratum 5 inches wide, prospecting slightly in gold, was struck. In the east drift of the Champion minc a ledge 14 inches in width hes heen struck.

New Mining District.—Considerable sxcitement was produced among our prospectors a few deys ago hy the report that some very rich discoveries had heen made ahout five or six miles from Bodie, in the neighborhood of Sunshine, or a short distance west of that station. Some rock was brought into town said to have been taken from croppings at Table mountain, which was covsred with free gold. Other spscimens did not look so well. A considerable number of people have hean out to take a look at the locality, and many more are riding or walking out eech day. We hear that a mining district will he organized. In the early days of Aurora a large amount of rich "float" was found in the neighhorhood of the new find, and many houlders were hroken to pieces and taken to that place and milled, and yielded a hendsome profit to the finder. No permanent ledge has ever heen found, however, although the Real del Monte Co. offered a rich reward to the person who should make the discovery and will it to them. We sincerely hope that the ledge hes at last heen fonnd. It would he hut another link in the chain of evidence to show that this is one of the greatest mineral helts on the Pacific coast, whose wealth may in time rivel thet of the famous Comstock lode of our sister State of Nevada.

NEVADA.

Items.—Messrs. E. Derhec, E. M. Preston, John Pattison, John T. Morgan, and others from this city have located the ridge from Omega to Greenhorn creek a distance of about one and one-helf miles. It is supposed that the old Alphe and Omega leed run down through this ridge. Tbe ledge all along the lower levels of the Pittsburg, averages ahout 18 iuches in width. Between the fifth and seventh levels the rock is very rich. The outlook for the mining interest of Willows valley is very flattering. The Deadwood miue, J. J. Lyons, Superintendent, has recently cleaned up including yield of the sulphurets, over $5,000, an average product of over $40 per ton. The Excelsior W. & M. Co., are ready for the rains. The South Yuha Tunnel Co., running under the South Yuha at Hoyt's old crossing, are pushing energetically ahead. Mr. Austin Walrath has purchased the New England quartz mine for $4,770. From the breast of the Derbec, 21 pounds of gravel washed out $55.71. King's hill ore has latcly yielded $85 per ton in a clean-up at the Orleans mill.

Rough and Ready.—Nevada *Transcript*. Nov. 1: Mr. Scrihener, one of the locators of the Iron Clad mine, which is now being worked with splendid results, has just discovered a ledge ahout one mile southwest of Rough aud Ready, that is believed to he richer in gold than even the Iron Clad. John Fippin, a pioneer quartz miner of Rough and Ready district, and Mr. Muchmore, another experienced gold-digger, are husily at work just ahove Randolph Flat. They sunk a shaft 50 feet deep, striking a ledge that is good-sized and valuahle. Now they are running a drain tunnel into the side hill and to the hottom of the shaft, a distance of 75 feet. This work has heen done within the past six months. They will commence to take out rock before long.

Ridge Items.—The reports from the Manzanita mine are flattering to the immense richness of the gravel deposits of the ridge. The company sent down $36,000 one day last week, the result of a partial clean-up. It is expected that the present clean-up will yield about $70,000. A small force of men is still at work in the North Fork mine, keeping the immense tunnel, which is ahout 4,400 feet long, in good shape. The company has levied another assessment of seven dollars per share on the original stock, or seventy cents on the new. Present stockholders propose to stand by the mine and

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Vagrancy and Crime.

We have lately expressed, in as forcible words as we could command, our condemnation of men who endeavor by legal means to rob the helpless and those who admiuister high trusts for their own aggrandizemeut and not for the public good. The glaring evils which have heeu disclosed in the deeds of those who only lately beld the people's esteem, are warnings against pinniug one's faith too freely upon anyone until his habits and methods are clearly understood. Some events wbich have falleu under our observation during tbe last week lead us to remark tbe evil whicb is being done to society by the lower grade of public enemies.

"Judge," said a rural justice of the peace, to a lawyer of high standing, in our hearing; "Judge, why can we not under the vagrant act of this State rid ourselves of the intolerable nuisance of tramps? It has got so now tbat a man is afraid to leave his home even in the daytime, for fear that his family will be robbed, insulted, or worse, hy tbese low-lived tramps who are coming in groups to our houses at all hours of the day. I have thought they might almost all of them be arrested and imprisoned under the existing vagrant act."

"They could he," replied the Judge, "and they ougbt to be. All you bave to do is to establisb tbe fact that they are without visible means of support or are doing nothing to earn a livslihood, and tbey can he committed under the vagrant article in tbe code. It is easy to establish this fact, for most of them will admit that tbey are doiug nothing, but gaining their living as common vagrants. I believe the evil could he materially reduced if the justices of the peacs throughout the Stato should enforce this provision of the eode against those who are a hurden upon honest workers and in fact thieves, incendiaries and criminals of the worst class. Any justice who will begin this work will do a great service to his neighhorhood."

This conversation which we overheard on the oars the other day, was called forth by the incendiary fires, house breakings and incrcasing number of tramps which are observed in the Alameda valley, and we doubt not in other parts of tbe State as well. People living in the country only kuow what a hurden, a meuace and a positive evil are the gangs of outcasts who tread our highways and gain food from our kitchens while tbey plot and execute tbeir abominahls crimes and outrages. The question is, what shall be done? It is well known that but few of these wanderers will work if work is held out to them. If they do a joh it is hecause they canuot get food without it, and as soon as the meal is obtained they take to the road again. What can he dons witb such men except to repress them by legal meaus. If the existing provisions of the cods covers such cases it should hy all means be enforced. For the time heing the State could better afford to hoard the wbole army of tramps in the jails and prisous thau to have them preying upon the community, making the rural housewife's life a continual fear, hurning harns, warehouses and stacks, destroying and stealing property enough in a night to pay the jail expenses for a month. If it he that the code affords immediate relief, there should be concerted action among all ranchers to bring tbe vagrants before a justice of tbe peace aud have them placed wbere they cau do no harm before their evil deeds grow greater. This point should he looked into and proper actiou taken by the members of every country commnnity.

Altbough imprisonment under the code may serve a present purpose and exert a repressing effect upon the floating element wbich now endangers rural comfort and prosperity, it is not so good as somethiug wbich can be had hereafter if tbe people are determined npon it. There cau be no douht that it is now altogether too easy to get a livelihood hy tramping. It is so easy that the life bas a fasciuation for hundreds of depraved, idle and ambitionless individuals. There is such indolence and ease about it that an occasional pinch of hunger is no obstaole to its pursuit. The true theory to meet tbe difficulty is to enforce lahor and turn its products to the puhlic accouut in compensation for the expense which the puhlic has to incur for corrective measures. Other States have systems for forcing vagrants to earn tbeir liviug, and they are said to exert most henefi cial effects. The enactment of such laws in this State has been urged by some of our interior exchanges, who know the extent of the evil as we, from our residence in the country, know it. As the evil seems to be growing, as the evil life of the tramp seems to make him bolder each year and more ready to trausact robbery and outrage together with his beggary, it is plain that a comprehensive and effective act for forcing the vagraut to labor for his support on puhlic enterprises must be adopted in the future as a measure of public safety. Many months will elapse before we can have a legislature to enact a law of tbis kind, and hefore it convenes the subject should he fully discussed in the light of all the experience of the older commonwealths. In such discuesion we are ready to take an active part. But what shall be done now? It will not do to let the burning and robhery go on for another year. It is not wiee to let a desperate class have free couree over our property, waiting until tho wrongs are done and then pursuing individuals in the hope of thrusting them in State'e prison after the fruits of our toil are destroyed. What is the immediate remedy? Is it in the enforcement of the code as tbe Judge suggested? If so, what community will act iu its own defence and lead the way for other tramp-ridden communities to follow?—*Pacific Rural Press.*

The Valenciana Mine, Arizona.

We have had an opportunity of examining a report made hy Henry A. Bigelow, of Prescott, Arizona, to the Prssident of the California and Arizona Mining and Real Estate Agency, on the Valenciana mins, in Black Canyon district, Yavapai county, Arizona. We make euch extracts from the report as may he of interest. The mine is about 40 miles soutbeast of Prescott and 60 miles north of Pbœnix, near the etage road between the two towns. The vein is in the great gold-bearing slate belt which traverses tbe country east of Prescott and the Sierra Prieta and Bradshaw ranges of mountains, in which are many clusters of gold veins known as the Black Hill mines, the Bigbug mines, the Black Canyon (in which the Valenciana is the most conspicuous) and the New River and Cave Creek mines.

The Black Canyon mines were first disoovered in 1864 by Mexicans, who wsre working placers in Turkey creek, on which Black Canyon is situated, and they at once huilt arastras and worked the mine for two years, during which time they extracted, according to Peralta's hooks, over $35,000 in gold.

Three times the Apaches stole from the Peralta party all tbeir horses aud mules and barassed tbe miners so much that they ahandoned the mine, which tben laid unworked till 1870, wben a party of Amsricans worked it for several montbs, taking out about $11,000 by arastras until the silver excitement in the Bradshaw mountains lured them away. In the fall of 1877, J. R. Deroche sorted over the ore left on dump by previous workers as worthless and worked 10 tons which paid $46 per ton. During the prcsent year M. L. Peralta & Co. worked three tons from tbe mine which paid in the Phœnix mill a trifle ovsr $100 per ton—selected ore from the hottom of tbe old workings.

The ledge runs nearly north and soutb and crops out boldly above the surfaco for several buudred feet, where the principal work is done, showing at intervals for 3,000 feet. Tbe main shaft is worked down in the old Mexican etyle by benches to about 90 or 100 feet, and is not timbercd, not being in a safe condition for work. The main opening is made wbere the vein is 20 feet thick and the quartz has heen taken out from wall to wall and 30 feet along the vein. South of the shaft is a good location for running a tunuel in ou the vein which would underrun the old workings and admit of stoping out all the ore to the surface. The quantity of ore in sight is enormous. Second-class ore on dump is estimated at 250 tons, which will pay from $12 to $15 per ton. Tbe quartz in chimney in shaft for ahout 200 feet in length on surface will mill $20. Walls of vein are soft slate. Vein runs down nearly perpendicular and shows every indication of permanency. Quartz is of a grayish white in which gold shows plainly; through richest portiou are copper staine in which not so much gold is visible. A good site for a mill cau be had for the choosing on Turkey creek anywhere from a mile or two from the mine, from whicli to the creek the bauling would he down hill.

At the mins there is no timber. All along the creek, however, is a good growth of eottonwood, willow and ash suitahle for firewood. A heavy growth of pine timber crosses tbe Bradsbaw mountains six miles west of the mine. Lumber and sawed timhers can be bougbt at mills in Prescott for $30 per tbousand.

The Nigger, Browu, Gillespie, Swilliug, Mason and otber gold mines, which have been worked hy arastras in years past, are near tbe Valenciana aud could furnish ore to any mill erected on Turkey creek that would work custom ore. Mr. Bigelow, in conclusion, states that all of the facilities of access and working eousidered, he regards the Valenciana mine as one of the most desirable gold mines yet discovered in Yavapai county.

The Colorado Chloride Find.

A prospector writing to the *Register Call*, describes the Silver Cliff depoeite that are now creating such excitement in Colorado, and are drawiug men from camps heretofore thought very rich. Throughout tbc districts are presented the straugest observable appearances of volcanic upheaval and formation. Onsidian exists in large bodies, hoth iu the porphyry and granite formation, and in tbe most irregular forms. There is an abundance of trap rock occupying a horizontal and shelvery poeition in disconnected flakes. It is also frequently found standing on its cdge, like elate etrata forming dykee intsrmediatc hetween the mineral-bearing agatized quartzite. I would say that from the present workings, together with its peculiar characteristic features, one would be lead to conclude that there are other large deposits not yet found. To me it is a perfect mystery. To say the least, it is marvelous. I cau only compare it to a very extensive dump pile, and I do not believe I could give a better or more comprehensive illustration. Take all dump piles in Gilpin county, place tbem so as to cover an area of 20 feet in depth—for a mine has not yet attained a greater depth. Now tben, mix a vast quantity of dark paint, tben more paint of a greenisb tint, and after a partial desiccation and stiffening of tbe latter having taken place, pour it altogether with tbe former, over and into the prodigious dump pile. The former color would tben represent the manganesc, the latter, the chloride of silver. The natural result would be the filling up of the cavities and interstices of the dump with the composition.

The Mines and the Courts.

Want of Diligence.

In the case of Courts vs. Moore's Flat Blue Gravel M. Co. suit was brought hy plaintiff to vitiate contract, and recover possession of mining ground. A contract was entered into hetween plaintiff and defendant tbree yeare ago, wherehy defendant contracted to sink a sbaft and prospect mining ground of plaintiff. A shaft was sunk until water was reached, and pumping machinery erected. Tben a tunnel was run to drain the mine, and after a few months labor uotbing more was done. The contract is no nearer being completed now than it was two years ago. Tbe plaintiff proves, that due diligence has not heen used; that the bsdrock might been reached by sinkiug the shaft some 435 feet and that the same might have beeu accomplished in a year. Judgment in favor of the plaintiff as prayed for.—*Nevada City Transcript.*

Diversion of Water Right.

Grant and Cooms vs. Mitchel et als. This suit was brought to prevent diversion of water right by defendant and to recover damages for water already diverted. The plaintiffs own a certain piecc of miniug ground in Rough and Ready township, and in running a tunnel for the purpose of mining this ground a spring of water was struck which flowed out of tbe tunnel. The defendant owned a piece of land helow this mining claim over which thc water flowed. Still further down the ravine is a parcel of land owned by plaiutiff, on which they desire to utilize the water. The complaint alleges that the defendant diverted the water from its natural channel down tbe dry ravine for their own use and advantage. Tbis allegatiou is sustainsd hy witnesses. Court gave judgment for plaintiff, with damages at five dollars.—*Nevada City Transcript.*

Reconsideration Denied.

The Acting Secretary has refnsed tbe application for a reconsideration of ths Department's decision of last June, rejecting the claim of Knight and Lacey for tbe Mosquito mine. Lacey is, however, left in possession pending an action on his application for a patent for the same lode under a different mine name.

Irregularly Sold.

W. J. Anderson has commenced three actions in the Twenty-third District Court to reeover from the Vermont Con. M. Co., 60,000 shares of its capital stock, which he claims was irregularly sold for delinquent assessments.

Suit to Prevent Sale.

M. F. Tarpey has brought suit in the Nineteenth District Court against Martin Tarpey and J. W. Brown, to enjoin them from disposing of 8,000 shares of stock of the Daney G. and S. M. Co., held by them as plaintiff's agent. Plaintiff alleges that the sale will cause him a loss of $12,000. A temporary restraining order has heen issued.

Blasting Gelantine—A New Explosive.—A new explosive agent, discovered by M. Nobel, and pronounced by the Austrian Militar-Comite to be bighly suitable for military purposes is likely also to rise bigh in favor for hlasting purposes, and, if all that is told about it he true, to send dynamite entirely in the shade. This substance, called in Englaud "hlasting gelatine," is formed hy dissolving collodion cotton in nitroglycerine in the proportion of 10% of the former to 90% of the latter. The result of the solution is a gelatinous, elastic, transpareut, pale-yellow substance, having a density of 1.6, and the consistence of a stiff jelly. The new explosive is in itself much less easily affected by blows than ordinary kieselgubr-dynamite, but it may he rendered far more insensihle to mechanical impulse by an admixture of a small proportiou (from 4% to 10%) of camphor. Experiments have been carried out, tbe result of which is to prove that the new explosive possesses, weight for weight, 25%, and hulk for bulk, 40% more explosive power than ordinary dynamite. With moist gun-cotton, gelatine compares nearly as favorably. The temperature at whicb it explodes is ahout 204° C., when heated geutly, and 240° C. when heated suddenly. The addition of camphor, however, seems to raise this point to 300° C. Water has little or no effect upou this suhstauce; it may he burned in considerable quantities without any fear of explosiou, and it is as stable and durahle as either dynamite or gun-cotton. The cost of the production of the new article is half as much again as kieselguhr-dynamite, and ahout the same as that of compressed gun-cotton. We bear that a factory has been, or is being, erected in Scotland for the manufacture of the hlasting gelatine for blasting purposes, eo that we are soon likely to hear more of this curioue explosive agent.

The Engineer.

The French and Our Isthmus Canal.

The last meeting of the International Congress of Commercial Geography was recently held at the Trocadero, in Paris, when speecbes were made hy most of the foreign delegates. The most important subject discussed, and the one which claimed tbe principal attention of all, was tbe ship canal across the American Isthmus. The people of tbe United States will he glad to learn of tbe progress that bas been made towards the accomplishmeut of thie work. At the opening meeting, Mr. Ferdinand de Lesseps declared himself entirely in favor of it, aud said that one reason for his opinion was that he was entirely opposed to monopolies. He liked to see competition and many routes of eommunication opened. He was of the opinion that a canal witbout locks was absolutely needed for ship navigation, but he did not helieve that a tunnel would be objectionable. The two routes surveyed hy Lieut. Wyse, and both pronounced as feasible, need tunnels of only 14 and 7 kilometers respectively, wbile the entire length of the canal will he only from 50 to 70 kilometers. Tbe Suez canal, he said, was 165 kilometers long, and had cost 495,000,000 of francs. Statistics shows tbat at the present time it is paying handsome dividends, and its stock is far above par. He estimated the expense of the American canal at something like 300,000,000 of francs, and thought that a capital of 500,000,000 would amply cover all expenscs. He also said that Mr. Levallery, who had been in charge of the work of tbe Suez canal, had told bim that it would be easier to make a canal such as this than one for railroad purposes, on account of the greater room for working.

Mr. Nathan Appleton spoke most etrongly in favor of the canal, in behalf of the United States. He was convinced tbat wben Mr. de Lesscps rang tbe bell, and gave tbe word to say that the explorations had heen sufficiently made, and tbat they were ready to decide upou the routo, delegates from all natione would come to the summons, and that wben the liue was decided npon, and Mr. de Lesseps would start the work of execution, and form the company, tbe capital of $100,000,000, or even twice this sum, would be easily secured. He hoped ths company would be organized in Frauce, with its office alongside of thoso of the Suez canal, with Mr. de Lesseps as President, and that tbere would be a hrauch office in New York. He felt a just pride in what France and the United States had thus far done towards it, and trusted they would continue to work together in the future.

New Railway in Portugal.—One of tbo most important of the new roads about to be built in Europe is the Beira Alta railway, a Portuguese liue, which, forming a junction with tbe northeru railway at Pampilhosa, will cross the Busacs range, pass tbrough the valley of the Mondega to Guarda, and terminate at Villar Formosa, on the Spanish frontier. The total length of the road will be only 125 miles, but the line will be important hecause it will open up a fertile and well-populated district, at pressnt without railway facilities, and also forming the missing link of the direct or iuternational route between Lisbon and Paris by the nortb of Spain. The present railway communication between tbe two capitals is 1,449 miles in length, while hy tbe Beira Alta line it will be only 1,171 miles, or 273 milss less. The contract for its constructiou and working has heen given to the Societe Financiere, of Paris, which binds itself to opeu the road in four years. The Portuguese government grants a cash subsidy of $41,125 per mile, the total estimated cost being $58,595 per mile. For this and other aid in the way of lands and buildings, and exemption from duties and imposts, it will exact a "transit duty of 5% on fares for freights and passengers."

Engineering Poetry.—At a celebration in honor of the completion of the first ten miles of track on the St. Josepb & DeMoinee narrow gauge road, Mr. J. H. Pickering, Superintendent of construction, sang the praise of narrow gauge in a poem, from wbich this is an extract:

> "What! Send an elephaut for a pony's load,
> To eat his head off on a broad gauge road?
> That day is past;—one-third the cost will do.
> To equip a narrow gauge and put it through,
> One-third their charge will yield big dividends,
> And make all men along the line our friends.
>
> "Now what we need is lower transportation,
> To make all business thrive throughout the nation;
> As sources of all wealth comes from production,
> Farmers cannot stand this broad guage suction."

Gauges.—The *Railroad Age* gives the following notes on width of gauges: India has now 7,599 milee of railroad, all of unusual gauges, as follows: 5,612⅜ milee of 5 ft. 6 inchee; 27½ miles of 4 ft.; 1,638⅜ miles of the meter gauge, (3.28 ft.); and 20 miles of 2 ft. 6 inches. Doubtless the advocates of each particular measure are ready to defend it against all others and prove tbat it should be the standard gauge. But henighted India is conaidcrahly hchind our own country in variety of gauge. We can boast the following handsome assortment of widths, several of which, includiug our principal etandard, are wholly unknowu in that unhappy land: 6 ft.; 5 ft. 6 inches; 5 ft.; 4 ft. 9 inches; 4 ft. 8½ inches; 4 ft. 8½ inches 3 ft. 6 inchee; 3 ft. 4 inches; 3 ft. and 2 ft.

Progress of East River Bridge.

The last wire of ths last cable of tbe East River bridge is in place. Six million eight hundred thousand pounds of wire now hang betweeu the towers and anchorage, nnd about 24,000 wires are bound up in the 76 strands that form tbe four great cables. The estimate of Engineer Roebling was that it would take no less than two and a half or three ysars to maks the main cables, but the workmen have been so expert that the whole process of cnble making has not lasted two yenrs. The cables are made about five or six feet above tho position they will occupy after all the settliug has taken place.

To protect ths cables they must bs continuously wrapped with charcoal iron wire, bound about them with the prucision of thread about n spool, and then this exterior must be saturated with nil, thick enough to produce, on dryiug, a viscid gum, and thsn painted with a thick coat of white lead. This preparation will be moisturo proof. This week the last two strands will be lowered into position, and then the 12 strands of each cable, now swinging loose, will be brought about ths seven cables, already bound together as a core, and put into wooden squeezers to be held for wrapping.

The interesting work of wrapping the cables has been begun. The cables nre held in position by wooden clamps, and wrapped from the towers towards ths center of tbe river and towards tbe nnchorages. Sixteen wrapping machines are to be employed. The wrapping machine is a reel arranged to carry a coil of wire, nnd it has handles like a pilot's wheel. An iron cylinder, made in halves so as to fit close about the cable, is worked around by n handle. The wire is first fastened to the cable, and this machine is moved along, slowly winding the wire about tbe cable as though it were a spool of cotton thread. The wrapping will take tbree months.

Russian Enoineers in Afghanistan.—Now that a great war is probable in Asin an engineering enterprise whicb Russin has in hand is of present interest: If different rumors, founded, it would seem, on a common basis, cnn be trnsted, the oft-mentioned and much-discussed scheme of a railway to tbc Russiou possessions in Turkestan has once more been brought forward. A Reuter's telegram from St. Petersburg and tbe St. Petersburg correspondent of the *Independence Belge*, agree in connecting witb this scheme tbe mission of Generul Abramoff to Cabul, and both assert that the Russian government seeks permission from Shere Ali to continue the line np to and beyond the limits of Afghanistnn. Here, bowever, the two authorities part company; one maintaining that the railway intended to connect Russia witb Afgbnnistan is to run from the Rnssian possessions in Turkestan to Cabul; the other that it is to start from the shores of the Caspian sea and go to Herat. The Russian government has resolved to build the long-projected railway througb Turkestan, and General Abramoff is commissioned to obtain tbe permissiou of Shere Ali to "extend the line as far as Cahul." The projuct of a railway from Turkestan to Cabul is one whicb, ns soon as tbe mountainous frontier of Afgbanistan was reached, would present engineering difficulties of a very formidable character indeed. According to Reuter's ngent at St. Petersburg, the Turkestan railway is to go to Herat by a route which a Russian army approaching Herat would undouhtedly take. It is possible, of couree, that the Russian government may have conceived the grandiose plan of huilding more than one railway in Turkestan, or rather one railway with eeveral branches. But if one line only is to be made it will probably, as Reuter's agent suggests, run from tbe Caspian sea to Herat. There seems, in any case, to be seriously a question of a railway for bringing the Russians into Afghanistan.

Laying Out Curves.—A simple instrument has been devised hy E. R. Dale, of England, for measuring tbc diameters of circular curves. It consists of a tube bearing at its lower end a fork, having in its center a feeler pressed ngainst the curve to be measured by a spring contained in the tube. The upper end of the feeler is fitted with a emall rack, genring into a pinion of the spindle of n hand the motion of which indicates on a graduated disk tbe diameter of the circle of which the arc is a part. In order to measure with tbe instrument the central feeler is pushed inwnrd until it, as well as tbe ends of the fork touch the arc to be measured.

The Northern Pacific and the Yellowstone.—The last officinl report says: Explorntious are being made looking to the exteneion of the Pacific Division into the vnlley of the Columbia over the Cascade mountains. Examination has been made of the country west of Bismnrck, and an exteneion of 205 milee to the Yellowstone river is recommended. A branch to Pembina, to sccure the Manitoba traffic, is recommended also; tbe lengtb would be 150 miles tbrough a good country.

Standing Room for the Human Race.—An Eugbshman witb a hobby has discovered tbat there is room for all creation on tbe Isle of Wight. According to the most recent estimate the population of the eartb ie about 1,440,000,000. Two square feet of standing room being allotted to eacb individual, tbie number would cover 66,115 acres; and the area of tbe island is 93,341 acres.

Useful Information.

Engraving by Electricity.—A new invention, which bids fair to revolutionize the msthoda at present employed for the reproduction of works of art, bas just been given to the world from Philadelphia. It is called the "Autoplate," and tho inventor is Mr. Louis Flusson, a gentleman of French birth. By his discovery the negative of a photograph, through the agency of cbemicals, light and electricity, can hs transferred to copper or brass plates in such n manner as to give the platc tbc appearance of having heen executed by an expert engraver. In copying works of art every line, every brush mark is produced with startling fidelity, wbils in landscapes every leaf and blade of grass can be seen exactly as nature made and where nature placed it. In portraiture from life the very texture of the skin and the expression is given with a faithfulness which would be impossible to tbe steadiest hand and sharpest eye. In printing from tbess plntes no chemical ink is used, plain printers' ink being all that is required. By this invention the reproduction of a work of art which would occupy an engraver several months, nnd cost in the neighborhood of $300, can be executed with superior faithfulness in two weeks, at an expense of $50 only.

Leatheroid.—The *American Manufacturer* says tbnt a new chemical product hns just been brought out at Wheeling, West Virginia, uuder the name of leatheroid. This name was selected by its inventors on account of its resemblauce to leather. It is made of two varieties, one being soft and flexible like leather, the other bard like gutta-percha or vulcanized rubbor, resembling those materials in its density, strength and hardness, and like tbem is susceptible of a very high polish. The leatberoid is manufactured from vegetable fiber by a chemical process wbich is patented. It is made in sheets of 12 feet in length by 4 feet in width, and can be made of any desired thickness, from one-hundredth of an inch to one inch. The leatheroid has been tboroughly tested as a substitute for leatber in tbe manufacture of trunks and wasbers, for gutta-percha in combs, napkin riugs, etc., for tin and iron in roving cans and bobbin boxes for cotton mills, for whalebone in whips, for copper in shoe tips, for wood in chair seats, and also used in the mnnufacture of friction pulleys for mnchinery cnms, and in fact tbere seems to be no end to the uses to wbicb it can be applied. Leatheroid can be made of any color, though it is usually made brick red to imitate leather or vulcanized rubber; black, which is used in the manufacture of combs nnd canes; and walnut, which is used in chair seats

Brick Making by Steam.—According to the *Iron Age* there are two brick yarde in tbe country, one at Washington and the otber at Baltimore, witb macbinery for making bricks by steam, which is stated to be very rapid and economical in operation. Eacb of theee establiehments is said to bave a capacity of over 200,000 bricks per day. The clay, after it has been passed through iron rolls, wbich pulverize the small stones and rejects the large ones, ie carried to the top of tbe building and then falls into the dieintegrator, which mnkee 450 revolutions per minnte. Here it ie reduced to a fine powder and pnsses off into a pipe, where, by the addition of steam, it is moistened enough to give to its particles tbe proper cohesiveness. Tbis pipe feede a wheel furnisbed with molde, which, in the two revolutions it makes each minute, turn out 232 bricks. As the wheel revolves tbe bricks drop out on to an endless helt wbich cnries them to a shed eome 50 feet away, wbere tbey are loaded by band upon small cars, whicb are rolled over into drying ovens and allowed to dry there during five hours, the dampness in these ovens being constantly withdrawn by an exhaust fan. After this they are stacked in kilns and fired.

Composition of Pewter.—C. Himly, of tbe University of Kiel, hns published the following nnalyeee of pewter, together with determinations of the specific gravity and the melting point of the alloys examined. The samples contained:

Quicksilver	5.540	4.000	....	....
Copper	3.913	4 070	3 913	8.545
Lead	0.099	0.050	0.091	0.751
Iron	0.012	0.072	1.000	0.140
Tin	90.326	91.209	89.848	83.999
Antimony	....	....	5.070	6.575
Sulphur	....	....	0.078	....
Specific gravity	7.454	7.392	7.292	7.404
Melting point	501°F	583	660	696

Rusting Rails. — Interesting observations have been made recently on the Cologne-Minden Railroad, Prussin, on the rusting of iron raile. A pile of raile of odd lengtbe were laid on sleepers over a hed of gravel early in 1870, and remained undisturbed until the fall of 1877, there being no use for them. It was theu found tbat they were covered with n layer of rust .12-inch thick, wbicb hnd to be removed by striking tbe rail with a hammer. Tbe cleaned rail weighed only 398.2 lbs., while its original weigbt was 419.1 lbs., sbowing that 5% of the iron hnd been destroyed by ruet which covered the rail quite uniformly. Tbis confirms the observation often made that rnils etacked awny are much more liable to rust tban those laid down in a track.

Fluxes for Alloys.—The beet flux for alloys of copper and tin is resin. It ebould be added when tbe metals are almost melted. Another good flux is sal-ammonia. In using this flux tbe copper is usually melted first and the flux added. Wben it is in tbe musby stats, after the flux has been put in, tbe zinc and tin ars then added. A good flux for old brass is common resin soap. It sbould be added in small lumps and stirred down into the metal when in the molteu state. In forming alloys of different metals the molten metals should always be kept uuder a covering of black glass or pulverized charcoal to prevent oxidation.

What Makes a Car Load.—This question is thus nswered by the *Butter, Cheese and Egg Reporter:* Nominally, an American car load is 20,000 pounds. It is also 70 barrels of salt, 70 of lims, 90 of flour, 70 of whisky, 200 sacks of flour, 6 cords of soft wood, 15 or 20 head of cattle, 50 or 60 head of hogs, 80 to 100 head of sheep, 6,000 feet of solid boards, 340 bushels of wheat, 400 of corn, 680 of oats, 400 of barley, 360 of flax-seed, 360 of apples, 430 of Irish potatoes, 300 of swest potatoes, 1,000 bushels of bran, 130 to 190 barrels of eggs and 15,000 to 26,000 pounds of hutter.

Babbit Anti-Friction Metal.—This metal is made of 1 part copper, 3 parts tin, 2 parts autimony and 3 parts more tin are added after the composition is in the molten state. This composition is called hardening, and when the metal is used for filling boxes, 2 parts tin are used to 1 of hardening. The above alloy constitutes the best anti-attrition metal in use, hut on account of its expenss it is very little used.

Good Health.

The Germ Theory and its Lessons.

The germ tbeory of disease was tbe subject of an exbaustive lecture in Philadelpbia, by Prof. James G. Richardson, a microscopist of high standing. Wbether the germ theory be finally proved or not bis statements are interesting nnd the practical deductions from tbe doctrine are of great sanitary importance. The following is a summary of wbat tbe Professor said: "The germ theory professss to account for tbe phenomena of smallpox, yellow fever, typboid fever, relapsing fever, measles, scarletina, diphtherin, chicken-pox, erysipelas, etc., by attributing tbem to the more or less mechanical irritation and other dieturbances ect up by masees of epores or mycelial threads, developing in the blood and in the nffected tissues. The lecturer did not think tbat it was proved that the minute vegetable orgnnizntions discovered in connection with contagious dieeases were tbe causes, but expressed tbe belief tbat it would be proved at no dietant day. He reviewed tbe chief evidence in favor of the germ theory, and quoted from eeveral eminent foreign pathologists wbo bave lately advoented this doctrine, nnd paid a tribute to Prof. Tyndall for tbe good work he bas accomplished in awakening popular attention to the connectiou between dust (which consists largely of germs) and disease. Tbe lecturer thought that grent benefit would result from its being underetood by every man, woman and child tbnt tbe contagion of smallpox, yellow fever, typboid fevcr, scarlet fever, measles, diphtheria, cholera, etc., is probably composed of exceedingly minute seeds, called spores—so emall that a maes the diameter of one of the dots or periods (.) upon a printed page might contain over fifty millions. Each one of these fifty million of seeds is capable, under fnvorable circumstnnces, of reproducing its kind witb almost inconceivable rapidity. So tbat, euppoeing, for example, tbe zygodesimus of Prof. Letzerich is really the morbific agent causing diphtheria, a particle of tbe grayieb false membrane which appears in the throate of pntients ill with this complaint, although no bigger than the dot mentioned, might contain sepnrate eeeds enough to infect every inhabitant of the whole continent of North America. The obvious deductions from tbese facts strengtben the urgent recommendatione of eanitarians tbat every effort should be made to prevent tbese mohific germe from being let loose, and wben tbey have made their escape to destroy all epores likely to come in contact with unprotected persons. Eacb individual affected witb smnllpox or} any other of the diseases mentioned is, according to this tbeory, to be looked upon as a eort of hot-bed or forcing-house for the eeeds or sporee of tbnt malady. The lecturer said that one of the most miscbievous popular errors, which a general acceptance of the germ theory would necessnrily subvert, is the belief tbat smnllpox and other contagious maladies often nriee without previous exposure to the seeds of dieease. The germ theory teacbes that every new case of contagious maladies is the immediate offspring of a preceding cnse and the direct result of expoeure to tbe cbauce of having tbe epores implanted in the system—an exposure whicb it only required sufficient knowledge, foresight aud care to avoid. In regard to public hygiene, its importance is only surpassed by its simplicity. For such contagious and infectious maladies it is: Avoid at any cost tbe entrance into communitiee of living spores or seede of disease. Sanitary authorities should be nrmed witb almost despotic power in order tbnt tbey may sbut out or kill every one of those actually visible or even tangible eeeds of dieense. Quarantine, disinfection and prolonged detention of pereone, witb disinfection or total destruction of goods from infected districts, is the right of the many at the expeaee of the few."

Does Running Water Purify Itself?

Tbis subjsct is discussed in tbe November *Popular Science Monthly* by J. A. Judson. He takes a decided negative, as will be seen by the following paragrnph: It is not impossible to point out authorities on sanitary matters so wedded to pet theories that they unbesitatingly dsny that the conversion of a pnrs runuiug stream, or even a large river, iuto a conduit for the sewage-filth of a great city, will bave any deleterious effect on the potable quality of the water taksn a few miles below the filth-entering point. It has been dsmonstrated that this is not only false in theory but also in fact. It was Dr. Letheby, of the English "Royal Commission on the Water-Supply of Londou," it is believed, who was the first to announce what has since been proved a fallacy, viz., that "if sewage be mixed with twenty times its volume of river-watcr, the organic matter which it contains will be oxidized and completely disappear while the river is flowiug a dozen miles or so;" and further, tbat "it is safe to drink sewage-contaminated water after filtration." The "Royal Rivers Pollution Commission" of 1868, unwilling that this expression of opinion should remain untested, submitted it to careful and ingenious experimental invcstigation. The rssult is thus annouuccd: "It is thus evident that so far from sewage mixed with twenty times its volume of water being oxidized during a flow of ten or twelve miles, scarcely two-thirds of it would be so destroyed in a flow of one hundred and sixty-eight, at the rate of one mile per hour, or after tbe lapse of a week." And, after mentioning certain details in support of this, the commissioncre conclude with the remark that "it will be safe to infer, however, from tbe above results, that tbere is no river in the United Kingdom long enough to effect the destruction of sewage by oxidation." Dr. Frankland, nn eminent English authority, before the Royal Commission on Water-Supply, gives some strong testimony in support of the statement tbnt it is impossible to remove tbe sewage-contamination from water by any known proccss, natural or artificial, so as to render it barmless, exoept by boiling for a long time, or by distillation; and, as these two processes are impracticnble on a large scale, then, he says, in his opinion, "Water that has once been contaminated by sewnge ought not afterward to be used for domestic purposes; and, inasmuch as it is generally believed tbat the noxioue matter of sewage exists tbere in the form of minute germs, whicb nre probably smaller than bloodglohules, I do not believe that even filtration tbrougb a stratum of chalk could be relied upon to free the water perfectly from such germs."

Best Artificial Light for the Eyes.—Dr. M. L. Holbrook writes: The following are tbe most essential conditions of a good artificial ligbt: It should be steady, and neither very dull or very intense. Flickering lights are nlways injurious. The Argand burner is the best. If a sbade is used it sbould guard tbe eye from tbe direct rays, while permitting a fair amount of ligbt in the room. The eye should not be kept in darkness hy too much shading. A lightly tinted paper is better than pure white for reading or writing. Yellow glasses have been found superior to others in some cases of weak eyes. In rending, the light sbould if possible come from behind tbe person, and the eyes should be allowed to rest a little every few minutes, even when they do not eeem to require it. In the writer's own experience this last item has been found of especial value.

Danger of a Phosphorus Burn.—Tbe *Medical Times and Gazette* tells of a young man, who, while traveling from Paris to Lyons, lit a matcb by scratching it with his tbumb-nail, and n piece of the incandeecent phosphorus penetrnted under the nail and made a elight burn, to which he paid no attention. But after an hour the pain became intense, the tbumb swelled, then the hand, and next the fore-arm. He wae obliged to alight at a station on the journey, and send for a medical man, wbo declared that instant amputation of the arm was necessary. The patient insisted on postponing tbe operation for a few boure, until the arrival of bis fnther, for whom he had telegraphed. Before the latter, bowever, could reacb hie son, it was too lnte; the poisonous matter bnd gninod tbe arm, tben the sboulder, and any operation became impossible. He died in great agony 27 hours after the burn.

A Rare Disease.—From the *Medical and Surgical Reporter* we learn that a case of a very rare affection—the ossification of the muscles of the trunk and limhs—was presented by Dr. Nicoladoni, hefore tbe Vienna Medical Society, in the person of a girl of seven yeare of agc. In tbis case, the disease wae far advanced, having commenced with tbe muscles of thc neck, whence it extended to the epine, the anterior part of tbe thorax, aud the limbs. A numher of tbe muscles were completely ossified. It is stated that there are only three sucb cases on record.

Nosebleed.—The best remedy for bleeding at the nose, as given by Dr. Gleason in one of his lectures, is in tbe vigorous motion of tbe jnws, as in tbe nct of mastication. In the case of a cbild a wad of paper sbould be plnced in ite mouth, and tbe cbild should be instructed to chew it bard. It is tbe motion of tbe jaws tbat stop the flow of blood.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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The Week.

The mining interests of our coast are certainly developing with wonderful rapidity. The rottenness of railroads and banke and other corporatione has turned the confidence of the people from them, and the result is that capital is seeking hetter investments in the minee. This is what has been needed for so long in many of our miniug districts, and it will lead to astonishing results. We have the mineral wealth—there is no douht ahout that—and all that is wanted is careful and intelligent playing of capital upon the mines, to hring down tons of hullion. See, for instance, the mines of Idaho, acknowledged rich, yet scarcely opened. Vast tracts of gravel is idle hecause there is no money to build 20 or 30-mile ditches. Quartz ledges worked to an average depth of only 300 feet, down to first water, and no further hecause there is not the money for requisite pumps. But even in Idaho, which, for the reason that the railroad does not go so near her as to many other rich districts, has attracted less notice than her merits deeerve, there is a feeling that capital is now heginning to appreciate her richness, and this feeling is suhstantially hacked by the fact that men are now comiug to examine her mines and are discussing the feasihility of certain water works.

The excitement in Colorado still continues. The great want of her mining camps seems to be greater facilities for transportation.

In California the hydraulic miners are longing for rain, while the ledge miners, at least of Bodie, hope that the winter will hold off until they get under cover.

The extraordinary developments in Bodie, have attracted atteution to other neighhoring districts, some of them new, othere, like Bodie, old and generally considered heretofore as of little value.

Encouragement for Poor Prospectors.

A proposition has heen suhmitted to the Constitutional Convention, now convened at Sacramento, providing that "any miner who shall discover a lode or lsdge of gold or silver quartz shall be entitled to $1,000 reward, provided he shall have sunk a shaft or winze a hundred feet." This proposition may have some special significence not implied in its tsrms; but however that may hs, it is suggestive of a subject thet is at least worthy of thought and discussion. Ie the prospector who opens up a gold or silver quartz ledge a servant of the State ahove all other men who strive in their own interest against difficulties? Or are the ohstacles he meets with, and the risks he takes, eo great that the State ehould step in and lend him a helping hand? If aid is to he extended to him, should it not also he offered to the discoverers and developers of gold placers and of deposits of any ore of silver, if not of valuable ores of any metal?

The prospector is generally a poor man. His tours lead him away from society into wild, uninhahited regions. He exposes his life not infrequently, and at heet has a rough if not a dangerous time of it. He employs his cultivated "cunning," his prospector's instinct, in spying out deposits of valuable mineral, each of which adds to the known resourcee of the country. The law provides for his reward, hy prescribing means hy which he may locate hie find, and ohtain, hy reasonahle outlay of money, a good title for it. But while hc is deciding how to locate his claim, he runs the risk of losing the results of his trouhle and skill. Others, catching the idea from him, may get ahead of him and locate all or part of that which, after a little examination, he might have located himself. Even after his location is made, and hefore he has ohtained a patent, he must expend a oertain amount a year upon his claim in order to hold it. These are difficulties, but not greater than a man meets in any field of fierce oompetition. The mincr encounters them, hecause he hopes in the end to gain; and if he is sharp and energetic, and his claim is really valuahle enough to he considered a worthy addition to the country'e resources, the chances are tbat he will enter into his hope.

This is apparently contradicted hy frequent experiences. Suppose the prospector has opened up a rich claim, proved to he so by a tunnel 100 feet in length, or a deep shaft; too oftcn he cannot go on, and win hack even what little the developments have cost him. It takes a mine to run a mine. Nor can he sell his claim for what it would probahly bring him if he could work further on it himself. He is poor, and has immediate necessities; he has hurdened himself with debt already in running his little prospecting shaft. He cannot wait. Capital is uot hungry, and can wait. The miner must take one of the first offers. Suppose he does not—suppose he continues to lahor at his mine, without any of the necessary appliances, waiting for a hetter offer. He will run in deht faster than the offers will rise. If he delays long the sheriff will appear. If things do not come to snch a etrait as this, the hest he can do is to slowly peg away; keeping hie head just above water, making now and then a littlc strike that calls forth his own hope and the oongratulatione of a few friends, hut on the whole feeling his venture a failure, and his perseverance a poor investment.

Suppose, on the other hand, that he accepts the firet offer. On Saturday afternoon he sells hie claim for $1,000 to a cunning capitalist; on the morning of the following Monday, the cunning capitalist sells the claim agaiu for $10,000. There is $9,000 out of the prospector's pocket. That is hard, is it not? It eeems so, indeed, hut it has its parallel. Sam Johnson sold Rasselas for a mere song. The puhlishers who hought it grew rich. Middlemen everywhere are living on the community. They are, to a certain extent, an ahsolute necessity. Would it pay the State to take in hand the grievanoee of careless, eccentric, unpractical Johnsons? Would Johnson he more justly dealt with, and would the English world of literature be enriched hy the offer of $1,000 to every man who ehould write an equal to Rasselas?

These thoughts are suggested by the proposition quoted. Others are in point. The mineral lands are owned hy the United States, and are opened hy the General Government to location and purchase. The State has nothing to do with them, so far. At the eame time there may he no ohjection to our offering inducements to miners to prospect our mountains, as the profits of any industry so started will accrue to the State more than to the United States. Still it is rather questionahle whether the State can afford to pay $10 a foot, for all the hundred-foot ehafts in the country, which might he started hy this proposition; especially when nothing is said ahout the amount of gold or silver in the ledge. There are lots of poor ledges, yet they contain some gold and silver, and many mines are fouud on which shafts are sunk, when all that comee from them will not even pay for the shaft.

University Ore Collection.—The University of California is desirous of forming an ore deposit collection, and has issued a circular to that end, asking mine owners and miniug men to contribute mineralogical specimens for the museum to the University, which Wells, Fargo & Co. have agreed to forward free of charge.

Caution to Inventors.

In a recent numher of the "Official Gezette of the United States Patent Office" appears a special order from the Commissioner of Patents disharring from practice hefore the Bureau a patent agent who had heen guilty of gross misconduct. The attention of the office had heen called to circulars published by this person, containing gross misstatements calculated to deceive the public, so that hereafter he will not be recognized as an attorney in the prosecution of cases in the Patent Office.

In connection with the order referred to, the Commissioner makes some pertinent remarks on the suhject of specification writing, unreliable agents, etc., which are worthy of careful perusel by all inventors, as the statements made apply to agents and inventors in every part of the country. Coming from the source it does—the head of the Patent Department—the warning given ehould have weight enongh to impress itself upon all inventors and cause them to he more careful in the future as to whom they entrust their interests. The Commissioner says:

"So many complaints have heen recently made of ignorance or neglect or fraud on the part of those professing to act as attorneys, that a repetition of the cautions heretofore given hy the Office seems now necessary. The preparation of specifications in simple casee eveu requires technical knowledge, familiarity with the useful arts and with the pateut law, and resources in the form of books of reference and recorde of inventions.

"Commissioner Burke (see Report for 1852, p. 451) said:

"'No great aid is to he expected in drawing up the suhstance of thc specification from any forms. The character of the devices described varies so widely, and the details to be emhodied demand such a different consideration and expression in different cases, that the language adopted on oue occasion can rarely he employed on another without great modification.

"'There is hardly any class of documents in preparing which so little aid is to be derived from precedents; none where more depends upon skill, experience, and ingenuity, or where these are more indispensihle.'

"Yet a large percentage of the cases filed in the Office are prepared hy men who have uone of the requisites named, and little knowledge heyond mere forms. These are often suhordinates dismissed from the Office or from private firms for incompetency or fault, or draftsmen or model-makers. The specifications filed hy these attorneys are frequently so imperfect and ohscure as to he unintelligible and utterly unfit for puhlication, and the preparation and conduct of these cases increase the lahor of Examiners, and are a fraud upon the inveutors.

"The Examiners of the Patent Office cannot undertake to do the work of attorneye hy rewriting and correcting epecifications. Their first duty is to see that the papers are in proper form, to notify the ettorney when and where corrections are needed, and, of course, the more ignorant the attorney the more corrections are required, and the greater are the annoyance and trouhle to which the Examiner is suhjected. It is an Examiner's duty to reject an application if the thing claimed ie old, or if the applicant has claimed too much, hut it is no part of his duty to notify the attorney when he has claimed too little for his client. It is sometimes done, hut it is oftener omitted, and the inventor of a valuable iuvention gets a worthless patent. Inventors are, therefore, urgently advised to avoid illiterate attorneys who advertise to work at the cheapest rates, hut whose services are dear at any price, and to seek the aid of those whose experience and technical and legal knowledge are hased on a liheral education, and who are in good standing at the Patent Office and hefore the country.

"In all of our larger cities, where there is a demand for patent practitioners, there are men to he found who are willing and ahle to give inventors salutary advice, and iuventors in any part of the country may find responsihle parties ahle tc give them advice as to the selection of attorneys of long and well-known standing.

"Inventors are particularly cautioned against men who claim to have special facility in the Office, or who intimate that money may he used to hasten or assure the allowanee of their cases.

"Inventors who are tempted hy circulare or letters coutaining intimations of the possession hy those who issue them of secret influences in the Patent Office will do well to note the following remarks of Commissioner Fisher:

"'Inventors ought to know that if they are foolish enough to pay their money upon such pretences, it will uever reach the pockets of the Government officials for whom they suppose it to he designed. It goes no further than the unscrupnlous attorney or agent, who, assuming to trade upon the supposed corruption of eworn officers, is willing to slander houest men, and destroy puhlic confidenco in the administration of public affairs, in order that he may enrich himself at the expeuse of his credulous client. Instances have come to my knowledge where money has heen extorted from clients hy agents after patents had heen actually allowed, hut not yet issued, upon the pretense that it was necessary to hrihe the Examiner. I know of no case where the money went heyond the solicitor. No practitioner can assert with truth that he possesses any facilitiss by which he is enebled to procurs petents in advance of any of his competitors heyond his knowledge of the forms and routine of the Office and his skill and care in ths prsparation of his cases. To take money from his clieuts under the prstense that it is to he used to procure such facilities is to add theft to falsehood. * * *

"'It will he a safe rule to distrust those who hoast of the possession of special facilities in the Office for procuring patents in a shorter time or with more extended claims than others.'

"Inventors, when attorneys or others demand exorhitant fees for supposed secret or improper influences in the Patent Office, will do themselves and the Office a service hy hringing such commuuication to the personal attention of the Commissioner.

"The caution of Commissioner Fisher, quoted ahove, has heen embodied in pamphlets of attorneys; among others, in those of the very men against whom it was directed; and if the present caution meets with the same fate, inventors may understand that its appearance in a circular or pamphlet is hy no means a guarantee of the ahility or honesty of those from whom the circular or pamphlet emanates.

"The remedy for the evils arising from ignorant and dishonest attorneys is in the hauds of the inventors themselves. Let them exercise the same caution and judgment in selecting a patent solicitor which a prudent man considers necessary in selecting any other professional man—a physician or conveyancer, for instance—for performing duties which demand experience and exactitude, and the Patent Office would soon be relieved from the time-consuming annoyauces caused hy unskilled pretenders, fewer worthless patents would he issued, and less vexation and cost would arise to applicants from the rejection of cases, meritorious in themselves, hut unfit to issue merely hy reason of the bad preparation of the papers."

The Silver Mill.

This is the title of a little pampblet by M. P. Boss. It consists mainly of a number of maxims for mill-men, "deduced from a practical experience." A valuable suggestion is thrown out in the Introductory. "Iron producers, scientists, and railroad engineers have their societies for mutual benefit. Minute details of facts and forme which they develop conduce to general improvement. But no society of practical, actual workers in mining and metallurgy, as developed in the U. S., exists to accumulate and retain, from their several experiences, tbat minutiæ so essential to the maximum of economy and success." The writer takes up "Crushing," mentioning various feeders and noting their success or failure. "Amalgamation," "Quicksilver," "Quicksilver Pump System," "Quicksilver Pressure System," "Amalgam" are treated of in order. Mr. Boss is the inventor and patentee of a quicksilver pump system, and this is illustrated and described in detail. We shall soon find occasion to give extracts from the pamphlet.

Lixiviation versus Amalgamation.—In a late issue of the Press a short article on this subject was published. It favored the former process rather than the latter, and at the close the writer, W. T. Rickard, F. C. S., of Tucson, was asked to furnish some explanation of the failure of lixiviation in parts of California, Nevada and Utah. We are happy now to acknowledge the receipt from Mr. Rickard of an answer to the challenge, if it may he called such. The letter will he published in the next issue of the Press. This suhject is a very interesting one and we shall he glad to hear more of it from mining men. There is no doubt that the lixiviation process has made failures as well as successes, yet it has heen strongly hinted that with fair opportunities opened to it, that process might supersede amalgametion in our most important mining districts, and greatly to the advantage of said districts. If this he the case, our miniug men should give more attention to it. Let us hear from more of them.

A new mining district has been organized in Washoe county, Nevada, four miles north from Reno, called the Reno mining district. Some 20 or 30 locations have already heen made and the prospects are now quite flattering. The average of six assays taken from the Esmeralda Con. at a depth of 70 feet, is $106.78. Two companies have hecn recently incorporated, namely: Esmcralda Con. M. Co. and the Monona M. Co.—the same directore to act for both companies, viz: Isaac Parry, B. S. Coggeshall, C. F. Clark, H. E. Parry and T. V. Julian. Isaac Parry, President, B. S. Coggsshall, Secretary. The office of the coupauy is 309 Dupont street.

Bullion Shipments.—Standard, Oct. 30th $16,929.19. Orieutal Con., Nov. 2d, $221.16. Bodie, Oct. 28th, $12,952.04; Nov. 2d, $24,943.83; Nov. 5th, $13,500. Extra, Oct. 31st, $6,262. Belmont, Oct. 30th, $7,661.25. Christy, Oct. 31st, $5,241. Northern Belle, Oct. 30th, $3,159.38; Nov. 2d, $4,364.34. Independence, Nov. 4th, $14,000. Indian Queen, Oct. 28th, $4,848.85. California, Nov. 2d, $201,446.22; total for Octoher, $387,831.20. Navajo, Nov. 4th, $5,500. Tyho Con., Oct. 31st, $7,961.67. Manhattan, Nov. 5th, $11,600.

Mines and Works of Almaden.—No. 7.

[Translated for the Press from "Annales des Mines."]

II.—Mineralogical Constitution of the Vein Matter.

There remains, in order to complete this description, to give some description of the mineralogical filling up of the veins, and to determine in what manner, and at what epoch this filling up took place.

The cinnabar presents in each rock a different aspect; it impregnates quite regularly the white and black sandstones, and forms simple patches, very rare at that, in the frailesca, the limestone and the schiste. It occasionally presents peculiar physical characters. When the schiste is in contact with the black sandstone, one meets it sometimes in cavities or in little veins between its layers, which give to the transverse fracture of the rock the aspect of a pack of cards, of which the edges are alternately black and red. At other times the schiste is entirely replaced by cinnabar in imperfect crystals, and more often by masses apparently sedimentary, who conform to the schistose structure of the primitive rock. This rarity, to which has been given the name of *schistose cinnabar*, is rare at Almaden, but it seems to have been more common in the ancient mines which are now abandoned—the Fueares to the west, and the Concepcion Nueva to the east of Almaden. The appearance of this rock, which was formerly regarded as sedimentary, while the cinnabar was supposed to be deposited at the same time as the schiste, shows how easy it is to be deceived in judging of the origin of certain ores solely from their appearance and from the examination of a few specimens.

The name *stalactiform cinnabar* has been given to certain agglomerations of powdered cinnabar, carried along by water, and afterwards deposited from it. These recent deposits of cinnabar of an entirely mechanical origin do not constitute, properly speaking, a special variety of the ore.

Pure cinnabar, crystallized, or in mass, is only rarely found. Without doubt a great number of cryetale of cinnabar have been found in the mines of Almadeu, which figure in the mineralogical collections of the entire world, but it suffices to say that all of which present cryetallizations, even slightly pronounced, are collected as curiosities, in order to understand that these crystale occur but seldom. The ore is more frequently accompanied by very small crystals of quartz and of sulphate of barium; iron pyrites is said to have been found in some specimens; this last substance, if it exists at all in the cinnabar of Almaden, is found very rarely.

Pure amorphous cinnabar is more frequent; that is called pure cinnabar, all which contains from 75% to 85% of mercury. It is found disseminated in an irregular manner in the midst of the cinnabariferous sandstone which forms the mass of the deposit, particularly in the San Pedro vein.

Native mercury is not very abundant at Almaden; one never finds it except alone, without cinnabar, in a very schistose quartzite of a dark-gray color, of a very compact appearance, sometimes in the sterile schiste or in the decomposed sandstone. It is true that sometimes drops of mercury are seen oozing from the walls of the galleries, but these come evidently from an altogether recent decomposition of the cinnabar exposed to the air.

Horn quicksilver has not been found at Almaden itself; it is found only at the mine of Valdeazogues, in a very decomposed white sandstone, where it presents itself either in pellicules, and in slender crusts, or else in prismatic crystals with square base with globulee of metallic mercury. The old mines of Guadalperal and Valdeazogues have furnished also some specimens now deposited with the collections of the geological map at Madrid, in which the cinnabar is associated with carbonate of copper (Guadalperal, la Concepcion), and with copper pyrites with malachite (Guadalperal.) One can see two kilometers north of Almaden, a layer of devonian quartzite containing spots of cinnabar and cupriferous efflorescences. This was prospected for copper some years ago, but was at last abandoned.

But all these substances which we speak of as sometimes accompanying the cinnabar of Almaden form altogether a quantity almost neglectable. In spite of the fact that in ordinary veine we find usually an association of divers metals, mercury, as was a long time ago declared by Ant. de Jussien, in a memoir read before the *Academie de Sciences* *, presents itself alone, and seems to avoid the presence of the other metals. The only affinity which it seems to possess in nature is its predilection for carbonaceous or bituminous matters at Almaden as in nearly all its deposits. We know that it is found at Idria, in the midst of bituminous strata of the triasaic (*brandschiefer, leberschiefer, silbershiefer.*) At New Almaden it is associated with a veritable coal. †

In Austria, a cinnabar mine has been exploited, where it impregnates beds of sandstone and of coal schiste; they have even found there a bed where cinnabar is associated with coal.

The presence of carbonaceous matters is less pronounced at Almaden, but it is incontestible. The schistes are often, when in contact with the veins, black, lustrous, carbonaceous; they stain the fingers. Proust, who analyzed some samples from Almaden, found a little plumbago.

But the most interesting study is that of the ordinary ore, quartzite more or less impregnated with cinnabar. When one calcines this so as to expel the mercury and sulphur, the rock appears like scoria, or a decomposed mass, which cannot hold together, and reduces itself entirely or in part to sand. The consistence of the residue enables us to judge almost exactly of the ore; from pure cinnabar nothing is left; and the calcined gangue resists less when the ore is richer. When on the contrary fragments of barren quartzite are calcined, they preserve their primitive structure and their primitive hardness.

The material of the quartzite which is wanting to-day in the rocks impregnated with cinnabar, certainly could not have been missing, neither at the time of the first deposit of the beds, nor after the strong pressure which compressed and straightened them. How could this disappearance of silicious matter be effected; matter inattackable by all the reagents which we can imagine intervened during the epoch of the formation of the veins of cinnabar? We do not pretend to explain this, and we renounce the reproduction of the diverse theories, all, more or less inadmissable, which have been proposed on this subject.

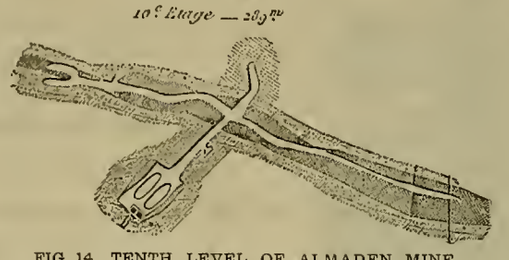

FIG. 14. TENTH LEVEL OF ALMADEN MINE.

III.—Age of the Veins.

The epoch at which the advent of the cinnabar took place, is not less difficult to point out. Incontestibly the cinnabar is not contemporaneous with the deposit of the silurian or devonian strata in which they are found. All that we know opposes this. According to all geologists the mercury, as all other metals, comes from the bowels of the earth. We find in the region of Almaden many rocks which have the same origin. These rocks have appeared at different epochs; in fact we cannot admit that the granites of Pedrochus are of the same age as the porphyry of Almaden or Chillon, or the trachytic porphyry of Gargantiel.

Is the appearance of any one of these rocks concomitant with that of the mercury? Some facts permit this hypothesis. The most important is the presence, in contact even with the cinnabar, of a melaphyric rock at the eastern extremity of the San Francisco vein, at the 9th level. We have also said that cinnabar in spots and little veins has been found at Almadenjos and at Guadalperal, in a rock intimately related to the melaphyres which form near this village a considerable mass in the midst of devonian strata. Finally, mercury in the metallic state at the contact of the melaphyre of Chillon with the sandstone. There have even been opened a shaft of 12 to 13 meters depth, which was afterwards abandoned, after having collected some kilogrammes of this metal; although this shaft has been open for 25 years, the debris of the excavacation are still about its mouth; it is composed of a melaphyre where the crystals of the quartz are less abundant than in those of the mines of Almaden. However, I should say that some doubt exists as to the origin of this mercury. No cinnabar is to be seen in the rock; the shaft is situated in the court-yard of a house, and it was suspected that the mercury might have been stolen and hidden under the ground for a long time and infiltrated into the fissures of the earth. This is only a suspicion, and the discovery of the melaphyre in contact with the cinnabar at Almaden itself, gives reason to believe that it is not well founded.

We admit then, as a fact, if not absolutely certain, at least very probable, that the cinnabar shows a preference for contact with the feldspathic rocks of Chillon, of Almaden, and of Guadalperal, and in some places is formed in those very rocks. We have already spoken of the great analogy presented from a purely petrographic point of view by the melaphyres of Chillon with those which come to the surface towards the end of the permian epoch, in the Vosges, and near Oberstein in the Valley of Nahe. *

Now in the Palatinate, as at Almaden, the melaphyres are in in intimate relation with the veins of cinnabar; † these veins are sometimes found in contact with the melaphyres, sometimes they traverse them as at Rathsweiler, Erzweiler, Baumholder; the presence of spots of copper ore, principally of carbonates of copper, spoken of already, completes the analogy; the cinnabariferous veins of the Palatinate are also accompanied by several copper veins.

We there ore think we are justified in assigning to the cinnabar of Almaden the same age as that of the Palatinate; it even seems to us, according to the description which M. von Cotta ‡ gives of it, that we can attribute to the same formation the deposit of cinnabar of Vallatta, near Agordo, which is also found in connection with rocks designated by the German geologists by the name porphyry, and near to the great copper vein of Agordo. We will abstain from the expression of an absolute opinion as to this age; it suffices for us to have determined with exactness the conditions of the deposition. We will say, however, that relation indicated would be difficult to explain if we did not admit that the cinnabar has appeared a little after the eruption of the melaphyres, nearly at the same time as the copper ores, which constitute, for example, in the permian layers of Mansfeld, the layers of cupriferous schiste (*Kupferschiefer.*) The cinnabar would then appear at Almaden a little later than that of Idria, which presents, however, conditions considerably different from those of Almaden, and which is now recognized as triassic.

It is to be understood that we cannot be absolutely certain upon these questions of age, nearly always so delicate; we hardly know (to-day) in fact, what name to give the deposits of Almaden. Since the last century Bowles and Hoppensack have given them the name of veins, and for a long time they went by that name. Several geologists protested, however, against this denomination, among others, Casiano de Prado. He points out the differences, frequently considerable, between the aspects of the deposits of Almadeu and that of ordinary veins; he declares that mercury never presents itself except in stratified beds, into which it is infiltrated from below. This is certainly a singular fact, and one which from its generality merits attention. Is it not due to the fact that the clefts which contain cinnabar were made by forces not sufficient to produce rupture across the strata, but only in the direction of their length?

From the moment that we admit with M. de Prado, that the mercury came from the interior of the earth; from the moment that we recognize in the deposits of Almaden the form of bands relatively straight, which follow a direction and inclination tolerably determined, we do not see how we can refuse to them the name of *veins*. We could give them the name *vein beds*, or that of *contact-veins*, but we should always recognize in cinnabar the character of a vein substance, carried to the surface very probably in the state of vapor.

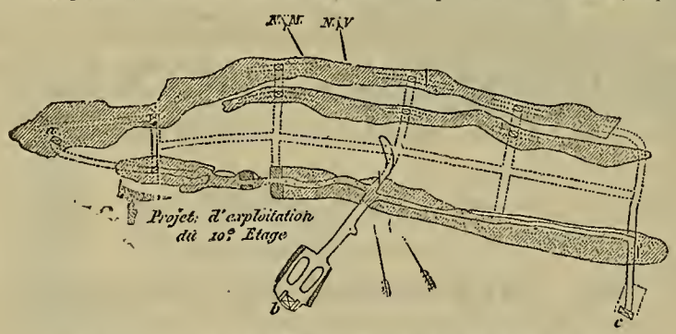

FIG. 15. PROJECTED EXPLOITATION OF TENTH LEVEL.

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* *Memoires de l'Academie des Sciences, 1717.*

† The bituminous matter at New Almaden is not "a veritable coal." It is sometimes found with the external appearance of coal, but when heated melts like bitumen, and burns without any ash to speak of. It is more usually of the color and consistence of coal tar and flows out of the drusal cavities in which it is usually found when they are opened.—Editor.

* See the description which has been given of them by M. Delcm. (*Annales des Mines*, 4th series, t. XVI., p. 511.)

† See *Das Vorkommen der Quicksilbererze in dem Pfalisch Saarbruckenscher Kohlengebirge*, par M. von Dechen. (*Archives de Karsten*, t. XXII., p. 375—464.)

‡ B. von Cotta: *Lehre von der Erzlagerstaetten;* 2nd edition, p. 360.

[To be Continued.]

What and How?

In this column are printed all sensible inquiries relating to and connected with mining or relating to any matters of general scientific interest; also the answers to them as dictated by individual experience, or as furnished by correspondents.

Asbestos.

"Prospector" writes to us from Sacramento making several inquiries which he will find answered below in brief. We have, in previous numbers of the Press, described the characteristics, uses, method of mining, value, etc., of asbestos in detail, all of which information can be obtained by examining our files.

Asbestos is used, in connection with liquid coating, on roofs, as a protection against fire, in rope of different sizes, for packing of gland-boxes and valve-stems on steam engines; in board, for gaskets for flange-joints, man-hole plates, etc.; in cement felting, for covering boilers, steam-pipes, smelting-furnaces, etc.; in fire brick, paints, lamp wicks, kindlers, and for many other minor purposes.

The qualities can be determined only by an expert. The best material has long, strong fiber, easily separated, without luster and free from silica.

The principal manufactory is that of the H. W. Johns Manufacturing Co., at foot of Thirty-ninth street, Brooklyn, N. Y., (office, 87 Maiden Lane, N. Y. city, with branch at 5 First street, San Francisco), and the Salamander Felting Co, of New York, with branch at 317 California street, San Francisco.

To H. W. Johns belongs the credit of first utilizing asbestos in this country.

The largest deposits are on Staten island, New York harbor, where pockets are often found containing 50 to 70 tons; and in the mountains of western Georgia, where the veins are from 1 to 8 feet wide. This mineral is found in so many different formations that it is impossible in short space to properly describe them. It is found in quantities all over this coast, both of good and bad quality.

It is worth in New York from $25 to $60 per ton for American, and from $100 to $300 for French and Italian. Here it is worth from $30 to $35 per ton when a first class article.

Use of Compressed Air for Sinking Bridge Caissons.

In the admirable article on the "Transmission of Power by Compressed Air," by Robert Zahner, M. E., in *Van Nostrand's Engineering Magazine* for November, 1878, page 446, *et seq.*, it is stated: "Without going into details as to its history, we shall only name the English engineers, Cubitt and Brunell, who, in 1851-54, first applied compressed air in its statical application to the sinking of bridge caissons."

As a historical fact we merely wish to state that the application of compressed air for the above-indicated purpose was certainly made at least 10 years before the date given by Mr. Zahner. As early as 1841, M. Triger, a French civil engineer, employed compressed air during the operations necessary for working a bed of coal lying under the alluvium bordering the river Loire, near Lauguin, in the department of Maine et Loire. In traversing an overlying stratum of quicksand, from 18 to 20 meters thick, he found it requisite to devise some means of excluding the semi-fluid quicksand and water, which found their way under every arrangement analogous to ordinary coffer-dams or caissons, in such quantity as to defy all pumping operations intended to keep them dry. For this purpose, M. Triger employed large sheet-iron cylinders, about 1.033 meters in interior diameter, securely closed at the top, in which (by means of a condensing pump incessantly worked by a steam engine) air was condensed to an amount sufficient to counteract the external hydrostatic pressure. The ingenious contrivance fully justified the expectations of the engineer. It proved to be entirely successful. The details of M. Triger's operations are recorded in "Comptes Rendus," Tome XIII, p. 884, *et seq.* Paris, 1841; also "Annalee de Cbimie et de Physique," third series, Tome III, p. 234, *et seq.* Paris, 1841.

Pacific Coast Postal Changes. — Offices established—Contra Costa, Cal., Henry Wilkenning, Postmaeter; Date Creek, Yavipai county, Arizona, Henry Addoues, Postmaster; Tebbsdale, Iron county, Utah, Daniel F. Tebbs, Postmaeter. Names changed—Mosquito Gulch, Calaveras county; Cal., to Glencoe, and Julius A. Lindsay appointed Postmaster. Postmasters appointed—Thomas J. Gould, Hermitage, Mendocino county; George C. Shaw, Omega, Nevada county; Frank W. Hilton, Round Valley, Inyo county, Cal. David Wigginton, Scholl's Ferry, Washington county, Oregon. Darius Rogers, Ferndale, Whatcom county; Wm. L. Steinweg, Sehome, Whatcom county, Washington Ter. J. H. Walcott, Ophir, Tovela county, Utah. Joseph Guindare, Florence, Pinal county, Arizona.

In the Treasury, Nov. 5th, there was about $137,000,000 gold available for resumption.

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We invite the acquaintance of all parties connected with inventions and patent right business, believing that the mutual conference of legitimate business and professional men is mutual gain. Parties in doubt in regard to their rights as assignees of patents or purchasers of patented articles, can often receive advice of importance to them from a short call at our office.

Remittances of money, made by individual inventors to the Government, sometimes miscarry, and it has repeatedly happened that applicants have not only lost their money, but their inventions also, from this cause and consequent delay. We hold ourselves responsible for all fees entrusted to our agency.

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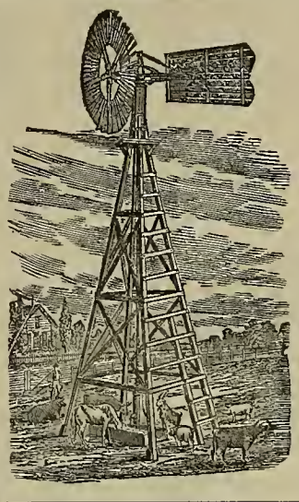

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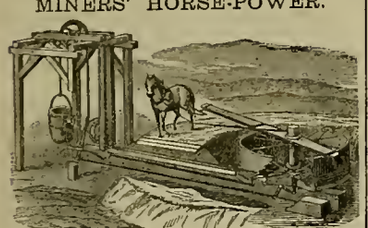

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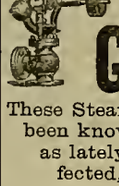

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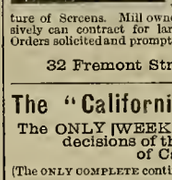

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Continued from page 293.

prospect thoroughly. The Eureka Lake Co. are extending the Weaver ditch down on top of the ridge to a point opposite Woolsey's Flat. The object of the extension is to supply the Boston mine with water. The Boston has 45 men employed. The foreman of the mine is Mr. James Redington. In the Blue Banks there are 15 men employed; foreman, Mr. John B. Erb. The Illinois Co. is through for the season.

PLACER.

THE MOUNTAINS YET REMAIN. — *Herald*, Nov. 2: As it is well known to practical men, gold-producing gravel extends in helts through the higher hills of the mountains, along what is termed the ancient channels of streams and rivers. Twenty years ago, the beds of ravines, canyons and rivers, which cut through these ancient belts were rich in the production of gold. The adventurous miners rushed to the harvest. Mining companies sprang up on every side, as if by magic. There was no lack of population. But times have changed. Men, who had made their fortunes, went down to the valleys and cities, nearer the coast, to invest their treasures; hut, the hills and mountains yet remain. Those people who continued here, have been compelled to prospect in the hills and dig tunnels into the mountains. Their energy and enterprise have been rewarded in hundreds of locations. The treasures of the Golden State have not at all been nnearthed. Damascus, Iowa Hill, Sunny South, Bath, Michigan Blnff, and other places, present a permanent continuance of wealth and prosperity. Probahly there is now no better mining section in the State, than that between the north and middle forks of American river.

PLUMAS.

SALE OF MINING PROPERTY.—*National*, Nov. 2: The North Fork Co. has sold all its mining property near the Big Meadows, to Frank Miller, of Sacramento. The sum mentioned in the deed is over $60,000. We are told that this sale will end the litigation and trouhle that has interfered with work in that quarter lately, and that operations will now he resumed and proceed regularly and smoothly as in the days gone by. The property is certainly very valuable and if properly managed, will be one of the most profitable mines in the State.

SAN LUIS OBISPO.

CHROME IRON AGAIN.—San Luis Ohispo *Tribune*, Oct. 26: The chrome business is constantly developing along the coast of our county from one end to the other. There is an almost daily increase in the quantity that is being delivered at the depot in this city. At Cayucos a large dump ie being made, and as soon as the trade will warrant, improvements will he made at the wharf to facilitate the shipment of the ore. At San Simeon, we helieve, regular shipments are heing made. The eupply seems to he inexhaustihle, and the large area of country that has heen prospected and found to contaiu good bodies of ore, gives assurance that a heavy trade can be maintained for many years to come. The only anxiety that our chrome miners need to feel is in regard to the market. Some have started in with very limited capital, and were, no doubt, willing to fill contracts at a very slight advance on the cost of the ore when delivered. It costs something to open a mine, to fit up roads and put things into running order; and to meet the uecessary expenses the owners must realize upon their first products. This, of course, is preferable to lying idle, hut it is desirahle to do better, if possihle. The miners should organize; the society should choose a capable and trustworthy agent from among their number aud send him to Europe, to the chrome manufacturing centers, with instructions to make an exhaustive inquiry into the subject. The expenses of such an agent could he paid by a general assessment upon the memhers of the society, and in this way would hardly be felt. It is probahle that the results would amply repay the projectors. The magnitude of the husiness demands that something of this kind ehould be done; it is in the power of those interested to do it, and the effort should he made.

Our Washoe summary failed to reach us in time for this issue.

Fire-Engine for Bodie.

The citizens of Bodie have been anxious for some time for the safety of their town. Their water supply is not large, and even if water were plenty they have had no adequate arrangements for protecting their huildings from fire. The matter has lately heen hrought forcibly hefore the people by the *Standard*, and as a result in part, no douht of this, decided action has at last heen taken. The course pursued has been the wisest possible, as experience in other similarly circumstanced towns goes to prove. Unwilliug to trust their town to water engines, either hand or steam, the Bodie Fire Department have purchased a chemical engine, of the Babcock patent. The engiue is known as a No. 3 Babcock. Its capacity is 120 gallons; its weight, 2,200 pounds. It is provided with 200 feet of hose. The price of au engine of this kind is $2,250, but Messrs. Park and Lacey, of 417 Market street, San Francisco, from whom the machine was purchased, made the Bodieites a present of $250, so that the mining town pays only 2,000. Enginee of this kind have made good records, and Bodie can now enjoy a new sense of security.

The Chemical Section.

The foHowing is a brief ahstract of the last two meetings of the chemical section of the California Academy of Sciences. At the regular meeting, held on the last Friday in September, Dr. G. F. Becker presented a brief outline of a paper of his, shortly to appear in *Silliman's Journal of Science* upon the determination of the error caused hy the presence of air in exact weighings for the determination of atomic weights. Pres. John Le Conte presented the facts with several possihle explanations of a curious phenonenon which occurred during the battle of Gaines' mill, in the late rebellion. The sounds of the heavy firing of the battle were inaudible on the opposite side of the river, at a comparatively short distance. Mr. August Harding explained a number of interesting arrangements of laboratory and lecture-room apparatus of his own invention. Prof. Rising presented a numher of interesting notes as to recent progress in chemical science. The last meeting was held in October.

President Rising occupied the chair, and the following members were preseut: Prof. John Le Conte, Prof. Joseph Le Conte, Prof. Hilgard, Dr. Becker, Messrs. Christy, Jackson, Booth, Harding, and Stillman.

Prof. Joseph Le Conte made an interesting communication on the functions of the liver in disposing of the waste tissues. He stated that his theory of the glycogenic function of the liver (published in the *American Journal of Science* early in this year) had drawn forth an objection from a prominent physiologist to the point he brought forward of the functions of the liver in dispersing of waste tissue. He had been, therefore, hronght to consider the subject more carefully, and had been still more convinced of the truth of his position.

The ordinary view of disposal of waste tissues is that the combustion of them takes place in the blood, in the part of the tissue when they are first decomposed, because the change from red to venous blood takee place in the tissues.

Prof. Le Conte, however, believes that the waste tissue is carried hy the hlood to the liver and is there separated into liver-sugar and urea, or some substance which rapidly changes into urea. Experiments made hy Schiff support this theory by proving that venous hlood is soon fatal to animals if the liver is tied, but is not so if the liver is free to act, the poisoning being due to decomposed tissues in the blood. Comhustion takes place in the capillaries of the tissues under the influence of venoue force, as the hlood remains for a longer time in the capillaries of the tissue than in any other organ. The blood acts as a reservoir not only of oxygen but of food, and if waste, the food taken in today is not used to build up tissue to-day, but is taken into circulation in the blood and the hlood forms tissue and regenerates itself from this supply of food, so tissue wasted to-day is carried by the blood to the liver, there decomposed into sugar snd urea, and so eliminated perhaps the day after or even longer.

Mr. Edward Booth gave an account of some experiments in England, regarding a peculiar property of filter paper of "fixing" certain metallic salts from their solutions, and of a method hased hased on this of detecting cadmium in the presence of copper in dilute solutions, and exhihited several series of tests which he had made to confirm the method.

J. M. Stillman presented an investigation on the ethyl ethers of glycerine, conducted hy him in Europe, involving a new method of ohtaining the mono-ethyl and di-ethyl ethers, and the more accurate determining of their hoiling points.

S. B. Christy exhihited some pieces of iron which he had coated with magnetic oxide hy heating in an atmosphere of steam in an iron tube, the coating being quite thick and coherent. This coating is interesting, as heing the same that Prof. Barth has found so useful in preserving iron against rust.

J. M. Stillman called attention to a method hy Prof. H. W. Vogel, of detecting the poisonous carhonic oxide in the air of rooms, etc., hy the peculiar spectrum which blood gives when containing even traces of this gas. By this means he could detect four-tenths of one per cent. in the air of certain rooms in Berlin. Prof. Jno. LeConte mentioned some experiments iu Belgium when powdered chemieale, as carhonate of lime, had been reduced hy immense pressure to hard and translucent hlocks.

A. W. Jackson stated that Prof. Sandberger had detected small traces of the precious metale in the common igneous rocks, which may throw light on the methods of ore deposits.

Prof. Rising mentioned some experiments by Beche in Italy, on the occurrence of horacic acid in the fumaroles he ohtained hy the action of steam at high temperature, from the serpentine rock of the country, horacic acid, sulphureted hydrogen and ammonia.

The meeting then adjourned.

PACIFIC PAINT MINING COMPANY.—This company has heen incorporated, with a capital of $100,000, for the exploration of a mine in Los Angeles county containing a natural deposit of paint of various colors.

WE call attention to the business card of Merchant & Alban, Mining Agents, 411½ California street, room 9, over the room formerly occupied by the San Francisco Board of Brokers.

THE Arctic whaling fleet had, on Sept. 1st, ahout 5,500 barrels of oil and 1,800 pounds of bone.

California Academy of Sciences.

A regular meeting of this society took place on Monday evening. Dr. Harkness presiding.

The following contrihutions to the cabinet were acknowledged: Thirty specimens of fossils and casts from Armagh, Ireland, and seven shells from the Wenlock Series, Silurian, Wren's Nest, Dudley, England, hy Dr. Harkness. A large number of bottles of fish and reptiles, from J. Gerstler and William Lockington. Numerous specimens of minerals from different parts of the State, by Dr. Emory Willard and Chas. D. Gibbs. The receipt of a large number of pamphlets, donated to the library, was also acknowledged.

A paper was read by A. W. Jackson, Mineralogist of the State University, on "The Microscope in Geology." Mr. Jackson explained the difference hetween a mineral and a rock or stone, and gave the three classes into which rocks have been divided, viz: The clastic or fragmental, the crystalline, and the amorphous. The formation of clastic rock is well known. Certain crystalline rocks have heretofore been considered homogeneous, and it is but recently that geologists have discovered their error. In view of this and other misapprehensions, is it strange that many wild theories have been maintained by geologiste. It is only by the observation of the component parts of rocks that their construction becomes known, and it is in this examination that the microscope comes into use. No method of investigatiou has met with such success as that in which the microscope is used. Chemistry has in many cases failed to give us a clear conception of the construction of rock, whereas the microscope has proved a perfect success. The existcnce of numerous cavities in rocks has long been known, but it is only recently and by the aid of the microscope that the multitude of these minute liquid cavities bas been made known. Each of these cavities in certain species of rock contains minute dancing hubhles. It is interesting to think when one looks at an immense hill of granite that it contaius innumerable minute sparkling dancing bubbles. What idea can we form as to the cause of the existence of these liquid cavities aud bubbles. At the time of the formation of these rocks there must have existed enormous quantities of water, great heat must have existed, aud the bubbles must have heen formed in the liquid cells by contraction. Perhaps in no department of geology does there exist so vast a difference of opinion as upon the subject of the formation of the rocks. Under these circumstances the microscope has heen found to be an important adjunct in the past, and the results of its use will probably be still more important in the future.

J. P. Moore delivered a brief address upon "The Relation of Fungi to Diseases." Mr. Moore stated in the course of his remarks that the existence of fungi many times resulted in death, and as to their minuteness they were floating in the air everywhere. The cause of salmon disease was the existence of fungi. The speaker said that the recent epidemic among house flies was caused hy fungi. The disease first appeared in the form of white stripes of fungoid growth npon the ahdomen of the fly, ard in hut ehort time the victim would succumh. The disease could he spread among fish hy simply feeding them with the dead flies. Mr. Moore claimed that the existence of fungi was not a concomitant of hut a cause of disease. He said that the fungi first appeared in floccillations around the articulations of the ahdomen, and increased in eize daily. The speaker then cited several diseases which were caused by fungi, hut which were not fatal, among which were ring worm, harber'e itch, etc.

Dr. Behr next addressed the Academy upon the same subject as the previous speaker, with whom he agreed in all the particulars of the subject,

Rev. Dr. Bleasdale, of Australia, then cited an instance which occurred in Australia, in which he set forth that measles were often caused hy persons sleeping on damp and mildewed straw.

"THE HOME DOCTOR."—This is the title of a hook presented to us hy the author, Dr. George M. Bourne, of San Francisco. It is a hook for the people, and purports to be a guide to health and for the home treatment of diseases. It is gotten up in neat etyle, with large, clear print, showing that the Doctor, while guiding his readers to health, does not intend to he guilty of injuring their eyes. The Doctor is an iconoclast among doctore generally, and among water-cure doctors in particular. Of the merits of his system the public can hest judge hy trying it. It certainly has this merit, that the trying of it can injure no one. Moreover, it is based, in general theory, npon simple, commonsense principles. The Doctor prefers keeping health to restoring it, and helieves that the physician should be called in to direct the habits of every day life oftener than to administer medicines for cure after laws have heen hroken. He helieves in the spreading of medical knowledge among the people, and to this end the hook in hand has been puhlished. In pursuance of this ohject the work is free from technical terme and states ite simple cures in equally eimple language. Without attempting to even outline the contents of this well-filled hook, we will merely mention that at the present moment what the Doctor has to eay of glanders, diphtheria and yellow fever will prove of special interest.

News in Brief.

GREECE'S new ministers have resigned.

THE short-time movement is spreading in Lancashires mills.

THE strike of the Baltimore oyster-shuckers is injuring the trade.

HAYES congratulates King Alfonzo on his escape from assassination.

IT is stated that France is becoming the diplomatic champion of Greece.

THIS year's yield of honey in San Diego county, may go over 1,000,000 pounds.

MOROCCO is passing through the triple ordeal of oholera, small-pox and malignant fevers.

RAILWAY companies in English cotton districts are discharging hands and reducing wages.

UNLIMITED issues of paper money in Japan are beginning to worry all who wish that country well.

THE German government proposes to increase the duty on wine, hides, grain and some other articles.

THE Portuguese have granted 50,000 acres of uncultivated laud in Mozambique for trying opium culture.

PLATES for printing $5,000 and $10,000 greenhack notes will be ready by the day fixed for resnmption,

IT is asserted that Afghanistan is required to reply to England's ultimatum by Nov. 20th, or the British forces will invade.

A YOUNG wood-chopper living near Auburn, Placer county, has hecn arrested for counterfeiting the legal tender silver dollar.

WM. D. CAMPBELL and John Spurgeon are suing the Spring Valley M. and I. Co. of Cherokee, Butte county, for $20,000 damages sustained by the plaintiffs through tailings being run upon their growing grain.

AORICULTURAL laborers in Kent and Sussex, have struck because of reduced wagee and threaten to emigrate to the Colonies.

JOSEPH U. CRAWFORD, an experienced railroad engineer, has received an important appointment from the Japanese government.

ABOUT six per cent. of the looms and spindlee in the Lancashire and Cheshire cotton districts, England, have stopped or are workiug on short time.

ON Oct. 31st, the German-American National Bank, Washington, suspended, leading to the closing of the German-American Savings Bank. The latter is pronounced sound.

A SPECIAL Board cousisting of merchants, manufacturers, fiuanciers and others, will probahly be established in Germany, to advice the government in mercantile matters.

A LIEUTENANT-GENERAL of the Mexican army has heen found guilty of violating neutrality laws in pursuing a band of revolutionists into the territory of the United States.

THE capital of the Oldham cotton mille is £4,600,000, more than half of which is borrowed. For the last year only ahout one-quarter of this has returned any interest.

BOULDER county, Colorado, farmers will try to stop the importation of dairy produce from Kansas. They should, for it is said that their own land can yield what ie wanted in that line.

BLACK wolves are making havoc among stock on the Platte, on the Panee and Forke of the Crow. Bad as a grasshopper plague a Colorado paper says, and calls for a bounty on wolf scalps.

IT is estimated that the balance sheet of the Paris exposition will show a deficit of 11,300,000 francs. This will be far more than made up by the increase in revenues resulting from the fair.

A CONVENTION has heen ratified between the United States and all the nations of Europe, except Great Britian, together with most of the Sonth American Repuhlics, providing for the establishment and maintenance at Paris of an International Bureau of Weights and Measures.

New Incorporations.

The following companies have filed certificates of incorporation:

NORTH NOONDAY M. Co.—Nov. 5th. Location: Mono county. Capital, $6,000,000. Directors—W. M. Stewart, P. Vanclief, W. F. Herrin, Frank Vernon and C. A. Burgess.

HERCULES M. Co.—Nov. 5th. Location: Amador county. Capital, $6,000,000. Directors—F. A. Benjamin, Gustavus Holland, Humphrey Rees, G. F. Tharp and S. Heydenfeldt.

WALES CON. G. AND S. M. Co.—Location: Eureka county, Nevada. Capital, $10,000,000. Directors—M. Redding, John H. Carmany, H. C. Patridge, J. Henry Applegate, Jr. and Grif. J. Griffith.

BELLEFONTAINE M. Co.—Location: Sierra county. Capital, $5,000,000. Directors—S. P. Warren, F. R. Wetmore, W. T. Perkins, Wm. Milroy and R. B. Milroy.

WESTERN M. Co.—Location: Arizona. Capital, $10,000,000. Directors—A. K. P. Harman, G. B McAneny, W. E. Dean, John H. Boalt and J. F. Boyd.

KENTON M. Co.—Location: Sierra county. Capital, $5,000,000. Directors—S. P, Warren, Wm. Milroy, R. B. Milroy, Charles T. Behan and A. Malpas.

LOWER CROWN POINT M. Co.—Capital, $10,000,000. Directors—John Sedwick, C. L. Weller, H. S. Stone, G. L. Murdoch, Geo. Seckle.

NORTH SIGOURNEY T. AND M. Co.—Location: Bodie district. Capital, $10,000,000. Directors—J. C. Wade, A. F. Main, J. C. Shain, F. W. Utter and John H. Daley.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THIS MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch from Washington, D. C.

FOR THE WEEK ENDING OCTOBER 22D, 1878.

DREDGING MACHINES—Geo. W. Cummings, S. F.
ORE STAMPS—Zaccheus L. Kay, San Diego, Cal.
EGG BEATERS—Wm. H. Wiester, S. F.
BENCH PLANES—Patrick Gallagher, Eureka, Nev.
COUGH REMEDIES—Trademark—James D. Culp & Co., S. F.

——The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

"Trademarks."

Recent United States patents for the following trademarks were secured through DEWEY & CO.'s MINING AND SCIENTIFIC PRESS PATENT AGENCY:

H. E. BOTHIN, 21 Stevenson St., S. F., "Mrs. Mills' Cream Yeast Powder"—Yeast Powder.

KRYGERS, RASMUSSEN & CO, Gold Run, Cal., "Pacific Crystal"—Starch for food.

A. S. HALLIDIE, 6 California St., S. F., "Pacific Wire"—Manufactured Wire in the coil.

MORE, REYNOLDS & CO., 212 California St., S. F., "M. R. & Co."—Whisky.

WHITTIER, FULLER & CO., cor. Front & Pine Sts., S. F., "Pioneer White Lead"—White Lead.

A. P. HOTALING, 429 Jackson St., S. F., "St. George" and "Dragon"—Whisky.

J. A. FOLGER & CO., 104 California St., S. F., "Limonium"—Lemonade Powders.

H. C. SHAW PLOW CO., Stockton, Cal., "R 8"—Plows.

RODGERS, ALLERTON & CO., 733 Market St., S. F., "Allekton"—Chemical Solution for Preserving Dead Bodies.

G. N. MILCO, Stockton, Cal., "Buffnell"—Insect Powder.

CHAS. R. BURRAGE, 1645 Mission St., S. F., "California Root Tea"—Medicinal Preparation.

ALICE C. SIMPSON, Danville, Cal., "Mrs. Simpson's Australian Cough Remedy."

B. GREENEBAUM, 22 Sansome St., S. F., "California"—Clothing.

ABRAMS & CARROLL, 3 and 5 Front St., S. F., "Royal Portable"—Lemonade

M. EHRMAN & CO., 217 Front St., S. F., "Evening Light"—Coal Oil.

J. E. MILES, 412 Clay St., S. F., "Alcyone" Coal Oil.

BURNELL & SIMPKINS, cor. 9th Ave. and G. St., South S. F., "Albion"—Malt Liquors.

JNO. PRUSSO, Oakland, Cal., "A Female Figure, seated, with scales and Sword"—Coffee and Spices.

CAL. CIGAR BOX CO., Berry, bet. 3d and 4th Sts., S. F., "Forest King"—Cigars.

FLETCHER & MCCOY, 23 Stevenson St., S. F., "Imperishable"—Paint.

A. E. MINTIE, 722 Montgomery St., S. F., "Dr. Mintie's Vegetable Nephreticum"—Medicinal Preparation.

WM. G. BADGER, 7 Sansome St., S. F., "Hercules"—Clothing.

M. PALEN, San Bernardino, Cal., "Havaboric"—Medicinal Preparation.

CHANNING WHITE, S. F., "Prairie Flower."

YATES & CO., 113 Front St., S. F., "Banner"—Oils; "Starlight"—Oils.

LEBES BROS. & CO., 207 and 209 Sacramento St., S. F., "Cribbage Brand"—Cigars.

J. A. FOLGER & CO., 104 California St., S. F., "Golden Gate"—Teas.

CHAS R. BURRAGE, 1645 Mission St., S. F., "Tartine"—Bread Raising Preparation.

A. E. MINTIE, 722 Montgomery St., S. F., "Sir Astley Cooper's Vital Restorative"—Medicinal Preparation.

J. A. FOLGER & CO., 104 California St., S. F., "Clipper"—Teas.

CHAS R. BURRAGE, 1645 Mission St., S. F., "B"—Bread Raising Preparation.

J. A. FOLGER & CO., 104 California St., S. F., "Pioneer"—Teas.

CHARLES R. BURRAGE, 1645 Mission St., S. F., "Sodine"—Bread Raising Preparation.

CHARLES R. BURRAGE, 1645 Mission St., S. F., "Waxen Queen"—Chemical Compound.

CHARLES R. BURRAGE, 1645 Mission St., S. F., "Ferri Vitrata"—Medicinal Compound.

As the latest laws governing the issue of trademarks are becoming better known to the business public, there is an increasing disposition on the part of manufacturers and tradesmen to secure the advantages guaranteed by the statutes. Full information concerning trademarks can be obtained free by addressing DEWEY & CO., Patent Agents, No. 202 Sansome St., San Francisco.

FRESH attractions are constantly added to **Woodward's Gardens**, among which is Prof. Gruber's great educator, the Zoographicon. Each department increases daily, and the Pavilion performances are more popular than ever. All new novelties find a place at this wonderful resort. Prices remain as usual.

FOR PRINTING MATERIALS, the publishers of this pape patronize Marder, Luse & Co., Pacific Type Foundry and Printers' Supply Warehouse, 532 Clay street, Sau Francisco, Cal. Send them a stamp for specimen sheet, and say advertised in this paper.

EXAMINE the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,423.04. Lewis O. Grover, President; L Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

MODEL MAKER AND MACHINIST.—I. A. Heald, No 514 Commercial St., San Francisco, (fourth floor).

DRIVING NAILS UNDER WATER.—Stack's illustrated advertisement appears once a month in this paper.

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, November 6, 3 P. M.

LEGAL TENDERS in S. F., 11 A.M., 99⅜@99⅝. SILVER, 1⅛@1⅛. GOLD in New York, 100⅛.

GOLD BARS, $90@910. SILVER BARS, 8@22 ₱ cent. dis count.

EXCHANGE on New York, ½% on London bankers, 49½@ 49¾. Commercial, 50; Paris, five francs ₱ dollar; Mexican dollars, 89¼@90¼.

LONDON CONSOLS, 95 9-16; Bonds, 107½ ex coupon.

QUICKSILVER in S. F., by the flask, ₱ lb, 41@41½c.

GENERAL MERCHANDISE.

[WHOLESALE.]

WEDNESDAY M., November 6, 1878.

BAGS—Jobbing.

Eng Standard Wheat, 14½@14¾
Cal. Manufacture
Hand Sewed, 22x36.. —@—
24x36.. —@—
23x40.. 15½@—
Machine Swd, 22x36.. 14½@—
Flour Sacks, halves.. 9 @10½
Quarters.. 2½@ 7
Eighths.. 4½@ 4½
Hessian, 60 inch.. —@—
45 inch.. —@—
40 inch.. —@—
Wool Sacks,
Hand Sewed, 3½ lb.. 47½@50
4 lb do.. 52½@—
Machine Sewed.. 50 @—
Standard Gunnies.. 13¾@14
Bean Bags.. 8 @ 9

CANDLES.

Crystal Wax.. 17 @—
Eagle.. 12 @—
Patent Sperm.. 30@—

CANNED GOODS.

Assorted Pie Fruits
2½ lb cans.. 2 25 @2 50
Table do.. 3 00 @3 25
Jams and Jellies.. 3 50 @3 75
Pickles, half gal.. 3 25 @ —
Sardines, qr box.. 1 67½@1 90
Hf Boxes.. 2 50 @2 75
Preserved Beef,
2 lb. doz.. 4 00 @ —
do Beef, 4 lb. doz. 6 50 @ —
Preserved Mutton.
2 lb. doz.. 4 60 @ —
Beef Tongue.. 6 50 @ —
Preserved Ham,
2 lb. doz.. 6 50 @ —
Deviled Ham, 1 lb,
doz.. 5 50 @ —
do Ham, ½ lb doz. 3 00 @ —

COAL—Jobbing.

Australian, ton.. 8 00 @— —
Coos Bay.. 6 50 @ 7 00
Bellingham Bay.. 6 50 @— —
Seattle.. 6 00 @ 6 50
Cumberland.. 14 00 @— —
Mt Diablo.. 4 75 @ 6 00
Lehigh.. 13 50 @— —
Liverpool.. 7 50 @ 8 00
West Hartley.. 10 50 @— —
Scotch.. 10 50 @— —
Scranton.. 11 50 @— —
Vancouver Id.. 7 00 @— —
Charcoal, sack.. 75 @— —
Coke, bbl.. 60 @— —

COFFEE.

Sandwich Id, lb.. @— —
Costa Rica.. 17½@ 17¾
Guatemala.. 17 @ 17½
Java.. 23 @— 26
Manilla.. 17 @— —
Ground, in cs.. 25 @— —

FISH.

Sac'to Dry Cod.. 5 @ 5½
do in cases.. 6 @ 6½
Eastern Cod.. 7 @— 7½
Salmon, bbls.. 8 00 @ 9 00
Hf bbls.. 5 00 @ 5 50
1 lb cans.. 1 45 @ 1 30
Pkld Cod, bbls..22 00 @— —
Hf bbls.. 11 00 @— —
Mackerel, No. 1.
Hf Bbls.. 10 00 @10 50
In Kits.. 1 80 @ 1 90
Ex Mess.. 3 25 @— —
Pkld Herring, bx 3 00 @ 3 50
Boston Smkd H'g 70 @— —

LIME, Etc.

Lime, Sta Cruz, bbl.. 1 25 @ 1 50
Cement, Rosendale.. 2 00 @ 2 25
Portland.. 4 00 @— —

METALS.

[WHOLESALE.
WEDNESDAY M., November 6, 1878.

IRON.—
American Pig, soft, ton.. 25 00 @26 50
Scotch Pig, ton.. 25 50 @26 50
American White Pig, ton.. 25 00 @26 50
Oregon Pig, ton.. 26 50 @— —
Refined Bar.. 2½@ 3
Horse Shoes, keg.. 5 00 @— —
Nail Rod.. —@ 7½
Norway, according to thickness.. 6½@ 7
COPPER.—
Sheathing, lb.. 34 @ 36
Sheathing, Yellow.. 19 @ 20
Sheathing, Old Yellow.. —@—
STEEL.—
English Cast, lb.. 16 @ 17
Black Diamond, ordinary sizes.. 16 @— —
Drill.. 16 @ 17
Flat Bar.. 16 @ 19
Plow Steel.. 8 @ 12½
TIN PLATES.—
10x14 I C Charcoal.. 8½@ 9
10x14 I C Coke.. 7 @ 7½
Banca Tin.. 18 @— 20
Australian.. 15½@ 17
ZINC.—
By the Cask.. 9 @— —
Zinc, Sheet 7x3 ft. 7 to 10, lb, less than cask.. 9½@— 10
NAILS.—
Assorted sizes.. 2 80@3 00
Plaster, Golden Gate Mills.. 3 00 @ 3 25
Land Plaster, in 10 00 @12 50

NAILS.

Ass'ted sizes, keg 2 90 @ 3 00

OILS.

Pacific Glue Co's Neatsfoot, No 1.. 1 00 @ 90
Castor, No 1.. 1 10 @ —
do, No. 2.. 1 05 @ —
Baker's A A.. 1 25 @1 30
Olive, Flagniol.. 6 25 @5 75
Peasch.. 4 75 @4 25
Palm, lb.. 9 @ —
Linseed, Raw, bbl. 72 @ —
Boiled.. 75 @ —
Cocoanut.. 55 @ —
China nut, ca.. 70 @ 72½
Sperm.. 1 40 @ —
Coast Whales.. 40 @ —
Polar.. 45 @ —
Lard.. 90 @1 00
Oleophine.. 22 @ 2½
Dover's Brit's.. 22 @ 23½
Photolite.. — @ —
Nonpariel.. 31 @ 32½
Eureka.. 18 @ 42½
Barrel kerosene.. 20 @ —
Downer Ker.. 37½@ —
Elaine.. 37½@ —

PAINTS.

Pure White Lead. 8 @ 8½
Whiting.. 1½@ —
Putty.. 4 @ 6
Chalk.. 1½@ —
Paris White.. 2½@ —
Ochre.. 3½@ —
Venetian Red.. 3½@ —
Averill Mixed Paint, gal.
White & tints.. 2 00 @2 40
Green, Blue & Ch Yellow.. 3 00 @3 50
Light Red.. 3 00 @3 50
Metallic Roof.. 1 30 @1 60

RICE.

China, Mixed, lb.. 5½@ —
Hawaiian.. 7 @ 7½

SALT.

Cal. Bay, ton.. 15 00 @22 50
Common.. 10 00 @12 00
Carmen Id.. 12 00 @14 00
Liverpool fine.. 19 00 @— —

SOAP.

Castile, lb.. 10 @ 10½
Common grades.. 4½@ 6
Fancy brands.. 7 @ 8

SPICES.

Cloves, lb.. 45 @ 50
Cassia.. 22½@ 25
Nutmegs.. 85 @ 90
Pepper Grain.. 15 @ 17
Pimento.. 15 @ 16
Mustard, Cal., ¼ lb glass.. 1 50 @ —

SUGAR, ETC.

Cal. Cube, lb.. 11½@ —
Powdered.. 11½@ —
Fine crushed.. 11½@ —
Granulated.. 11 @ —
Golden C.. 9¼@ —
Cal. Syrup, kgs.. 70 @ —
Hawaiian Mol'sses 26 @ 30

TEA.

Young Hyson, Moyune, etc.. 27 @ 31
Country pckd Cumpowder & Imperial.. 50 @ 60
Hyson.. 30 @ 35
Fooo-Chow O.. 35 @ —
Japan, 1st quality 40 @ —
2d quality.. 20 @ 25

LUMBER.

WEDNESDAY M., November 6, 1878.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE RETAIL PRICE.	
Rough, M	13 00	Rough, M	18 00
Refuse	9 00	Fencing	18 00
Clear	23 00	Flooring and Step	28 00
Clear Refuse	13 00	Narrow	30 00
Rustic	23 60	2d quality	25 00
Refuse	18 00	Laths	3 50
Surfaced	20 00	Furring, lineal ft	⅞
Refuse	14 00	**REDWOOD.** RETAIL PRICE.	
Flooring	20 00	Rough, M	18 00
Refuse	12 00	Refuse	14 00
Beaded Flooring	23 00	Pickets, Rough	15 00
Refuse	13 00	Pointed	16 00
Half-inch Siding	16 00	Fancy	22 50
Refuse	14 00	Siding	20 50
Half-inch Surfaced	20 00	Surfaced & Beaded	30 00
Refuse	14 00	Flooring	30 00
Half-inch Battens	16 00	Refuse	22 50
Pickets, Rough	11 00	Half-inch Surfaced	30 00
Rough, Pointed	12 50	Rustic, No. 1	30 00
Fancy, Pointed	13 00	Battens, lineal ft	—
Shingles	1 75	Shingles M	2 00

Signal Service Meteorological Report.

SAN FRANCISCO.—Week ending November 5, 1878.

HIGHEST AND LOWEST BAROMETER.

Oct 30	Oct 31	Nov 1	Nov 2	Nov 3	Nov 4	Nov 5
30.14	30.10	30.05	30.06	30.10	30.03	30.00
30.05	30.06	29.06	30.02	30.05	29.01	29.93

MAXIMUM AND MINIMUM THERMOMETER.

50	00	50	57	62	63	59
52	51	51	51	52	54.5	52

MEAN DAILY HUMIDITY.

79	81	84	84	81	87	66

PREVAILING WIND.

SW	W	W	SW	SW	SW	SW

WIND—MILES TRAVELED.

100	185	100	188	121	137	217

STATE OF WEATHER.

Clear.	Fair.	Fair.	Cloudy	Fair.	Rainy.	Fair.

RAINFALL IN TWENTY-FOUR HOURS.

					.11	.01

Total rain during the season, from July 1, 1878, 1.95 in.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

General Robert Allen Silver Mining Company.

—Location of principal place of business, San Francisco, California. Location of works, Pinal County, Arizona.

NOTICE is hereby given that at a meeting of the Board of Directors, held on the 29th day of October, 1878, an assessment of twenty-five (25) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin to the Secretary of the Company.

Any stock upon which this assessment shall remain unpaid on the second day of December, A. D., 1878, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the second day of January, 1879, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

M. C. SOUTHARD, Sec'y.

Office, No. 411½ California street, Room 11, San Francisco, California.

Land Purchasers' Association.—Location

of principal place of business, San Francisco, California.

Notice is hereby given that at a meeting of the Board of Directors, held on the 5th day of November, 1878, an assessment of four ($4) dollars per share (being a part of the 43d installment on the subscription to the stock) was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at No. 641 Sacramento street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 9th day of December, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before will be sold on Monday, the fourth (4th) day of January, 1879, to pay the delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors.

C. S. WRIGHT, Sec'y.

No. 641 Sacramento St., San Francisco, Cal.

Mineral Fork Mining and Smelting Com

pany.—Location of principal place of business, San Francisco, California. Location of works: Big Cottonwood District, Salt Lake County, Utah Territory.

Notice is hereby given, that at a meeting of the Directors held on the 31st day of October, 1878, an assessment (No. 1) of two (2) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, Room 20, Safe Deposit Building, No. 328 Montgomery street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the seventh day of December, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Saturday, the 14th day of December, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

OTTO METCHKE, Sec'y.

Office, Room 20, Safe Deposit Building, No. 328 Montgomery street, San Francisco, Cal.

Mount Jefferson Milling and Mining Co

—Location of principal place of business, San Francisco, California. Location of works, Garrote Mining District, Tuolumne County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the seventeenth day of October, 1878, an assessment (No. 5) of five (5c.) cents per share was levied upon capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, Room 6, 315 Pine St., San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the twenty-fifth (25th) day of November, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Tuesday, the seventeenth (17th) day of December, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK, Sec'y.

Office, Room 6, No. 318 Pine St., San Francisco Cal.

New Basel Con. Gravel Mining Company.

—Location of principal place of business, San Francisco, California. Location of works: Placer County, Cal.

NOTICE.—There are delinquent upon the following described stock on account of assessment (No. 4) levied on the 24th day of September 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Name.	No. Certificate.	No. Shares.	Amount.
G Mahe	6061	1500	$75 00

And in accordance with law and an order of the Board of Directors made on the 24th day of September, 1878, so many shares as may be necessary of each parcel of such stock will be sold at public auction at my office, rooms 5 and 6, No. 434 California street, San Francisco, California on the Eighteenth (18th) day of November, 1878, at the hour of twelve o'clock, noon, of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

D. F. LEGAYE, Sec'y.

Office, 434 California St., San Francisco, California.

Summit Mining Company.—Location of

Principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 5,) levied on the 10th day of September, A. D., 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
C Lehmann, Trustee	200	5	$ 25
C Lehmann, Trustee	201	5	25
C Lehmann, Trustee	202	5	25
C Lehmann, Trustee	203	5	25
C Lehmann, Trustee	204	5	25
T Scotland	13	6,250	312 50
F B Whiting	28	200	10 00

And in accordance with law, and an order of the Board of Directors, made on the tenth day of September, A. D., 1878, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, on Tuesday, the nineteenth day of November, A. D., 1878, at the hour of two o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

J. W. CLARK, Sec'y.

Office, Room 6, No. 318 Pine Street, San Francisco, Cal.

The California Fruit Growing Association.

—Location of principal place of business, San Francisco, California. Location of property, El Dorado County, California.

Notice is hereby given, that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 9) of three ($3) dollars per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, No. 641 Sacramento street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 30th day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Monday, the 21st day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco, Cal.

POSTPONEMENT.—At a meeting of the Board of Directors of the California Fruit Growing Association, held September 23d, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till Saturday, the 26th day of October, 1878, and the day of sale of delinquent stock is hereby postponed to Friday, the 22d day of November, 1878.

D. A. BROWN, Sec'y.
Office, No. 641 Sacramento street, San Francisco.

POSTPONEMENT.—At a meeting of the Board of Directors held on the Nineteenth day of October, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till November 30th, 1878, and the day of sale of delinquent stock is hereby postponed to December 21st, 1878.

D. A. BROWN, Sec'y.
Office, No. 641 Sacramento Street, San Francisco, Cal.

Vigorit Powder Company.—Location of

principal place of business, City and County of San Francisco, California. Location of works, California City, Marin County, State of California.

Notice.—There are delinquent upon the following described stock, on account of assessment (No 1) levied on the first day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. of Cert.	No. Shares	Amount
Louis McLane, Trustee	30	437½	$218 75
Louis McLane, Trustee	32	½ of 875	218 75
G W Grayson, Trustee	62	1312½	656 25
H H Shinn, Trustee	91	400	200 00
H H Shinn, Trustee	92	400	200 00
H H Shinn, Trustee	93	400	200 00
H H Shinn, Trustee	94	112½	56 25

And in accordance with law, and an order of the Board of Directors, made on the First day of August, 1878, so many shares of each parcel of stock as may be necessary will be sold at public auction, at the office of the Company, Room No. 1, 109 California street, on Wednesday, the second day of October, 1878, at the hour of 2 o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

JAS. W. BAKER, Sec'y.

Office, No. 109 California street, Room 1, San Francisco, California.

POSTPONEMENT.—By an order of the Board of Directors made on the First day of October, 1878, the above sale is postponed until Monday, October 21st, 1878, at the same hour and place.

JAS. W. BAKER, Sec'y.

POSTPONEMENT.—By an order of the Board of Directors made on the Eighteenth day of October, 1878, the above sale is postponed until Friday, November 1st, 1878, at the same hour and place.

JAS. W. BAKER, Sec'y.

POSTPONEMENT.—By an order of the Board of Directors made on the first day of November, 1878, the above sale is postponed un il Monday, November 18th, 1878, at the same hour and place.

JAS. W. BAKER, Sec'y.

Testing and Working Silver Ores.

The above is the title of an illustrated work of 114 pages, for miners and prospectors, by Chas. H. Aaron, which has just been issued by Dewey & Co. Mr. Aaron has managed to give many useful hints and suggestions, free from all technicalities, and in such a style as to be easily comprehended. It is written for the miner, with no chemical symbols or metallurgical technicalities to confuse those who are not chemists or metallurgists. The following summary of the contents of the work will give an idea of its scope:

Under the heading of the first chapter, "Testing Ores for Silver," we find paragraphs on ore formation test for silver, with heat and water, acid or blow pipe. In speaking of testing for a process, the extent and richness of ore is considered, smelting ores, selecting and working same ple, appliances for testing, roasting, etc. Under the head of "Working Ores" the author describes Aaron's process, has something to say of superheated steam, preparation of dichloride of copper and protochloride of copper, use of copper and iron, quantity of chemicals, carbonate of lime, chloride ores, amalgam, Patchen's process, etc. He also describes the methods of working roasted ores, treatment of base metals, stirring, heat of furnace, want of sulphur, etc. Under the head of "Leaching Processes" are the titles, Smelting, Mexican process, Chilean process, Kroehnke's process, etc. Under "Pulverizing Machines" are described the arastra and its construction and operation, stamp batteries, screens, Crocker's trip-hammer battery, Paul's pulverizing barrel, Kendall's battery, Noice's pulverizer, a cheap rock breaker, etc.

In speaking of amalgamators the author describes a cheap amalgamator, grinding the ore, directions for making a barrel, preventing mechanical wear, use of quicksilver, copper in bars, Freiberg barrel, cheap barrel trough, barrel on rollers, Aaron's amalgamator, separator, etc.

He describes an improvised retort, roasting furnace, furnace tools and furnace building. Among the miscellaneous invention may be found Aaron's leaching apparatus, with two or three different arrangements, a small mill, sampling tailings and settling tanks, dichloride of copper, etc. Mr. Aaron is a practical miner, of long working experience on this coast.

The book is a serviceable one for miners' and prospectors' use. Price, post free, $2.00. Address Dewey & Co., MINING AND SCIENTIFIC PRESS, 202 Sansome Street, San Francisco.

CERTIFICATE OF PARTNERSHIP.

The undersigned, having formed a partnership to carry on the business of General Publishers under the firm name and style of Dewey & Co., Publishers, this certifies that the principal place of business of said partnership is situated at 202 Sansome street, in the city of San Francisco, State of California; and that Alfred T. Dewey, residing in the city of Oakland, State of California, and Warren B. Ewer, residing in the city of San Francisco, State of California, are all the members of said partnership.

ALFRED T. DEWEY.
W. B. EWER.

STATE OF CALIFORNIA, } ss.
CITY AND COUNTY OF SAN FRANCISCO, }

On this second day of October, in the year one thousand eight hundred and seventy-eight, before me, Chas. E. Kelley, a Notary Public in and for the said city and county, personally appeared Alfred T. Dewey and W. B. Ewer, known to me to be the persons whose names are subscribed to the within instrument, and they acknowledge to me that they executed the same.

In witness whereof, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written.

CHAS. E. KELLEY,
[Seal.] Notary Public.

Endorsed—Filed October 7th, 1878.
THOS. H. REYNOLDS, County Clerk.
By J. WHALEN, Deputy Clerk.

CERTIFICATE OF PARTNERSHIP.

The undersigned, having formed a partnership to carry on the business of Patent Agents under the firm name and style of Dewey & Co., Patent Agents, this certifies that the principal place of business of said partnership is situated at 202 Sansome street, in the city of San Francisco, State of California; and that Alfred T. Dewey, residing in the city of Oakland, State of California, and Warren B. Ewer, residing in the city of San Francisco, State of California, and George H. Strong, residing in the city of Oakland, State of California, are all the members of said partnership.

ALFRED T. DEWEY,
W. B. EWER,
GEO. H. STRONG.

STATE OF CALIFORNIA, } ss.
CITY AND COUNTY OF SAN FRANCISCO, }

On this second day of October, one thousand eight hundred and seventy-eight, before me, Chas. E. Kelley, a Notary Public in and for the said city and county, personally appeared Alfred T. Dewey, W. E. Ewer, and George H. Strong, known to me to be the persons whose names are subscribed to the within instrument, and they acknowledged to me that they executed the same.

In witness whereof, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written.

CHAS. E. KELLEY,
[Seal.] Notary Public.

Endorsed—Filed October 7th, 1878.
THOS. H. REYNOLDS, County Clerk.
By J. WHALEN, Deputy Clerk.

Iron and Machine Works.

THOS. PENDERGAST. HENRY S. SMITH.

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Crushing Rolls, Clarifiers, Vacuum Pans, Air Pumps, Concentrators, Bag Filters, Charcoal Filters, Blow-up Tanks, Coolers and Receiving Tanks.

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Flour Mill Machinery, Saw Mill Engines and Boilers, Dredging Machinery, Oil Well Retorts, Powder Mill Machinery, Water Wheels.

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Ores sampled.

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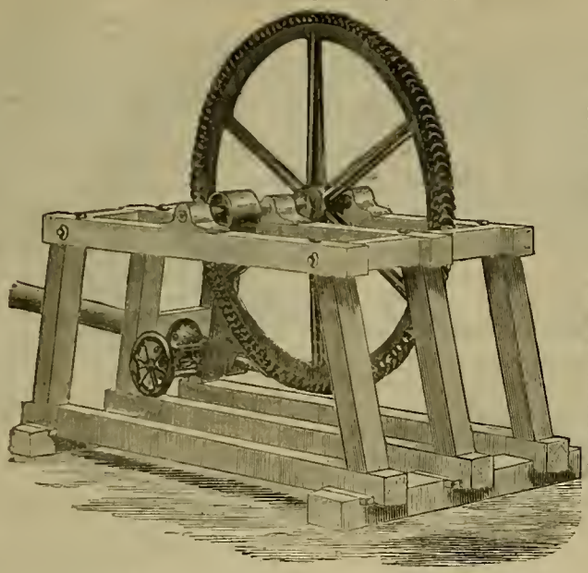

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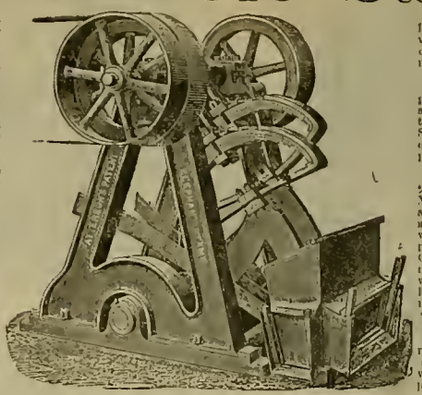

The above engraving shows the Machine in exactly the position it would be placed in a mine; the reader will therefore see that all wood work is done away with, and that once the Machine is on the ground it will take but a few days to set it up and have it in full working order.

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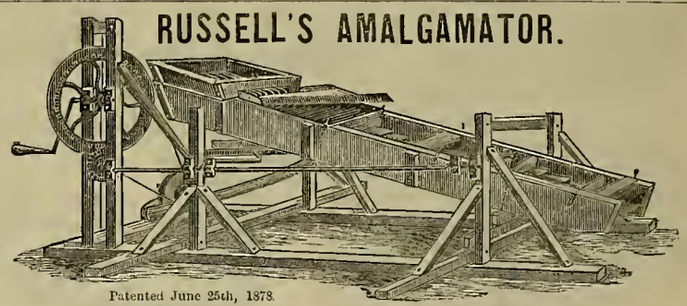

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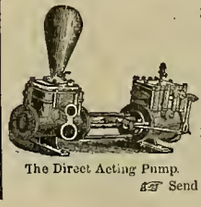

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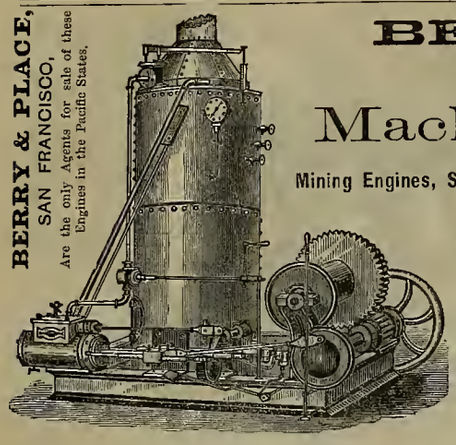

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BY DEWEY & CO., Publishers. SAN FRANCISCO, SATURDAY, NOVEMBER 16, 1878. VOLUME XXXVII Number 20.

Artesian Wells.—No. 6.

Improved Tools.

In the last article, rough cuts and descriptions showing the general character of well-boring tools were given. To-day we give cuts of improved apparatus. All the tools represented are patented, and the cuts of the same copyrighted by Charles D. Pierce, manager of the Pierce Well Excavater Company, No. 4206, Elm Avenue, Philadelphia, Pa.

Figs. 1 and 3, represent two views of a 17-inch auger. The shells or pods are made of quarter-inch iron-plate. The lower portion of these pods, after forming the cup-like curve, are shod with knives or cutters, which are inclined in two directions, so that when the auger is revolved they will engage the earth at the inner corners first, and cut down gradually with a draw-cut. The outside points stand farther than any other portion from the center of the apparatus, as is indicated by the dotted circles. Thus so small a portion of the auger touches the side of the bore-hole, that there is a minimum of friction. Moreover free access of the air to the space beneath the auger, is allowed so that when the latter is drawn up no suction will interfere. Other devices have been tried to overcome this suction; the edge of the shell has been turned over, forming an air-tube; pipes have been used; the side of the shell has been flattened;—but with no flattering success, as the air passages so formed are soon filled with debris. The dots on the edge of the pods show where sand-sides and valves may be attached, thus converting the auger into a pump. These attachments are necessary in boring in quicksand. When great distances must be sunk through quicksand, a curb is put in, and the boring continued through this. The cutters are of three-eighth inch steel, and so fastened with rivets that they may be removed and new ones substituted. The shells are attached to cast-steel arms, which are hinged so that when the auger is drawn up full, and the collars or hauds (shown in cuts) slipped up, the shells swing open, and the debris falls out. It is said that this auger will bore through anything except solid, hard rock.

Fig. 5 represents an 18-inch auger, the construction of which can be gathered from the cut. Fig. 4 shows the same, with the sand-sides and valves attached. In both cuts the marginal dotted lines indicate the size of the borehole, no part of the tool but the outer points of the cutters being allowed to touch the sides of the hole. The key, B, Fig. 4, can be removed so that the shells may be spread, either to discharge debris, or to admit of the entrance of rocks nearly the size of the borehole. The valves, Fig. 4, are hinged about E, the dark dotted lines showing them closed, the lighter lines indicating their position when open. The position of their axis is shown by the dotted diameter, in the horizontal projection, below Fig. 4. The valves may be lifted up, for discharging purposes, by means of the rod F, Fig. 4. Only one valve need be lifted, and hence but one of these rods is necessary.

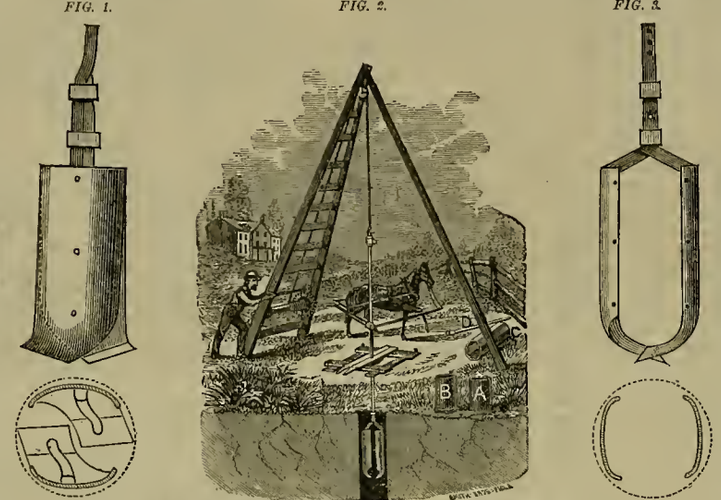
Fig. 2 shows one of these excavators, as worked by horse-power. By means of hook-wrenches men may revolve the rods and do the boring. A, B, show clay-pipes; C is a wooden-pipe; these are of little value where pressure has to be exerted in forcing the tube. Iron is generally used, as explained in a previous article. D is an extra shaft. Eight revolutions fill the auger. It is drawn up and emptied every two feet. The man at the crank feeds the auger and raises it when filled. In boring hard material the auger must be pressed down by some weight on the rods. When men are boring some of them frequently sit on the wrenches while others turn.

Improved Sand Auger.

Some kinds of sand, gravel and quicksand, will not slide up into any kind of an auger over a foot deep, unless there is something to stir the sand and elevate it. Fig. 6 represents an improvement intended to manage such material. This auger has a spiral elevating core, an air passage down the center of the core, C (an inch in diameter), which prevents suction. The core is revolved and allowed to drop below the cylinder, A, far enough to fill. The cylinder does not revolve with the auger. When the auger-worm is full, it is drawn up into the cylinder, and the sand, slush or gravel, is held by the cylinder and leather flaps or valves, E E, when all is drawn up together. The contents are discharged by sliding the cylinder up two feet. D is an adjustable set-screw and ring to regulate the sliding cylinder, A. The cylinder can be removed for clay boring.

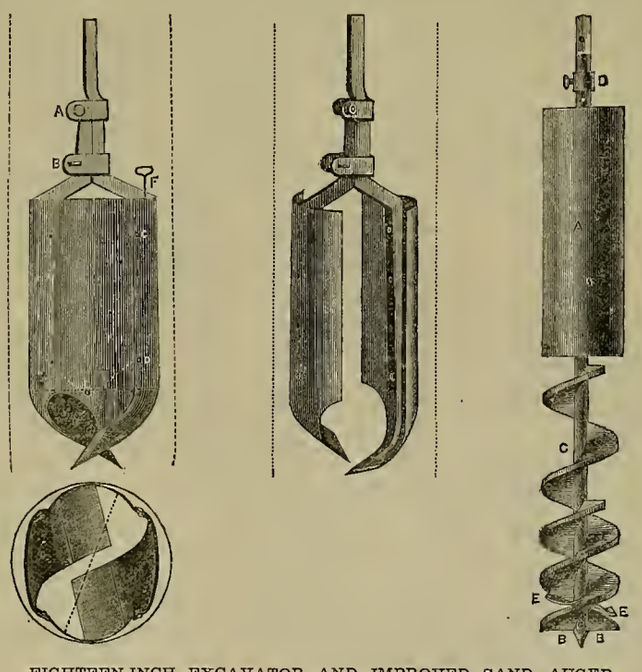
None of these tools are adapted to boring in hard, solid rock. When this is encountered and must be bored through, other tools are needed, as indicated in previous articles. In our next we will consider improved apparatus for *drilling* wells.

FIG. 1. *FIG. 2.* *FIG. 3.*



EXCAVATOR WORKED BY HORSE-POWER.

FIG. 4. *FIG. 5.* *FIG. 6.*



EIGHTEEN-INCH EXCAVATOR AND IMPROVED SAND AUGER.

THE Commissioner of the General Land Office recommends that the Sierra Nevada M. Co. be advised to institute proceedings against the Union Con. M. Co., to test the validity of the latters patent.

Death of Henry Sumner Smith.

Henry Sumner Smith, Vice-President of the Mechanics' Institute, and one of the proprietors of the Ætna Iron Works, in this city, died at his residence on Tuesday last. Mr. Smith has resided in this city since 1856, and has been identified with the iron working interests during all this time. He was well and favorably known in the community as a genial, upright man and one who well deserved the success attending his business efforts during late years. He was a first-class mechanic, and was universally respected by all with whom he came in contact. A special meeting of the Mechanics' Institute was held on Tuesday evening, Irving M. Scott, President, in the chair, to take suitable action in reference to the death of Mr. Smith. The President said that deceased was one of the most active and honorable members of the Institute and the mechanical profession. No member had given more patient and conscientious labor to promote the interests of the Institute. He had endeared himself to every one who knew him, and was above reproach in his business and private relations. It was fitting that the Institute should take proper steps to honor the memory of the distinguished member.

Mr. Hallidie gave a short sketch of the life of deceased. He was born in Rutland, Vermont, August 23d, 1832, and served as an apprentice in a machine shop. He came to California in May, 1856, and soon after joined the Mechanics' Institute; was employed in the Vulcan Works, and was sent to Oroville to superintend the erection of a quartz mill. After six years service in the Vulcan foundry, he served as foreman in the Pacific and Golden Gate foundries, and in April, 1866, formed a partnership with Hanson & Pendergast, in the Ætna foundry. He was for four years a member of the Tax-payers' Convention, and in 1876 was nominated by them for the Assembly. In 1875 he was elected a trustee of the Institute, and re-elected in 1877. In August last he was elected Vice-President, to fill the vacancy created by the resignation of James Duffy. His experience was of the greatest value in making the Industrial Exhibitions successful. He was a man of quick perception and careful judgment, and enjoyed the fullest respect and confidence of his fellow-workmen and fellow-men.

On motion, the Chairman appointed A. S. Hallidie, H. S. Wheeler and W. H. Birch a Committee on Resolutions, who reported the following:

WHEREAS, We are called together for the purpose of giving some expression of sentiment and feeling on the occasion of the unlooked-for and unexpected death of the Vice-President of this society, Henry Sumner Smith, it is by the members of the Mechanics' Institute, in public meeting assembled,

Resolved, That by the untimely death of Henry S. Smith, the Mechanics' Institute of San Francisco has lost one of its most valued and efficient members and painstaking and faithful officers, whose active and intelligent efforts have always tended to the advancement of this association and the best interests of the mechanics of this city.

Resolved, That his death leaves a void in the social circle that cannot easily be filled, and the silence of his voice and association of his ready offices in every place where his services were needed, will be felt in this community and long mourned by his friends.

Resolved, That in this hour of their affliction, and in view of their irreparable loss, the members of his family have our most sincere sympathy.

Resolved, That this Association show its respect for its late Vice-President by attending the funeral, under the direction of a committee of six, three of whom shall be from the Board of Trustees, and three from the members at large.

The resolutions were adopted, and the committee was appointed, as follows: For the Board of Trustees—S. H. Wheeler, D. A. McDonald, Samuel Dinsmore. For the members at large—W. H. Birch, Chas. R. Steiger, C. F. Bassett.

The funeral will take place Sunday afternoon, under Masonic auspices. Deceased was a Past Master of California Lodge, F. and A. M., and President of the Past Master's Association, and otherwise of high degree in the Order.

The members of the Mechanics' Institute will assemble at one o'clock, at the Library building, on Post street, to attend the funeral in a body. The building will be closed on Sunday, except for the purpose of assembling the members.

THE Hayes M. Co. are having good work done on one of their mines, near Santa Maria creek, in Yavapai county, Arizona. Their deepest shaft is down about 50 feet, vein about four feet wide.

DURING the month of October, 2,251,141 pounds of silver-lead bullion and 3,457,452 pounds of silver ore were shipped over the Utah Southern road.

THE Flood and Kirkpatrick mines in Oro Blanco district, Arizona, have been sold to a company in Philadelphia for $75,000 and the money paid.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—EDS.

Lixiviation versus Amalgamation.

EDITORS PRESS:—In your impression of Oct. 26th I observe an extract from an article I contributed a short time since to the *Arizona Citizen* on the above subject. I now send you the concluding portion of it, which may possibly suggest the reason why lixiviation has not hitherto proved a success in Utah, Nevada and California.

"The only precaution to be observed is to have the works erected and conducted under the supervision of a competent, experienced metallurgical chemist, who is capable of modifying the process to suit the particular ores with which he may have to deal, and whose actual experience is such as to enable him to grapple with and overcome any unexpected obstacles which may present themselves in the constituents of the minerals. Serious blunders (involving heavy pecuniary losses and frequently total failure with entire loss of capital invested) being the almost inevitable results of intrusting these costly works to the management of mechanical engineers, miners and others, who, however well qualified in other respects, have not the chemical knowledge and experience which are indespensable in order to insure certain and successful results from what is essentially a chemical operation."

Not having been in the places you mention during the last few years (except for a short visit to Inyo county last year), I am unable to explain the causes of their failure, but am strongly inclined to attribute them to neglect of the precautions I have suggested. On the other hand, I have observed notices of its success in Utah, from time to time in your journal, as well as a very interesting account of the process in your impression of July 7th of this year, as conducted at the works at Baranca in the Province of Sonora, Mexico, under the supervision of Mr. N. Graff, an accomplished metallurgical chemist (formerly assayer to the Gould & Curry Co.), where it has proved a most undoubted success; as well as at the establishment of Mr. R. Johnson, Mina Prieto, near Hermosilla, where (again under the management of another first-class chemist, Mr. Platry) it is working $25 ore to good profit.

The success of the process has also been triumpbantly demonstrated in Colorado, where there are now seven or eight large establishments in steady operation, some of them combining the Hunt & Douglass copper process with the extraction of silver.

It has also been carried on with marked success at Swansea, Wales, and in Germany, during the last 30 years; so that its success, when properly conducted, is no longer a matter for argument; and I am firmly convinced that when a class of men shall have been educated to work the process as it should be, it is destined to supersede amalgamation to a great extent in Nevada, Utah and California—as it is already doing in Mexico. W. T. RICKARD, F. C. S.

Tueson, A. T.

Lixiviation in Utah.

The following is from the Salt Lake *Herald*:

The old Telegraph leaching works on the Jordan are running very successfully, on ores from the Old Telegraph and Jordan mines. About 700 tons per week is the amount being leached. The ore concentrated after leaching, for the remaining lead and silver, and by this means there is very little loss. The cost for leaching and concentrating amounts to less than $1.50 per ton. The sulphides are mixed with slacked lime and the slimes from the concentrator, the whole being put in sacks and melted down with the ores in the smelter. It is the intention to treat the sulphides from the Bingham works in a like manner from this time forward.

MECHANICS' LIENS.—Notice is given by the Supreme Court, in two decisions delivered at Pittsburg recently, that mechanics who file liens against property "for work done and material furnished" must comply exactly with the requirements of the statute if they would have their claims sustained. In one case, the lien "for plasteriug and furnishing materials for plastering two dwelling houses as per contract," was declared fatally defective because the claim did not set forth the kind and amount of material furnished, and the time when the materials were furnished and the work done. In the other case, the lien set forth that the materials were furnished for the "erection and construction" of the buildings, whereas the evidence showed that they were for the *repair* of the buildings, and it was therefore disallowed. This is getting the law down to very fine points, but mechanics are warned by the decision that to make their liens good they must be very exact in stating their claims. In one case, at least, the claimant has no opportunity to file a new and amended claim, the limited time for that having already expired.

A LATE invention of William H. Armor, of McKeesport, Pa., is an improved vehicle wheel hub. The spokes of the wheels in which this is used may be put into the fellies and the hubs, without cutting the tire.

The Martin White Case.

An Instructive Decision by the Supreme Court of Nevada.

This decision, rendered a few weeks ago, is so replete with interest to mining men, and involves so many open questions, that rather than run the risk of losing any of it by garbling condensation, we shall publish it in full. It is too long for one issue, and will be continued in several.

General Statement of the Case.

This is an action to determine the right of possession of certain mining ground in the Ward district, White Pine county. The plaintiff deraigns title from the location of a claim called the Shark, and the defendant is the grantee of the location of the Paymaster. Both claims were located on the same ledge—the Paymaster in July, the Shark in September—and the principal question in the case is as to the validity of the Paymaster location.

The facts in regard to this location are very clearly and fully presented by the findings of the District Judge, which embrace the special verdict of a jury upon a number of issues submitted to its decision. No exception whatever is taken by either party to the findings of the jury, and the objections of the appellant to the additional findings of the Court relate rather to the conclusions of law involved than to the facts upon which they are based.

The question before us is therefore narrowed down to a construction of the legislation of Congress and the local rules of the Ward district governing the location of mining claims.

Before entering upon a discussion of the purely legal questions involved in the case, however, it will be best to give a connected statement of the facts, which are as follows:

Organization of Ward District.

Mineral deposits were first discovered in what is now the Ward mining district by Thomas F. Ward, in March, 1872. On the 1st of May the district was organized, a set of local rules adopted and (it seems) Ward appointed Recorder. The rules so first adopted were, in their general features, like the rules everywhere prevalent on this coast before the enactment of the law of Congress of May 10th, 1872. Claims were to be located by posting a notice at the point of discovery, the notice to be recorded in 15 days; this to hold the claim good for 100 days, within which time a certain amount of work was to be done on the ground in order to hold the claim a year. Each locator was to have 50 feet of the surface on each side of his ledge or vein, but this not to carry the right to any mineral deposit therein distinct from the one located. These rules, so far as they were not inconsistent with the act of Congress of May 10th, 1872, continued in force until the 1st of October following, when the miners adopted a new set of rules.

Discovery and Location of the Paymaster.

Such being the law of the district for the location and holding of claims, Ward, on the 17th of July, 1872, discovered the vein or ledge which is now in controversy, and placed upon the croppings at the discovery point the following notice:

Paymaster location notice,—"We, the undersigned, do hereby locate and claim fifteen hundred (1,500) feet on this ledge lode, or deposit of mineral-bearing quartz or rock, with all its dips, spurs, angles and variations, together with all privilcges prescribed by the mining laws of the United States and this district, and intend to hold and work the same according. We claim three hundred (300) feet easterly, and twelve hundred (1,200) feet westerly from this monument, running along the course of the vein. This shall be known as the Paymaster.

"Ward Mining District, July 17th, 1872, situated about 1,500 feet northwest by north, from Mountain Pride lode."

To this notice were appended the names of the locators, and opposite the name of each was set the number of feet (undivided) to which he was to be entitled.

Changes in the Record and Location Notice.

On the following day, July 18th, the claim was recorded by Ward, as Mining Recorder of the district, by copying it into a small memorandum book which he carried in his pocket, and which at that time constituted the record book of the district. Subsequently, about the first of August, a larger book was obtained, and the records transcribed from the little book. In the meantime, however, the Paymaster notice, and the record of it, had been changed as follows: It seems that there was some sort of an agreement subsisting between Ward, John Henry, E. C. Hardy and three others, that they should be equally interested in the locations made by Ward. But in the location of the Paymaster, Ward had omitted Hardy's name, and inserted that of Dave Pearson, who was not a member of the company. A few days after the location and recording of the claim, Henry called Ward's attention to the fact that Pearson's name was improperly on the notice, and Hardy's name improperly omitted. He also objected to the unequal distribution of the claim among the six locators. Ward thereupon changed the notice on the ground, and the record in the little book, by erasing the name of Pearson and substituting the name of Hardy, and by changing the figures following the names, so as to give to each locator 250 feet of the claim. These changes in the notice and in the little book were made before the transcription to the large book which, since the 1st of August, 1872, has contained the records of the Ward district.

Further Developments.—Work Performed.

Subsequent developments have shown that the vein or ledge upon which this Paymaster claim was located has a course or strike from southeast to northwest. According to the magnetic meridian (variation 16½°) it runs more nearly east and west.

In September, 1872, some work—it does not appear how much—had been done on the Paymaster location, but the course of the vein was not clearly determined.

A Conflicting Location.—The Shark.

Such being the condition of that claim, on the 9th of September the locators of the Shark discovered the croppings of the same vein at a point about 400 feet northwest of the location point of the Paymaster, and posted to following notice:

"Shark mine, No. 1. Notice: We, the undersigned, do hereby locate and claim fifteen hundred (1,500) feet on this ledge, lode or deposit of mineral-bearing quartz and rock, with all its dips, spurs, angles and variations, together with all privileges prescribed by the mining laws of the United States and this district, and intend to hold and work the same according. We claim 750 feet on each side of the monument running along the course of the vein. This shall be known as the Shark mine, No. 1.

"Ward mining district, Nye county, Nevada, September 9th, 1872.

"JOHN TAYLOR, 375 feet.
"THOMAS CONNOR, 375 feet.
"MATHEW GLEESON, 375 feet.
"CHAS. STRUTENBERGER, 375 feet."

On the following day this notice was recorded, the certificate to the record being as follows:

"Recorded September 10th, 1872, at 10 o'clock A. M. Situated about 600 feet northeasterly from Young American mine, and about 300 feet northwesterly from Paymaster mine.

"THOS. F. WARD, Recorder."

Ward Allows it Recorded.

Some significance is attributed to the fact that Ward, the locator of the Paymaster, going upon the ground for the purpose of making this record, and necessarily observing the proximity of the Shark to the Paymaster, made no complaint at the time that the Shark locators were on his claim. It was not until October, and after some work had been done by the locators of the Shark, that notice was given that they were on the Paymaster vein. They, however, denied that it was the same vein. They claimed a cross vein, and declared that if it turned out that they were on the Paymaster they would give it up.

Change in the Paymaster's Notice and Record.

About this time—on October 10th, 1872—John Henry, one of the Paymaster locators, took down their notice and put up another, the same in all respects as the one removed except that it claimed 300 feet southerly and 1,200 feet northerly from the monument, instead of 300 feet easterly and 1,200 feet westerly. On the same day he drove down two stakes, one at the northwest end of the Paymaster and the other at the southeast end. They were marked "Northwesterly stake of Paymaster" and "Southeasterly stake of Paymaster." These stakes were on a line, or very nearly on a line, with the croppings of the vein as now developed, and within a few feet of the center line of the claim as now surveyed. At some time subsequent to the change of the notice on the mine, a corresponding change was made in the record of the claim by erasing the words easterly and westerly and inserting the words southerly and northerly. The jury could not find who made this change in the record, but the District Judge was of the opinion, and so are we, that it was done by Ward and Henry, but without any fraudulent intent.

The Laws of the District Altered.

In the meantime, on the 1st of October, the laws of the district had been changed so as to conform more nearly to the act of Congress of May 10th, 1872, it being especially provided that locators should have 300 feet of surface ground on each side of their vein, to include, of course, not only the vein originally located but all veins within the surface lines. (R. S., Sec. 2322.)

The Paymaster Location Held to be Valid.

It is found as a fact that sufficient work has been done under each of these locations to satisfy the requirements of the law of Congress and the rules of the district. The Paymaster location was never marked upon the ground in any other way than by the three stakes on the line of the croppings—one at each end and one at the point of discovery—until it was surveyed for the purpose of the patent application in October, 1875. The Shark location was never marked on the ground in any way, except by the monument at its initial point, until April, 1874, when Gleeson set stakes at the four corners of the surface claim. On these facts the District Judge concluded that the Paymaster location was valid, and, as a consequence, that the subsequent location of the Shark on the same ground was invalid. In accordance with this conclusion the judgment of the District Court was for the defendant.

[To be Continued.]

A NOVEL soldering iron, the invention of M. Paquelin, was recently described before the Academy of Sciences, Paris. Its distinctive feature is a platinum receptacle, in which heat is instantaneously generated with air and petroleum vapor or air and coal gas.

Volcanic Eruptions in the South Seas.

We have received the particulars appended respecting this singular phenomenon from Mr. Consul Layard, Noumea. The accuracy of the account is vouched for by a Swede named Peterson, resident on Tanna, who was an eye-witness to the events narrated: The eruption occurred on the 10th of January last about 10 A. M. The bottom of the harbor at the west side rose above water for about 50 fathoms in length at the first earthquake shock. A new volcano burst out close to Sulphur bay, between it and the old volcano. The west side of Port Resolution is all bursting up with steam at this moment. A second great eruption and earthquake happened on the 11th of February, and the bottom of the harbor was again upheaved for about another 50 fathoms, making the entrance to the harbor very narrow. Three rocks rose up about a cable's length from the west point to seaward out of 11 fathoms of water. There is now a bar with only 15 feet of water where there used to be five or five and a half fathoms right across the mouth of the harbor, a little inside. A tidal wave, about 50 feet high, swept the east point of the harbor, destroying all the native plantations. My cobra house was swept away. The wave occurred on both occasions, but the first was the largest. Every one, including myself, lives on the hill tops, so no lives were lost. My vessel, the *Suengone*, was driven right up among the trees, but carried out again. I lost both my anchors and all my boats. I have come here without either. It is wonderful how she was saved. As we came out I saw a patch of discolored water about two miles due north from the port. I did not examine it, but am sure it is a new shoal. It extends, perhaps, a cable's length. I left Tanna on the 27th of March. We had strong winds and variable, very hot, with rain, at times before the eruption. The old mountain was very active also, roaring and throwing up huge rocks. The tidal wave was very local; so was the shock. The missionary on the other side of the island hardly felt it, and there was no wave there. A high hill behind the rock called Cook's pyramid, on the west of the harbor, fell into the sea, and has made a new point of land; and Cook's pyramid is some 40 feet higher out of the water than it was. We had several small shocks all the time between the two big ones, also after the last big one. The natives say they never knew anything like it before. On the west side the earth has cracked and sunk very considerably; on the east side the land was swept by the tidal wave; the plantations on both sides are destroyed. It will not affect the natives much; they began to plant again immediately. The wave did not destroy the trees. The whole harbor is so contracted by the upheaval that I doubt if a large ship could find room to swing in. The bottom in the place I have named has been raised 15 or 20 feet, or more, above the water in some places along the shore. Two days before the first shock the old mountain was very active, roaring loudly. The fish were violently affected; seemed paralyzed, and unable to swim. Numbers were left on the beach—so many that the natives and the pigs could not consume them, and they rotted as they lay.—*The Colonies and India.*

Americans Ahead of Europeans.

"A good copy is better than a poor original," says the proverb. What, however, shall be said of a Continental firm which buys locks or takes samples made in New Haven, United States, and exhibits them in the Austro-Hungarian Department of the Paris exposition?

Let us examine them:

1. On the hasp and key of one are the figures "23," the private number of that particular padlock, made by Mallory, Wheeler & Co., of New Haven, Conn.

2. The stamp "2 tumblers" has been so far removed from the varnished face of the padlock that it can only be seen by glancing at it in the light so as to present a certain angle. It is doubtless one of a set of samples on which the inscription, "2 tumblers," has been put with white lead, which has been removed by turpentine, but left an impression on the asphaltum varnished.

3. Another padlock has "3 in." yet visible; and a third has "in.," "20," both of the Mallory, Wheeler & Co.'s marks.

If made in Austro-Hungary, they would hardly have inscriptions in English.

4. The scutcheon of the keyhole has been ground down thin in removing the stamp of the firm.

I can only account for the substitution of American locks on one of two suppositions:

1. They could not make any so good.

2. The name of the company—Eisenwarenindustrie und Handels-actiengesellschaft, Moravia in Olmuz—was too long to go on such locks.

The American juror in this class, No. 43, Prof. William P. Blake, detected the fraud and had the award of a medal canceled.—*E. H. Knight, in Scientific American.*

A NEW substitute for modeling clay is coming into use. It consists of 51.2% of fatty acids and fats, 5.2% of oxide of zinc, 30.2% of sulphur, and 13.4% of clay. A successful imitation is made up as follows: 300 parts of fatty acid (from olive oil) boiled with 43 parts of oxide of zinc, and 130 parts of olive oil and 60 parts of wax melted together with it. Into this molten mixture incorporate 250 parts of sulphur and 118 parts of clay.

MECHANICAL PROGRESS.

Progress in the Manufacture of Steel.

M. Marche took a rapid historic survey of the manufacture of steel, obtained at first by cementation, then by puddling, followed by the more perfect Bessemer apparatus, and lastly, when the Siemens apparatus allowed the necessary degree of temperature to be obtained, by direct melting of the iron on the sole of the Martin furnace and those derived from it. In passing briefly over this part of his subject, M Marche merely indicated to his hearers the design of the various apparatus mentioned and the method of their employment. He then stated at greater length the various points which distinguish the modern method of manufacture from the ancient, showing how important a part is played by chemistry at the present time. In the old metallurgical works the head founder and the head puddler directed operations; now this direction belongs in an absolute manner to the laboratory. In a steel works everything is now done with mechanical precision. Each of the elements contained in the material worked is exactly proportioned, not only at the commencement and in the final product, but through all its successive stages. It is determined where they are to concentrate themselves, and by what method they are to eliminate themselves at each step in the manufacture. Nothing is left, as formerly, to the skill of a workman, who, destitute of scientific knowledge, worked by routine or by empirical rules, of a more or less rational character.

In like manner, in order to ascertain the quality of the metal obtained, they are no longer content with rough tests, where all was left to the judgment of the workman in charge, but special machines are used which indicate with precision its resistance, elasticity, breaking tension, etc., and which render possible the expression of different qualities by exact figures. These testing machines are now used in all factories and works where steel is made or used.

Thanks to these tests, we are able to give a scale which makes known the corresponding qualities for each composition of metal. Without seeking to make distinctions which could not be defined with precision, the metal is more often designated in the market by its physical qualities—resistance, elasticity, proportionate tension before breaking.

The exact knowledge of these elements admits of the careful choice of the most suitable metal for each purpose as, for instance, railways, wheel-tires, axles, boilers, etc.

As to the cost of manufacture, that of steel has already considerably fallen; it approaches very near to that of iron, and everything tends to show that it will soon not only reach that level, but will even fall below it. The manufacture of steel, indeed, as far as regards labor, is less costly than that of iron; the amount of loss is not so great, and if the price has remained higher, it is because it has hitherto required the use of ores and raw material of greater purity; but already several metallurgists have succeeded in replacing these special ores, which have been brought from Algeria, Elba, Sardinia, etc., by others which are more common, and there can be no doubt that when, as must soon be the case, these ordinary ores are universally employed in the manufacture of steel, this metal will add to all the advantages already experienced, that of being less costly than iron.—*Exchange.*

Improved Revolving Roller Anti-friction Bearing.

The following we clip from an English exchange. The use of revolving rollers for bearings has not hitherto proved very successful, but Mr. John Robinson, of Sheffield, has invented some improvements which he believes will remove the difficulties which have been encountered. In the construction of a bearing for ordinary purposes he provides several rollers of equal lengths and diameters, and each having an annular groove or neck, turned or otherwise, formed at a short distance from each end; he then prepares two circular frames the internal diameter of which slightly exceeds the diameter of the shaft to which the bearing is to be applied. Each frame consists of four semi-circular plates or pieces, forming when put together two washers or complete circles, one washer having slots corresponding in size to the necks of the rollers and opening to the outside, and the other washer having similar slots opening to the inside, thus when the two washers are put together and the slots opposite each other, the solid parts of the washers close up the entrance of the slots, leaving circular holes at equal distances round the washer, thus keeping the rollers equidistant. The four parts of the frames are secured by screws or other suitable means. For some purposes he prefers to turn a single groove in the middle of the rollers, and in that case only uses one frame, and in the case of long bearings he may use the two end frames and a center one combined. According to another modification, he simply uses solid circular washer-shaped frames with the slots, having rounded ends opening to the outside into which the necks of the rollers are dropped. The rollers in all cases are of larger diameter than the width of the frame, and, therefore, project beyond the inside and the outside of the frames, so that the shafting revolves on the rollers clear of the frame, and the outer surface of the rollers revolve and bear on the pedestal, or other bearing frame, causing the entire frame and rollers to revolve. Thus the entire frame with the rollers revolves round its own axis as well as each roller revolving round its own separate axis. By constructing the frames in parts in the manner herein described, facility is afforded for applying the rollers to sink necks and positions otherwise inaccessible. The number of rollers, as also their lengths and diameters, may be varied according to circumstances. They may be composed of any suitable material, but he employs by preference hardened steel for the purpose.

NOVEL COMPRESSED AIR MOTOR.—A novel arrangement of compressed air motor applicable to tramway cars has been invented by Mr. V. J. Fallart, of Brussels, which consists chiefly in a peculiarly constructed apparatus of spiral construction, in conjunction with other mechanical parts. When applying his system to a tramway car he mounts this latter on a framework so constructed and articulated at its four corners as to be able to turn freely in any direction, and although the said car can be of any other shape he prefers making it with two compartments disposed one above the other, with a spiral flight of steps conducting to the top one. On the above-mentioned frame he fixes severally a reservoir for gas, an air compressor in the form of a coiled pipe, and the so-called spiral apparatus. To set the carriage in motion he opens the gas valve, which admits the gas into a cavity formed under a piston placed in an air chamber. This gas is ignited at this spot by means of a lamp, or otherwise, and the piston working in the said chamber compresses the air, which is conducted into the reervoir or coiled pipe. From there the driver of the tramway car, by means of appropriate gearing, valves, rods, or other mechanical equivalents, conducts it into what he calls the spiral apparatus, consisting of a pair of cylinders enclosed in a circular envelope, working directly on, and thereby imparting motion to the driving shaft, which is put into communication with the carriage wheels by means of an endless chain passing over pulleys mounted on the shafts of said wheels. In order to turn easily on curves he has another wheel mounted so as to turn freely on each shaft, and an indicating needle placed on the platform serves to indicate the direction of the line of rails beneath, so that the driver, by means of an appropriate lever, is enabled to direct the car in any direction.

"SOFT CENTER" STEEL.—The *Revue Industrielle* describes what it calls a new composition of iron and steel as follows: "A cast-iron mold is divided into two sections by means of a transverse plate of thin sheet iron. The two metals are then poured into the respective compartments. The sheet-iron partition prevents the mixing of the metals and facilitates the welding by itself being brought into a state of fusion. It is said that the product is well adapted for safes, and that it resits drills." In view of the fact that this process is the subject of an American patent now some years old, and that it has been used for years in Pittsburg and other places in the manufacture of what is known as "soft center" steel, it is rather late in the day to call it a new process. The description given is hardly correct, however, as plate iron is used instead of sheet iron. In the practice at Pittsburg several pieces of iron are sometimes used, making several alternate layers of iron and steel. For use in manufacturing safes the outside layer is iron. For plows there are three layers, generally two of steel and one of iron. The character of the center, that is, whether it shall be "hard" or "soft," of steel or iron, depends largely upon the use to which it is to be put. Where the use demands hardness on the outside for protection against wearing or abrasion, and at the same time considerable toughness in the center, as in plows, the center is soft or of iron. For ease of welding and toughness with rigidity, hard center or steel center is used.—*Iron Age.*

A NEW STREET CAR MOTOR.—A new steam street car motor, built by Messrs. Porter, Bell & Co., the well-known locomotive builders of this city, says the *American Manufacturer*, has just been put for trial on the extension of the Citizens' Passenger Railway Company between the cemetery and Sharpsburg. We had the pleasure of a ride upon it the other day, and, so far as we are able to judge, it is a complete success. The new motor is separate from the car, and is attached to the latter by a link. It may be run either forward or backward. The chief feature of this motor which distinguishes it from other street car motors is the horizontal tubular boiler. This insures durability in the tubes, the lack of which has been one of the chief objections to the vertical boiler. It is provided with Shaw's patent exhaust nozzle, which makes the exhaust noiseless. With the ordinary car attached it may be started, stopped, run over rough places in the track or on curves with the same facility as the car drawn by horses, and a much greater speed. It is claimed that it will travel on any of the street car grades up to 350 feet in the mile. We do not see any reason why it or some equally good steam motor should not be the street car motor of the future. The horse car is a barbarism, unworthy of the age.

GEORGE F. PALMER, of Rochester, N. H., has invented a hose nozzle by which the quantity of water discharged may be easily regulated without changing nozzles, and without in the least checking the free passage of the water.

SCIENTIFIC PROGRESS.

Le Conte's Theory of Mountain Formation.

Dr. Joseph Le Conte, in his Elements of Geology, lately published, gives a very complete theory of mountain formation, based upon the supposition that the earth is substantially solid.

The earth is regarded as made up of concentric isothermal shells, each cooling by conduction to the next outer, and the outermost by radiation into space. For a long time the outermost would cool fastest. But a time would come when the outermost would become of a nearly fixed temperature, receiving heat from external and internal sources, while the interior would still continue to cool by conduction. The interior, because cooling faster, and also because the amount of contraction for equal cooling is greater at high than a low temperature, would contract faster than the exterior. The interior would tend therefore to shrink away from the exterior, which, following it down, would be subjected to powerful horizontal pressure, and must finally yield somewhere. *Mountain-chains are the lines along which the yielding of the surface to horizontal thrust has taken place.* This yielding is not by upbending into an arch, leaving a hollow space beneath, nor yet into such an arch, filled and supported by an interior liquid, as usually supposed; but by mashing or crushing together horizontally, like dough or plastic clay, with foldings of the strata, and an upswelling and thickening of the whole squeezed mass.

The theory here presented accounts for all the principal facts associated in mountain-chains. This is the true test of its general truth. It explains satisfactorily the following facts: 1. The most usual position of mountain-chains on the borders of continents. 2. When there are several ranges belonging to one system, these have been formed successively coastward. 3. Mountain-chains are masses of immensely thick sediments. 4. The strata of which mountain-chains are composed, are strongly folded, and, where the materials are suitable, are affected with slaty cleavage; both the folds and the cleavage being usually parallel to the chain. 5. The strata of mountain-chains are usually affected with metamorphism, which is great in proportion to the hight of the chain and the complexity of the foldings. 6. Great fissure-eruptions and volcanoes are usually associated with mountain-chains. 7. Many other minor phenomena, such as fissures, slips, and earthquakes, it equally accounts for.

A New Anthracite.

At the recent meeting of the American Institute of Mining Engineers, the President, Eckley B. Coxe, presented, says the *Coal Trade Journal*, specimens of a peculiar variety of anthracite. It has a dull, greasy appearance, as if an ordinary piece of anthracite had been rubbed with a greasy rag and allowed to dry. It was formerly considered a very impure coal, containing a high percentage of ash, and was picked out of the coal and thrown away; but the following analysis by Prof. J. Blodgett Britton, of Philadelphia, shows that it is quite as good a fuel as ordinary anthracite.

Water	4.36
Volatile combustible matter	3.48
Ash	7.26
Fixed carbon (by difference)	84.90
Total	100.00

The carbon is to some extent in the nature of graphite and slowly combustible. The following is an analysis of the ash:

Silica	25.66
Alumina	27.08
Ferric oxide	42.83
Lime	1.56
Magnesia	1.83
Manganous oxide	.11
Sulphur	.17
Phosphoric acid	.21
Alkali, undetermined matter and loss	.69
Total	100.00

GAS CLOTH.—This is a name given by Dr. Hirzel, of Leipzic, to a gas and water-tight stuff, which he has produced by placing a piece of so-called gutta-percha paper between two pieces of some not too coarse and dense material—shirting (undressed)—and then passing the arrangement between heated rollers. It may be made still denser and more resistant by being coated on both sides with copal lac. It can be applied to all those purposes for which water-proof material is used, and is well adapted to form gas-tight membranes for regulators of pressure of compressed gas, bags or sacks for dry gas-meters, as also dry gas reservoirs.

NEW PROCESS FOR TESTING AIR. — Prof. Wanklyn and W. J. Cooper have brought before the Sanitary Institute of England their new process for testing air. A strongly alkaline solution of permanganate of potash is prepared, the strength of which is determined accurately. They allow a known volume of this solution to act on a known volume of air heated nearly to the temperature of boiling water. After allowing the solution to act on the air they again determine the strength; the lose of strength represents the amount of oxygen consumed by a known volume of air. The purer the air the less the consumption of oxygen.—*Iron Age.*

Steam as a Light Reflector.

As everything pertaining to the improvement of the methods and paraphernalia of illumination is at the present time looked upon with special interest, we reproduce, for the benefit of our readers, an account of a recent patent granted in Germany to Herr L. Brandau, of Berlin, in which he proposes to utilize the emissive properties of steam for illuminating purposes. In describing his plan, the patentee refers to the fact that steam in condensing forms dense white vapors, which possess the property, when exposed to an intense source of light, of partly reflecting and partly absorbing and subsequently emitting it, as the clouds behave toward the sunlight, diffusing a mild and uniform brightness. In adapting his system to overhead and side lights, Herr Brandau employs an apparatus consisting essentially of a glass chamber, into which steam is admitted, a passage way for its exit being also provided. This is then either illuminated directly, or with the aid of mirrors, by the source of light.

Novel as it may seem, the plan appears to us to have decided merit, and it is not impossible that the idea of Herr Brandau may contain in it the elements necessary for the successful moderation and diffusion of the blinding brilliancy of the electric light, which has in most situations proved to be a serious drawback to its usefulness.

The high absorptive and emissive properties of water vapors, both for heat and light, are well-known physical facts; and the commonplace allusion to the sudden gleam of brightness that follows the escape of clouds of steam, especially noticeable when the sunlight is hidden, will serve as a familiar example of a principle that Herr Brandau proposes to turn to useful account.—*Engineering and Mining Journal.*

REFORMS IN COAL WASHING.—Under this head P. Barnes, in the *Iron Age*, explains some of the reasons why the importance of coal washing has not been more generally recognized. He says that it is almost impossible to convince many consumers that the ash-making or other impurities, or any considerable quantity of them, have ever been washed out of coal, or can ever be. This is due in part to the fact that the literature of the process—that is, the clearly-recognized results—is so scanty that but few persons realize its simplicity or the experience of others in it. Others cannot believe that the washed product can be obtained at reasonable prices. This is because many who have tried the process have often been either unable or unwilling to go to the expense of putting up respectable apparatus and making a fair trial. They have patched up a rig which has proved a failure and led to their condemning the whole project. He closes as follows: As soon, however, as a few coal-washing establishments have been really constructed (and not merely fixed up and tacked together in the cheapest way to "experiment" with) so that they can be continuously run and driven hard, even with the race of workmen who know no other tools than a pinch bar and a sledge hammer, coal washing will begin to look up, and some confidence will be felt in its utility to the general consumer, and not solely to the maker of high grades of pig iron. If, also, it be true that coal and iron lie in a complete and an important sense at the foundation of a great part of our manufacturing interests, and if the price of coal to-day is so important a factor, as it is said to be, in the ability of our works to continue in operation, it cannot be a judicious policy to ignore or to neglect any important method of promoting their real improvement, either in quality or in price.

THE ELECTRIC LIGHT SCARE.—The English correspondent of the *Iron Age* writes from London, under date of October 14th, as follows: The electric light *furore* here is almost incredible; in fact it threatens to become a sort of second railroad mania. Already three new "limited" companies have been formed to work it. The *Ironmonger* gives lists of the contributors, from which I learn that two have each a capital of £100,000 and the other £5,000. Mr. E. J. Reed is "in" at one. The panic in gas shares is not merely marked, it is ridiculous. Poor clergymen, maiden ladies and other innocent investors have become frightened and are throwing their good property (gas shares) away at any price the enterprising "bears" of the Stock Exchange think fit to fix. Edison's alleged discovery of the divisibility of the light came like a bombshell into the gas camp. Shares fell here in two days to the extent of 27%.

THE HAYDEN EXPEDITION.—A letter from Washington, Oct. 18th, says: A letter was received by the Secretary of the Interior to-day from Professor Hayden, reporting his arrival at Cheyenne on the 14th instant, and giving news of the safety of those portions of the survey expedition that are still in the field. He says that, with the exception of some mules stolen from the Wilson detachment, no losses have occurred to the survey during the summer. He reports that "the work of the survey, though interrupted from time to time by storms, has gone on steadily," and that two tons of specimens are on their way from Bozeman.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending Oct. 24.		Week Ending Oct. 31.		Week Ending Nov. 7.		Week Ending Nov. 14.	
Alpha	15½	13	15½	13½	15½	13	14⅝	13⅜
Alta	16	12½	15	12⅞	14½	12⅜	11	
Andes	90c	75c	75c	50c	1½	50c	1.05	90c
Alps	75c				80c			
Argenta	8½	6	7½	6	7½	5⅝	5⅞	4½
Atlantic	90c	80c	1.15	1	1.30	1	1.30	1.20
Aurora Tunnel	1½	90c	2½	1	1	70c	80c	70c
Baltimore Con	3½	2½	3	2½	3	2½	3½	3
Belcher	9¾	7⅞	9⅝	8⅜	8¼	7⅜	9⅝	7⅞
Belmont	3¾	2¾	2.65	1.70	2½	2	2½	1½
Best & Belcher	27	21⅜	23	22½	26	23	25¾	20½
Bullion	12⅜	11½	15	11¼	14⅜	11¼	13⅜	11⅜
Bechtel	1.40	1.20	1.35	1½	1	90c	85c	60c
Belle Isle	45c	30c	60c	70c	50c	40c	45c	30c
Bodie	19½	18	21	19⅜	20	17½	17⅜	16½
Benton	9	6¾	7¾	7	7¼	6¾	7	6
Bulwer	18	14½	17	16½	16	16	16	13
Boyle								
Black Hawk	2.10	1.05	1½	1	1¼	1	1.05	1
Belvidere	2	1½	1.80	1	1¼		1½	1.40
Booker	1¾	1	1¼	1	2	1.10	1.30	1.10
Caledonia	5¼	3¾	5	3¾	4.50	4.00	4.90	4½
California	13	11½	12	11½	13	11½	12½	8¾
Challenge	2	1.60	1.90	1.05	2	1½	1.80	1.60
Chollar-Potosi	64	55	68	58½	61	58	59	50
Comanche								
Confidence	11¾	9½	11	10	11¼	10	11¼	9
Con Imperial	1.40	1.20	1.35	1	1.35	1½	1.30	1.10
Con Virginia	13¾	11½	12	11¼	13¾	11¾	13⅜	8¾
Crown Point	11½	9½	11¾	10	11	9⅜	10½	9
Con Washoe	2.60	2.40	1.95	1.90	2	1½	3.10	3
Champion	50c		1½	1¼	1½	50c	75c	40c
Concordia							1	50c
Dayton								
DeFrees	20c	10c	20c		20c	15c	15c	10c
Dancy								
Day	80c	30c	85c	70c	70c	60c	50c	40c
Eureka Con	43	36	39	33	38	33½	36	30
Exchequer	6¾	5⅜	6¾	5¾	7	6	7	6¾
Endowment	90c	60c	95c	70c	85c	50c	60c	45c
Gen Thomas								
Grand Prize	7½	5½	6¾	6½	8½	6¾	8⅝	7½
Gila	40c	30c	40c		20c		40c	35c
Golden Chariot	1½	35c	50c	15c	50c	25c	25c	
Golden Terra						4½	5½	
Goodshaw	90c	50c	75c	50c	65c	60c	65c	50c
Gould & Curry	18	14½	18	15¾	18½	16¾	18¾	15¾
Hale & Norcross	25½	20½	25	23½	24½	22½	22¾	17½
Hillside	4	3½	4	3½	4	3½	4	3½
Highbridge	2	1.70	2.40	1.95	2.65	2½	2.50	2
Homestake	10	9					12	
Hussey	85c	30c	35c	25c	60c	40c	40c	45c
Independence	3¾	1.95	2.60	2	2½	2.40	2⅞	1½
Julia	7	6¼	7	6½	6⅝	5¾	6	4½
Justice	9½	8	9½	8⅝	8⅝	7½	8¼	6¼
Jackson	10	8	10	9	8½	8	8⅝	8
Joe Seates								
K K Con								
Kentuck	8	6	7½	6½	8½	7½	7⅞	6
Kossuth	35c	20c	30c	25c	30c	25c	30c	25c
Keystone								
Lady Bryan	3½	1½	3½	2.90	3½	2½	3	2½
Lady Wash	3½	2½	3	2	3½	2	2½	2
Leopard	1.40	75c	1	80c	80c	60c	75c	60c
Leviathan	1	80c	1	80c	95c	85c	85c	50c
Leeds	1.90	1½	2	1½	2	1½	1½	1.20
Lee								
May Belle	50c		40c		50c	40c	75c	50c
Modoc	60c	50c	55c	50c	55c	50c	60c	50c
Manhattan	4	3⅜	3⅞	3⅜	3⅞	3½	4.00	3½
Martin White	10	9½	10		9¾	9¼	9¼	8½
McClinton	75c	60c	75c	60c	75c	60c	75c	50c
Meadow Valley	40c	30c			50c	45c	40c	30c
Mexican	65	56	63½	56½	76½	67¾	74	65
Mides								
Morning Star	3½	3	3½		3½	3	3¼	5
North Con Virginia	8	7	8¾	7¾	12½	10	12	10
New York	2	1½	1.80	1½	1½	1.30	1.60	1
Northern Belle	11	9½	10¾	10½	10½	10	11	10¼
New Coso							10c	5c
Navajo	80c	50c	1	90c	85c	60c	75c	60c
Occidental	1	75c	1					
Ophir	55¼	45	51	46½	58¾	51	58	49
Oriental	3	1	1½	95c	1.05	40c	1	65c
Overman	27¾	23	27	24½	28	24	26½	22½
Panther								
Phenix	4½		4	3½				
Phil Sheridan	1½	1	1½	1	1½	1	1.10	95c
Prospect	20c						20c	
Raymond & Ely	5½	5	6¼	6	11	6¼	8½	7
Richer	1½		1½	1¼	1½	1	1	
Rock Island			50c					
Rye Patch			2½	2				1
Rough & Ready	2½	2¼	1	2½	2½	2	2	1½
Savage	26	19½	24½	22	23	18½	20⅝	15½
Seg Belcher								
Sierra Nevada	195	161	190	163	200	182	194	183
Silver Hill	2.85	2¼	3½	2.15	3¼	2¼	3	2¼
Silver King	17	15	18		15		16½	16
Silver Prize	10c				5c		5c	
Succor	1.65	1	1¼	1.10	1.30	95c	1⅛	1
Summit	1.90	1½	1¾	1¼	1.40	1	1	90c
Scorpion	6	2½	5	4½	4½	2½	2¾	2½
Solid Silver	2½	2	1¾	1	1		1.10	1
South Bodie	80c	60c	60c		60c	40c	50c	40c
South Standard	60c	50c	60c	50c	50c	40c	50c	30c
Star	75c	60c	75c	55c	70c	50c	60c	55c
St. Louis	80c	50c	80c	50c	90c	1	90c	1
Syndicate	2½		3½	2	2			
Tioga Con	2½	2	2½	2½	2½	1¼	2½	1.90
Tiptop	1¾	1.40	1¾	1.30	1.40	1½	1.45	1.30
Trojan	30c	25c	30c	25c	50c	25c	55c	10c
Union Con	162	140	160	143	161	148	159	142
Utah	32	27½	36	31½	45	34	43	40
Vermont	8½	5½	6	5½	5½	5½		
Ward	1.60	1.40	1½	1.30	1½	1.30	1	1.30
Wells-Fargo	70c	45c	60c	45c	85c	55c	70c	50c
Woodville	60c	50c	60c	40c	50c	40c	55c	
White Cloud							1	75c
Yellow Jacket	27½	21	23½	21¾	25	22½	24½	20

Sales at S. F. Stock Exchange.

Friday A. M., Nov. 8.

640	Alta	13@12½	
40	Alpha	14⅜@14¼	
370	Andes	1	
330	Best & Belcher	25@25½	
885	Bullion	13¼@13⅜	
870	Belcher	9	
215	Benton	6¾@6¾	
1100	Baltimore Con	3¼@3.10	
1870	Con Virginia	13¾@13	
225	California	12¾@12¾	
55	Chollar	59	
230	Crown Point	10½@9¾	
885	Con Imperial	1.30@1.25	
610	Caledonia	4.80@4.75	
550	Cosmopolitan	45c	
65	Confidence	11@11¼	
630	Challenge	12@1.60	
700	Concordia	.50c@1	
1100	Exchequer	7@6¾	
170	Flowery	1	
445	Gould & Curry	18@18¼	
300	Glasgow	50c	
175	Hale & Nor	22½	
250	Justice	8¾@8½	
810	Juha	8@8¼	
80	Kentuck	7¼	
100	Kossuth	25c	
510	Leviathan	85c@80c	
545	Lady Bryan	3@2.90	
1010	Mexican	74@73¾	
100	Morning Star	5	
500	N Sierra Nevada	10c	
1405	N Bonanza	12@11¾	
165	N Con Vir	10½@10	
245	Overman	26¾	
1175	Ophir	57@56¾	
1425	Phil Sheridan	1@1.10	
200	Prospect	20c	
2050	Solid Silver	1@1.10	
1720	Succor	1@1.10	
1225	Sierra Nevada	192@193	
1360	Savage	20@20½	
1300	Senator	40@45c	
7350	Scorpion	2¼@2.60	
1770	St Louis	95c@1.1300	
1195	Silver Hill	2.95@3.2100	
100	Trojan	10c	
215	Union Con	157@154	
35	Utah	42@42½	
450	Washoe Cou	2@2.90	
100	Ward	1.30	
705	Wells-Fargo	70@60c	
315	Yellow Jacket	24@24¼	

SECOND SESSION.

830	Argenta	8¼@8½	
120	Aurora T	75c	
350	Bechtel	85@70c	
820	Bodie	17¼@17½	
500	Belmont	2¼@1.95	
370	Bulwer	14	
50	Black Hawk	1¼	
800	Belle Isle	40@35c	
640	Booker	1¼	
150	Belvidere	1¼@1.40	
450	Champion	40c	
100	Chieftain	20c	
330	C Pacific	9½	
150	Dudley	1¼	
500	Day	50@40c	
175	DeFrees	15@16c	
700	Endowment	60c	
115	Eureka Con	36¼	
50	Gila	35c	
625	Grand Prize	8¼@7¾	
500	Goodshaw	60@65c	
250	Hussey	55@60c	
600	Highbridge	2	
2125	Independence	2.30@2.25	
35	Jackson	8	
50	Klamath	1¼	
50	Leopard	75c	
100	Leeds	1.70	
240	Meadow Valley	35@30c	
265	Manhattan	3¾@3¾	
335	McClinton	70@75c	
1370	Mono	5¼@5¾	
125	M White	3¾@3¾	
470	Modoc	55@50c	
335	May Belle	50c	
1515	Navajo	60@70c	
420	Northern Belle	10¼	
1300	New Coso	5@5¼	
2100	Oriental	65c@1	
2050	Paradise	1¼@1.40	
835	Raymond & Ely	8¼@8½	
50	Richer	1	
900	Red Cloud	3¾@4	
350	S Standard	50c	
400	Star	55c	
650	S Bodie	65c	
1600	Silver Prize	5c	
2230	Summit	1.20@1.40	
480	Sitting Bull	75@85c	
100	Tiptop	1.40	
140	Tioga Con	2¼@2	
150	W Cloud	75c	

Saturday A. M., Nov. 9.

150	Alpha	14	
340	Alta	13¾@13½	
360	Argenta	8½	
200	Andes	1.05	
410	Aurora T	80c@70c	
255	Best & Belcher	24¼@24	
235	Bullion	12@12¼	
260	Belcher	9@8¾	
200	Belmont	2	
250	Bodie	16¾@16¾	
150	Baltimore Con	3	
65	Benton	7@6¾	
515	Bulwer	13@13¼	
200	Bechtel	80c	
500	Belle Isle	45@40c	
80	Belvidere	1¼	
470	Con Imperial	1.40@1.30	
460	Con Washoe	3.10@3	
200	Champion	40c	
100	Chieftain	10c	
300	Con Pacific	8	
120	Dayton	10c	
70	Dudley	1¼	
815	Exchequer	6¾@7	
215	Eureka Con	35¼@30	
200	Endowment	60c	
200	Fairfax	4¼	
200	Flowery	1	
270	Gould & Curry	18¼	
530	Grand Prize	8	
100	Goodshaw	55c	
50	Hussey	60c	
190	H & N Norcross	24@24½	
240	Hillside	4	
100	Hamburg	1¼	
1180	Independence	1¼@2	
300	Indian Queen	1	
177	Justice	8¼@8	
90	Julia	5¾@5¾	
180	Kentuck	7	
190	Kossuth	26c	
300	Kentuck	7	
200	Leviathan	85c@80c	
240	Lady Wash	2	
640	Lady Bryan	3	
60	Leeds	1¼	
735	Mexican	73¼@73	
50	Morning Star	5¼	
500	Mary Ann	1	
250	Modoc	55c	
755	Mono	6¾@6¾	
215	McClinton	50@70c	
25	Manhattan	3¼	
45	May Belle	50c	
250	North Con Vir	10¼@11	
420	New York	1.40@1.60	
350	Niagara	30c	
2510	Navajo	75@70c	
100	New Coso	5c	
200	N Sierra Nevada	15c	
125	Northern Belle	10¼@10¾	
200	N Bonanza	11¾	
940	Ophir	57@56¾	
420	Overman	25¼@26	
1665	Phil Sheridan	1.10@1	
1850	Paradise	1.35@1.40	
50	Rough & Ready	2	
770	Raymond & E	8¼@8¾	
140	Red Cloud	3¾	
260	Richer	1	
200	South Standard	50c	
200	Senator	40c	
885	Savage	20@19¾	
130	Sierra Nevada	189@191	
2920	Silver Hill	2.90@3	
580	Succor	1.15@1	
300	Scorpion	2¼	
265	Solid Silver	1.10	
700	St Louis	1.10	
100	Summit	90c	
500	Silver Prize	5c	
320	Trojan	50@55c	
350	Tioga	1.90@2	
200	Tiptop	1.40	
365	Union Con	153@158	
175	Utah	41@42½	
50	Woodville	45c	
20	Ward	1¼	
500	Wells Fargo	65c	
205	Yellow Jacket	23½@23¾	

Monday A. M., Nov. 11.

310	Alta	13@12¾	
65	Alpha	14@14¼	
200	Atlantic	1.30	
435	Best & Belcher	25@24¾	
365	Belcher	9@8¾	
150	Benton	6¾@6	
430	Bullion	13@12¾	
850	Baltimore	3¼	
440	California	12¼@12	
885	Cou Virginia	13¾@13¼	
120	Chollar	56@55¾	
385	Crown Point	9¾@10	
360	Con Imperial	1.30	
1705	Caledonia	4.85@4.90	
250	Challenge	1¾	
795	Exchequer	7¼@7¾	
1430	Fairfax	4½	
200	Flowery	90c	
280	Gould & Curry	18¼@18¼	
505	Hale & Nor	23@23¼	
300	Justice	8¼@8	
350	Julia	5¾	
200	Kentuck	7¾@7¾	
400	Leviathan	80@85c	
325	Lady Wash	2	
345	Lady Bryan	3@2.90	
950	Mexican	73¾@73	
100	Margarita	50c	
50	New York	1.40	
900	N Sierra Nev	15c	
3750	N Bonanza	12@11¾	
900	N Con Virginia	12@11	
855	Ophir	57¼@58	
125	Overman	24¾@24	
740	Phil Sheridan	1	
30	Rough & Ready	2	
300	Senator	35c	
405	Savage	19¼@19	
360	Silver Hill	2.90	
435	Sierra Nevada	191@194	
400	Succor	1	
1170	Solid Silver	1.10	
1250	St Louis	1	
125	Scorpion	2¼	
425	Utah	41@43	
270	Union Con	155@153	
210	White Knob Con	3.10@3.50	
100	Wells-Fargo	65c	
750	Ward	1.20	
225	Yellow Jacket	24@23¾	

AFTERNOON SESSION.

1250	Argenta	8¼@8½	
20	Aurora T	75c	
385	Bodie	16¾@16¾	
155	Bulwer	14¼@14¼	
200	Becht	75c	
345	Belm	1.10	
350	Bel	40@39c	
130	Bl	1	
3375	C	40@75c	
440	C Pacific	3¼@3¾	
60	J	1¼@1¼	
100	D	50c	
220	D	40@40c	
105	Eureka Con	34@35	
505	Endowment	55@50c	
50	Golden Terra	4¼	
525	Grand Prize	8¼@8¾	
50	Goodshaw	55c	
50	Golden Chariot	25c	
450	Hamburg	1.90	
200	Hussey	55@60c	
100	Hillside	3¾	
700	Highbridge	2¼@2.30	
1060	Indian Queen	1	
595	Martin White	9	
500	McClinton	70c	
250	May Belle	50c	
40	Meadow Valley	40c	
1060	Mono	5¼@5¾	
2940	Navajo	75@60c	
1520	Oriental	85c@1	
2495	Paradise	1.40@1½	
120	Raymond & Ely	8	
350	Red Cloud	3¾	
1495	Savage	17@16¾	
380	S Bodie	65@80c	
840	Summit	1	
500	Silver Prize	5c	
200	Sitting Bull	80@85c	
200	Star	55c	
475	South Standard	30@35c	
350	Tuscarora	5c	
105	Tiptop	1.40	
70	Toga Con	2	

Tuesday A. M., Nov. 12.

200	Alpha	14¼@14	
240	Andes	1@.95	
165	Best & Belcher	22½	
765	Belcher	8@8¼	
685	Bullion	12¾@12	
440	Benton	6@6¼	
1115	Bechtel	1.10@1.05	
2085	Con Virginia	12¾@12½	
660	Con Imperial	1.40	
40	Chollar	54@53	
445	Crown Point	9¾	
1030	Exchequer	6¾@7	
200	Fairfax	4¼@4½	
1130	Flowery	1	
1220	Gould & Curry	17@17½	
600	Glasgow	2	
580	Hale & Nor	18¾@18¾	
335	Justice	7¾@7¾	
100	Kossuth	30c	
600	Leviathan	75@80c	
860	Mexican	71@69	
1050	N Sierra Nevada	15c	
320	N Con Virginia	11¾@11	
1180	N Bonanza	12@11¾	
880	Ophir	54½@55¼	
355	Overman	24¼@24	
50	Rough & Ready	1¾	
350	Succor	1.10@1	
257	Sierra Nevada	184@188	
375	Savage	17¾@17½	
360	Scorpion	2¼@2.60	
300	St Louis	1.40c	
150	Trojan	50c	
530	Union Con	144@142	
235	Ward	1.10@1.05	
860	Wells Fargo	65@60c	
1150	Washoe Con	3¼	
745	Yellow Jacket	22@21	

AFTERNOON SESSION.

300	Argenta	8¼	
250	Aurora T	75c	
300	Belmont	1.60	
300	Bechtel	75c	
190	Bodie	16½@16¾	
765	Booker	1¼@1.15	
200	Belle Isle	30c	
600	Belvidere	1¼@1.40	
200	Bulwer	13	
100	Black Hawk	1.05	
650	Champion	75@60c	
40	C Pacific	3¼	
300	DeFrees	10c	
1	Dudley	1¼	
60	Eureka Con	34½@34¾	
950	Endowment	60@55c	
300	Gila	40c	
300	Grand Prize	8¼@8¾	
500	Goodshaw	55c	
50	Hillside	3½	
120	Highbridge	2.10@2	
35	Hussey	55c	
1530	Independence	1.90	
250	Jacksou	8@8¼	
500	Leopard	70@60c	
160	Leeds	1¼@1¼	
305	Mono	5½@6	
260	Manhattan	4.45@4¼	
1020	Modoc	60@55c	
200	McClinton	75c	
25	May Belle	50c	
185	Northern Belle	10½@10¾	
2055	Navajo	70@60c	
510	Oriental	1@95c	
1440	Paradise	1¼@1.60	
875	Raymond & Ely	7¼	
100	Red Cloud	3¾	
100	Rustler	50c	
100	Star	55c	
320	Summit	90c@1	
630	S Bodie	60c	
200	S Standard	30c	
450	Silver Prize	5c	
25	Silver King	16½	
790	Tiptop	1.45@1¼	
350	Tioga Con	1.90@2	

Wed'sday A. M., Nov. 13.

340	Alpha	13¾	
1475	Best & Belcher	21¼@20½	
950	Bullion	12@11¾	
1000	Belcher	8@8½	
1150	Caledonia	4.90@4.85	
1630	Con Imperial	1.15@1.10	
1350	California	9¼@9¾	
3225	Con Virginia	9¼@9¾	
80	Confidence	9	
220	Chollar	50@52½	
500	Crown Point	9¼@9¾	
225	Exchequer	6¾@7	
1000	Gould & Curry	16½@16¾	
1350	Hale & Nor	18@17¾	
410	Justice	7¼@7¾	
540	Julia	5¼@5⅝	
2200	Kentuck	6@6¾	
805	Leviathan	75c@80c	
1065	Mexican	68@69	
1695	Ophir	54¼@52	
475	Overman	24@22¾	
450	Sierra Nevada	185@188	
850	Savage	17@16½	
1150	Succor	1	
360	Silver Hill	2.60@2.55	
160	Union Con	144@145	
225	Utah	40@42	
390	Yellow Jacket	20¾@20	

AFTERNOON SESSION.

380	Andes	1.10@1	
620	Argenta	8¼@8½	
150	Atlantic	1.20	
170	Bodie	16½@16¾	
500	Belmont	1¼@1.60	
310	Belle Isle	30c	
200	Booker	1.10	
15	Belvidere	1.40	
120	Bulwer	16	
345	Bechtel	60@70c	
50	Black Hawk	1	
1000	Grand Prize	8¾@8½	
400	Golden Terra	4¼	
550	Golden Chariot	25c	
550	Goodshaw	50@55c	
1550	Hussey	60@45c	
160	Hillside	3.90@4	
350	Highbridge	2.10	
50	Homestake	12	
2355	Independence	1.95	
350	Ida	50c	
100	Leopard	75c@65c	
1150	St Louis	80c@1	
200	Leeds	1¼	
245	S Bodie	50c	
460	Summit	95c@1	
150	Star	60c	
150	Silver Prize	5c	
50	Silver Bull	75c	
50	S Standard	35c	
120	Scorpion	2¼	
200	Senator	30c	
350	Sutro	20@25c	
1100	Solid Silver	1.10@1	
110	Tioga	2@1.90	
1150	Tuscarora	5c	
870	Tiptop	1¼@1.40	
620	Trojan	50@45c	
30	White Cloud	1	
760	Ward	1.15@1	
450	Wells-Fargo	60@50c	

SALES OF LAST WEEK AND THIS COMPARED

Thurs'd'y A. M., Nov. 7. Thursday A.M., Nov. 14.

375	Andes	1.10	65
120	Alpha	15¼@15	14¼@14⅜
995	Alta	13¼@13½	12¾@13
50	Best & Belcher	25¾	24¾
770	Belcher	8@8¼	7¼@7¾
365	Bullion	13¾@13¾	13¼@13⅜
670	Baltimore Con	3	2¾
510	Benton	7	6¾@6¾
960	California	12¾@13	11¾@12
2085	Con Virginia	13¾@13¾	12¾@13
295	Crown Point	10¾@10¾	9¾@10
80	Chollar	59	53
2730	Con Imperial	1.30	1.25
25	Confidence	11@11¼	10¼@10¾
380	Caledonia	4.90	4.85
390	Challenge	1¾	1¾
100	Con Washoe	2	1.90
1925	Exchequer	7¼@7¾	6¾@7
500	Fairfax	4	4¼
200	Flowery	1	90c
395	Gould & Curry	18@18¼	17¾@18
440	Hale & Nor	22¼@22¾	21¾@22
490	Justice	8¼@8¾	8@8¼
760	Julia	5¾@5¾	5¼@5¾
335	Kentuck	7¼@7¾	6¾@7
900	Kossuth	25c	25c
600	Leviathan	90c@1	80c
280	Lady Bryan	2.90@3	2.90@3
75	Lady Wash	3	2½
1015	Mexican	74¾@72½	71¾@72
520	New York	1.30	1.30
75	North Con Vir	10¼@10¾	10¼@10¾
4765	N Bonanza	11¾@12	11¾@12
1355	Ophir	55¾@56	55¾@56
225	Overman	25½@26¼	25¼@25¾
50	Phil Sheridan	1	1
100	Rough & Ready	2	2
325	St Louis	95c@1	90c@1
735	Sierra Nevada	193@200	190@194
505	Savage	20¼@20¾	19¾@20
50	Succor	95c	90c
665	Silver Hill	2¾@2.80	2.70@2.80
100	Senator	45c	40c
260	Scorpion	2¼@2.80	2.60@2.70
1300	Solid Silver	1	95c
250	Trojan	50c@60c	45c@50c
355	Union Con	159@161	154@156
185	Utah	41@44	40@42½
50	Woodville	45c	40
805	Ward	1.20@1	1.15@1.20
200	Wells-Fargo	70c	65c@70c
720	Yellow Jacket	24@24¼	23¼@23¾

AFTERNOON SESSION.

2310	Argenta	6¼@6¾	6¼@6¾
100	Aurora T	75c	70c
35	Belmont	2¼	2¼
100	Bulwer	14¼@15	14¼@14¾
225	Bodie	17¾@18	17¼@17¾
200	Bechtel	80@75c	80@75c
980	Booker	1.30@1¼	1.30@1.25
150	Black Hawk	1	1
460	Belvidere	1.30@2	1.30@1.40
100	Belle Isle	35c	30c
700	Champion	50c	50c
700	Chieftain	10c	10c
725	O Pacific	3¼@3¾	3½@3¾
440	Day	40@50c	45c
575	Dudley	2¼@2	1.90@2
1725	DeFrees	10c	10c
240	Endowment	60c	55c
180	Eureka Con	35½@36	35½@36
75	Golden Chariot	25c	30c
500	Goodshaw	60@65c	60@65c
620	Grand Prize	8¼@8½	8¼@8½
100	Gila	35c	35c
500	Golden Terra	4¼	4¼
50	Hamburg	1½	1½
850	Hussey	50@55c	50c
300	Hillside	4	3½
470	Highbridge	2@2.10	2@2.25
150	Ida	25c	20c
580	independence	2¼@2.40

Pacific Board—Latest Sales.

Wed'sday A.M., Nov. 13.			
60	Alta	12½@12¾	
380	Best & Belcher	19½@20	
300	Bullion	12@12½	
80	Belcher	8½@8¾	
250	California	9¼@9½	
210	Crown Point	9½@9¾	
930	Con Imperial	1	
55	Con Virginia	81@82	
40	Caledonia	4.70@4.60	
10	Chollar	52	
70	Exchequer	7	
445	Gould & Curry	16¼@16½	
355	Hale & Nor	17½@18	
100	Julia	5½	
300	Justice	7¼@7½	
120	Kentuck	6¾	
185	Mexican	69½@69¾	
450	Ophir	52@53½	
10	Overman	23½	
190	Savage	16½@16¾	
10	Sierra Nevada	15c	
40	Silver Hill	2¾	
30	Union Con	145	
10	Utah	42	
150	Yellow Jacket	20@20¼	
	AFTERNOON SESSION.		
620	Atlantic	1.29@1.30	
20	Alta	12	
200	Andes	90c	
70	Belcher	8½	
30	Bodie	16@16¼	
10	Bullion	11¾	
295	Best & Belcher	21@20½	
105	California	9¼@9½	
400	Con Virginia	9½@9¾	
20	Caledonia	4.60	
150	Con Imperial	1.15@1.10	
30	Crown Point	9	
10	Chollar	52	
150	Endowment	50c	
100	Grand Prize	8½	
150	Gould & Curry	16½@16¾	
50	Golden Chariot	25c	
150	Hussey	50c	
30	Julia	5½	
90	Justice	7¼	
50	Lady Bryan	2.90	
270	Modoc	55c	
30	Mexican	69½	
100	Mackey	1¾	
60	N Bonanza	2.30@2.35	
300	N Sierra Nevada	15c	
100	Ophir	53½@53¾	
150	Phil Sheridan	96@c1	
90	Savage	16½@16¾	
50	Silver Hill	2½	
100	Silver Prize	5c	
200	Solid Silver	1.10@1.15	
10	Utah	41½	
10	Union Con	143	
150	Wells-Fargo	60c	
150	Yellow Jacket	20@20½	

California Board—Latest Sales.

Wed'sday A.M., Nov. 13.			
120	Andes	1	
200	Atlanta	40@45c	
225	Ætna	25c	
40	Alta	12¾	
75	Belcher	8½@8¾	
80	Best & Belcher	23@22½	
110	Bullion	12½@12¾	
195	Caledonia	4¾@4.60	
130	California	9¼	
260	Con Virginia	10@10¼	
235	Crown Point	9½@9¾	
200	Con Imperial	1¼	
150	Exchequer	7	
35	Gould & Curry	17¼	
150	Goodshaw	50c	
55	Hale & Norcross	18½@18¾	
95	Julia	5½@5¾	
35	Justice	7¼	
325	Lee	35@40c	
60	Mexican	70@70½	
120	Mackey	1¾@1¾	
200	Mt Hood	25c	
200	N Sierra Nevada	15c	
35	Ophir	54½@54¾	
40	Oriental	36c	
100	Pictou	20c	
35	Savage	18@18½	
20	Sierra Nevada	18¾	
120	Tioga Con	2	
300	Tiger	95@97½	
45	Utah	41	
20	Union	148	
1300	Union Flag	7@8c	
160	Wash Bon	40c	
50	Ward	1.05	
	AFTERNOON SESSION.		
300	Ætna	15c	
300	Atlanta	45c	
100	Alexander	10	
60	Alta	11¼@11½	
100	Almaden Q	8	
75	Belcher	8½@8¾	
50	Best & Belcher	21½@21¾	
70	Bullion	11¼@11½	
90	Crown Point	9½@9¾	
125	Caledonia	4.60@4¾	
75	California	9¼@9½	
200	Con Imperial	1.20	
3100	Case Con	17½@20c	
20	Chollar	52	
250	Endowment	60c	
150	Exchequer	7	
80	Gould & Curry	16½@16¾	
100	Goodshaw	50c	
70	Hale & Nor	18@17¾	
80	Julia	5½@5¾	
540	Justice	7¼@7½	
150	Mt Hood	20c	
30	Mexican	69½@69¾	
200	N Sierra Nevada	14c	
100	N Union	4@4¼	
150	New York	1.10	
30	Ophir	54	
80	Phil Sheridan	1	
30	Savage	16¾	
150	Sierra Nevada	18¾	
250	Santiago	1.10	
110	Silver Hill	2¾	
120	S Xavier	1.10@2	
200	Tiger	95@97½c	
5400	U Flag	5@20c	
20	Union Con	145	
80	Yellow Jacket	20½@21	

Mining Share Market.

Two hundred and sixty-six men have been discharged from the California and Con. Virginia mines. Opinions vary as to the cause. Mackey says there has not been work for many of the men for some time. Others hint that they were employed during election time for political purposes. The *Stock Reporter* thinks that they have been engaged on dead-work, which is now finished. Whatever the true cause, the effect on the market has been the most natural supposable, though no very alarming crash has resulted.

Mackey says that the heat in the lower levels is so great that six men can hardly accomplish what one man can on a higher drift. He also says it will hardly pay to take out the ore still remaining in upper levels, on account of the great settling that has taken place. Few of the discharged men will he wanted again soon. But he thinks that work is increasing in other parts of the Comstock, sufficiently to compensate for the decrease in the Bonanza pay rolls.

This event raises the question as to whether it is good policy to attempt such deep mining, while so many surface deposits are idle in all parts of the coast.

An ominous movement in the market, was the slight rise in Bodie stock on the decline of the Bonanzas.

The Eureka Con. is showing unexpected vitality. The spur-wheel break, it seems, is not to stop dividends, after all.

The lesson of the week is: The Comstock is not the only place in the world where profitable investments can he made.

Bullion Shipments.

Since our last issue, we have noticed the following shipments of bullion:

California.—Bodie, Nov. 4th, $13,427.54; 11th, $12,151.71. Extra, Nov. 5th, $4,188. Pittshurg, Nov. 9th, $3,256; Standard, Nov. 9th, $16,597.12.

Idaho.—Black Jack, $5,822.21. Idlewild, $1,500. Potosi, $1,083.75; $1,300.

Nevada.—Belmont, Nov. 8th, $6,031; total for Oct., $25,046. Independence, Nov. 11th, $12,500. Indian Queen, Nov. 4th, $4,814.24. Manhattan, Nov. 13th, $12,196.92. Navajo, Nov. 11th, $5,300. Northern Belle, Nov. 4th, $2,899.85; total for October, $47,013.74. Raymond & Ely, Nov. 2d, $4,967.28. Stafford, Hamilton, $1,847,02. Star, Cherry Creek, $500. Tyho Con. Oct. 31st, $3.852.85; total for Oct., $64,630.92.

Utah.—Ontario, $5,288.86; Silver Reef, $1,512.32; $5,698.48; $4,843.52.

THE Wellington mine, at Departure bay, shipped 12,000 tons of coal in the month of October.

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

CALIFORNIA.

AMADOR.

PERSEVERANCE REWARDED.—*Ledger*, Nov. 9: For some time Humphrey Reese, the well-known mining expert of Sutter Creek, has been endeavoring to get capitalists interested in the Hercules claim, 1½ miles south of Plymouth. He has at last succeeded. A company has been organized. The work is to he commenced at once. The machinery from the Coney mine, Jackson, has been purchased for use at the Hercules. At the hottom of a 50-foot shaft, is at 10-foot quartz vein.

CENTENNIAL.—The Centennial 20-stamp mill has started up, with flattering prospects. Sinking operations are through with for the present. The shaft is 320 feet deep.

KNIGHT'S FOUNDRY.—This prominent establishment of Suttor Creek, is crowded with work of every description. Among the jobs in progress we may mention 400 feet of 11-inch pipe for the hydraulic claim of Horne and Nevills, at Butte City; also 1,500 feet of pipe for Nevills and Rhodes, to be used on a gravel bank near Butte. A wheel of Knight's patent, 4½ feet in diameter, for Moyle's gravel claim in Volcano Flat is finished. A smaller wheel, 3 feet in diameter, is to he put up on a mine near Murphys, Calaveras county.

ITEMS.—Mannon's creek claim at Sutter is worked out. Fixing up steam hoisting works at the Downs mine, at Volcano, has commenced. R. Stewart is still busily engaged in repairing his quartz mill near Volcano. The Volcano tunnel is in 1,200 feet, leaving 1,000 feet of the hardest rock yet to he gone through. Water is now obtainable in sufficient quantities to run three 8-hour shifts. Mace's mill above Volcano is running on ore from R. Stoken's claim. J. Grieshach's mine, near Mace's, is improving. The ore hody has widened out and rivals in quality the richest taken from the claim in the past. The Montreal gravel claim at French Hill, known as Trueb's claim, was sold hy the Sheriff on Tuesday, to L. Raholt, for $832.24, amount of judgment and costs.

CALAVERAS.

YANKTON MINE.—Calaveras *Citizen*, Nov. 9: This mine is situated about four miles east of Murphys, in the Stauislaus mining district, and is owned hy W. M. Oliver and T. F. Trask. The ore is easily extracted. They have three shafts sunk on the lead, the deepest being only 40 feet. The ore is rich in hoth silver and gold and will average at the lowest estimate $100 to the ton without assorting. The lead averages 20 inches in width. They have about 50 tons of ore on the dump, and are preparing to erect a fine stamp mill. They have a good mill site easy of access. Water can he procured from the Union ditch with which to run the mill, and timher can he procured in abundance and of the very hest quality, within a distance of two or three miles. The claim is 1,500 feet in length and can he traced on the surface nearly the whole distance. The extension has been taken up hy different parties and prospects well. Many are inclined to helieve that a second Bodie will result from the rich discoveries.

GRAVEL MINING REVIVING.—*Chronicle*. Nov. 9: There is not water enough yet for all the claims, hut several hydraulics have hecn put in active operation during the past two weeks. On the Bonanza, Moser & Co., piping has been commenced. Work has also begun at the Mammoth, J. F. Veith owner. The mill at the Duryea gravel mine in Chile gulch is running day and night. The underground force is sufficient to keep the machinery constantly employed. Brown & Co., proprietors of the Burlington tunnel claim, on Tunnel ridge, are crowding work ahead with the best of results. All the hatteries at the Hoey & Sliter claim in Old Woman's gulch are running on gravel that averagee $1 to the carload. G. Raymond, proprietor of the Penneylvania claim, adjoining Hoey & Sliter, is making good progress with his tunnel. Cook & Co. are working their Calaveras hydraulic vigorously. The company own a ditch in connection with the mine, a circumetance that rendere them independent. As the eupply of water increases work will he resumed on other mines.

CHAMPION MILL.—*Chronicle*, Nov. 9: The huilding is a suhstantially huilt edifice 70x40. There are four arastrae so arranged that all can be fed from the hattery which stands in ahout the center of the huilding. The hattery is composed of three etamps, aud is ueed exclusively for hreaking up the quartz prior to its heing fed to the arastras. All the machinery is run hy a mammoth overehot water wheel, measuring 40 feet in diameter. The proprietore of the mine have ahout 800 tons of ore on the dump, a large proportion of which is good for $100 per ton.

ITEMS.—Whitford & Co. lately went to work in the shaft of an abandoned mine on Valentine hill, about a mile from West Point. They had not sunk to exceed six foet when they uncovered a two-foot ledge that experts say will pay $8 per "cargo." Reed & Rohinson, proprietors of the "Buffalo" mine, are doing well. At Glencoe, *nee* Mosquito, the Banner continues to flourish. At the "Rehecca" everything progressee favorably. New machinery is being put on the San Joaquin. The Malone mine, at Rohinson Ferry, is soon to be worked. A new mill is being erected at the Collier mine. It is reported that an extensivo hydraulic claim is soon to be opened at Washington ranch, about three miles above El Dorado. A 16-inch pipe is to be used. The Happy Valley B. G. & H. M. Co will soou be piping on the old Percival claim, and tuuueling to open up the Sport Hill country.

EL DORADO

NEVER SO PROMISING.—*Republican*, Nov. 7: In our mines the outlook has not been so promising, in this county, for yeare as at the present time. In quartz, we have the old Church-Union, that has not failed for years to turn out $10,000 a month, and the Gold Deposit and Utah, just started up, that promises to do even hetter, with several other mines being developed, which give every assurance of success. In gravel we havo several mines that are acknowledged, nniversally, to be rich, and there cannot be the slightest doubt that we have thousands of acres, still untouched, of as rich gravel diggings as have ever yet been developed. Several experienced miners, mcn who havo been engaged in the husiness for years all over the coast, have been prospecting about here for several months and have purchased and bonded a number of mines. The newest in gravel are the Anderson claim, just ahove Smith's Flat, upon which a mill and hoisting works have been erected, and in which a fortune is already in sight, and the Negro Flat, hotter known as the Madden mine. This latter claim has been worked in a small way, for years, and has yielded up many thousands of dollars. This latter claim is in the hands of wealthy parties in St. Louis, and J. W. Whitlach. The present owners paid $15,000 for the property, only three or four acres of which have heen worked, and put on two six-inch giauts, and are working it in a systematic manner. They employ seventeen men, Mr. Whitlach being the Superintendeut, and Peter Watt, foreman.

LOS ANGELES.

SILVERADO. — Los Angeles *Herald:* The Blue Light's concentrator has not yet arrived, although it is said to he on the road. The owners of the Southern Slope are not working their mine at present, their time heing ocoupied in settling up their affairs in the valley. The Thanksgiving is sacking good galena ore. The discoverers of Silverado, and what we might now call the Bonanza Kings, Messrs. Cassidy & Curry, are working their Southern Belle mine to a good advantage by running a tunnel to strike their vein. They expect in a short time to commence working their Santa Clara coal mine. Frank Luce is making good improvements on the Santa Rosa, and is getting out good milling ore. The Santa Ana, Santa Rosa, Southern Belle, Scorpion, Lake & Seares, Florentine, Blue Light and the Flanagan mines are all supposed to he the same ledge. All are extensions north and south of the Southern Belle. Good ore is shown from the Mayflower, Rough and Ready, and many others.

MONO.

SILVER HILL.—Bodie *Standard*, Nov. 6: The Silver Hill tunnel enters Silver hill south of Aurora and at a greater depth. Work has heen steadily prosecuted with three shifts of men since commencement, and will be continued right on through the winter. Another contract will be let in a few days to run 250 feet. The thorough prospecting of Silver hill by this company is of immense advantage in developing the range, and we fully expect to hear of important devolopments ere long.

BLACKHAWK.—East crosscut, 400 level, has been advanced seven feet; total length 41 feet. Another stringer of ore about two inches wide has heen cut. Prospects favorable. West crosscut has been advanced seven feet; total 37 feet. The rock in hoth crosscuts is a little softer. The new shaft is 98 feet deep; progress for week, 13 feet.

DUDLEY.—Work in einking still progressing rapidly and timheriug heing done as fast as depth is attained.

RIQUEZA.—The shaft has attained a depth of 260 feet, a progress of 50 feet during the paet two weeks. A elight flow of water in the hottom. Several stringers of quartz have been passed through. The east crosscut is in 120 feet. A ledge formation of quartz mixed with porphyry 20 feet wide has heen passed through and the face is now in hard porphyry.

ORO.—This property is next the Goodshaw and Concordia mines. The locatiou is a very favorahle one. Work will he commenced at an early date to enlarge the present shaft into a two-compartment and timhered. The directors are Geo. W. Copo, Jules Simon, Edward D. Wright, J. H. Dane and William Stuart, who is also Secretary. The Superintendent is Thos. Steele.

SOUTH BULWER.—Shaft down 182 feet; still sinking. Will continue einking to 250 feet, when crosscutting will he commenced for the vein.

MONDAY.—The company are pushing their new shaft ahead as fast as possible, having put on as many miners as can he worked to advantage. The ledge ie two feet wide and shows gold freely. The shaft is down 25 feet, and has good working ground.

ENTERPRISE.—Thie mine is situated on the easteru slope of Silver hill, on a line with the Bulwer and Belvidere. The shaft ie down 73 feet; progress during the week, 12 feet. At a depth of 50 feet a ledge two feet wide was struck pitching to the west.

NEVADA.—Have let a new contract to sink the shaft down to a depth of 100 feet. This mine has a very favorable location, heing directly south of the Champion.

SUMMIT.—The south drift is in from the shaft 38 feet. The ledge is three feet wide, of good average ore. A drift has been started north, in which the ledge is two feet wide.

DOUBLE STANDARD.—This company are working with a small force, pending preparations for winter quarters. The first 100 feet will be worked with windlass.

RELIEF CON.—The shaft is down a distance of 115 feet and the bottom is now in brown porphyry, having cut through the upper formation.

CALIFORNIA.—Supplies for the winter will be laid in as soon as possible, and work will be actively resumed.

CANDELARIA.—Matters yet are dull on account of expected litigation with some of the properties. The Northern Belle company's mines are looking exceedingly promising. A first-class body of ore has recently beeu opened up in the drift ruuning from shaft to ore body, but matters are not far euough advanced to extract the same. Other locations, such as the Hollins shaft, are being worked, the ono in questiou having struck an ore vein of promise. The Mt. Diablo has also found a good body of ore, and the mine is looking first-rate throughout. Work will soon be commenced on the Potosi mine.

LAKE DISTRICT.—The Mammoth mill started up on the 21st of last month on orcs from the Mammoth and other mines belonging to the company. The property of this incorporation is said to be looking exceedingly well, and explorations go to prove considerable richness and extent. A soft streak of mineral-hearing quartz was struck in the Mammoth which assayed $200 per ton.

NEVADA.

IDAHO.—Grass Valley *Union*, Nov. 7: There are five ore-producing stopes. All the surface works are in prime condition, and the full head of 50 stamps are constantly running. The yield of the mine for four weeks in October was $47,000. The usual monthly dividend of $7.50 per share, amounting to $23,250, was declared on Mouday. This makes the 111th regular monthly dividend, aggregating the magnificent sum of $2,510,500.

CENTENNIAL.—The drifts show a good ledge of pay rock in their whole length. The fine appearanco of the ledge in the north drift gives great satisfaction, as it is in new ground and going toward the old Smith & Crossett ground, which was found very rich many years ago. The other levels and stopes of tho mine present their usual good appearance. The prospects for regular monthly dividends in the future are good.

ALASKA.—At the station of the 4th level (which is now to be opened), a vein of good gold-hearing rock is exposed, which will work to a fine profit. Good ore is found northward to the Bullion ground, and a drift is to be carried through to that ground, by which means both compauies can he served through the new combination shaft.

SWISS-AMERICAN.—Work on this new mine has gone on steadily during tho past month, and the perpendicular shaft has reached a depth of over 90 feet. A whim shaft has heen put down in the old workings to the depth of 50 feet, and a strong 3-foot ledge openod, which prospects in free gold, and makes a fair showing in eulphurets.

ROCKY BAR.—Active work is going on in the different levels of the mine, heing prosecuted hy six or seven trihute companies. About the mine and works between 60 and 70 men are engaged. A recent crushing of tribute rock from the Rocky Bar paid $64 per load, as the highest figure, while another lot yicldod $34.

BEN FRANKLIN is one of the old square claim locations, on Oshorne hill. E. F. Moore & Co., have a lease of the ground. The ledge is 14 inches in width, and shows gold freely. It dips into the claim from adjoiuing ground, and when worked has paid handsomely.

SCADDEN FLAT.—With the continuance of fair weather steam will he started up in from five to six weeks. The mill recently purchased at Brown's Valley, Yuha county, is now being taken down, and will be shipped to this place by rail.

CASSIDY.—This mine, situated on Ophir hill, has recently been purchased by James Bennalleck, and work will soon be started. It has produced good paying rock.

GOLD HILL.—The present depth of the incline is about 460 feet. The ledge is of good size hut of low grade.

NEW YORK HILL.—Tho last crushing of 51 loads paid $100 per ton, and the sulphurets therefrom, 5½ tons, yielded $1,700.

WASHINGTON.—The incline is down 140 fect, and the ledge in the drift from 10 to 18 inches in width. The rock has improved of late and carrics well in good-looking sulphurets. A recent assay of the rock gave $36 per ton in gold and silver.

PACIFIC.—Located on New York hill, and owned hy McDonald & Co., hrings to the surface ore which mills from $150 to $200 per load.

PEABODY.—This claim on Rhode Island ravine, in the vicinity of the Gold Hill mine, is now being worked on tribute. The ledge is 12 inches in width and of a fair grade.

LAFAYETTE No. 2.—Located at the head of Bullion ravine, on Osborn hill. In doing the annual work gold-hearing rock has beeu found, which givee encouragement. The ledge is from 6 to 10 inchee in width.

ONLEANS.—A numher of prospectors are at work on different portions of this property,

Continued on page 316.

True Fissure Veins.

Advance sheets of the third revised edition of Phillips' "Explorers', Miners' and Metallurgists' Companion" have been placed in our hands. From them we extract the following:

"True fissure veins" are always found in metamorphosed (reheated spots of strata), chiefly in the "azoic," less frequently in the "paleozoic," and no good mine has been found in England above the "triassic," or first period of the "mesozoic" or third time; but, in some other parts of the world, antimony, lead, iron, manganese and mercury, in the second and third periods of this "mesozoic" time, when sufficiently metamorphosed in veins, which are, however, not well defined true fissures, but modifications from extensive volcanic upheaval, and consequent sublimations.

1. "True fissure veins" are rarely found unaccompanied by others, and various systems or ages of their fractures can often be observed, as they have slidden at different times upon each other.

2. They do not conform to the cleavage of the stratum, or lie in the intervening division between two distinctly different strata.

3. They do not generally decrease, but rather increase their width and riches, at the greatest depths attained by man, although apparently occasional instances occur of the reverse.

4. Their encasing walls are remarkable for regular definition, smoothness, and unctuous or soap-like clay surfaces.

5. Their constituents of matrices and minerals are always found in laminations more or less conforming to general parallelism with the encasing walls; and, when short diagonal "splices" or "vughs" occur, they are almost invariably in similar planes.

6. The minerals are sometimes found in most distinct individual courses, the one beside the other, or in different parts of the vein's width; at other times, speckled indiscriminately throughout, or in occasional stones of each; whilst, more frequently, they are so intimately mixed that they cannot be separated by hand.

7. Thus, the minerals are associated side by side with entirely different and numerous elements: the permanently insoluble oxide of tin beside the sulphurets of iron, copper, zinc, and sometimes lead; or arseniurets, oxides, carbonates, etc., of the one or the other, some in massive and others in crystalline forms; all of which, I presume, are derived from chlorides or oxides, the oxide of tin alone retaining that insoluble form, whilst the others have passed, or are still passing, into other combinations.

8. "True fissure" veins take independent paths through all of the metamorphosed strata lying in their course or dip. If, however, a stratum of rock overlies those that had been metamorphosed before, the vein *does not* pass out beyond the earlier heated spot, into that since deposited thereon.

9. They partake somewhat of parallelism, for each age of fracture, but take all bearings and dips at their different ages, as governed by the directions of the lines of contraction or subsidence of the age.

10. The veins of the *one parallel*, in the *same* complicated system, will all be richer in minerals of similar kinds, than those that run transversely thereto; not, I think, from any *difference* of *magnetic* influence caused by bearing, but from *age of fracture* alone, and consequently larger space and longer action for better solution and precipitation of the minerals.

11. The magnetic bearings of veins have been greatly influenced by the general contour and directions of the adjoining ridges of the more primitive granite rocks, and vary their degrees of bearing and dip accordingly, and the richer veins generally parallel such influential causes for conformity.

12. However near the systems of veins or districts may lie to each other, certain peculiarly local influences will apply, as particularly displayed in Cornwall, where, commencing, at the St. Just district, near the Land's End of England, the north and south veins have been most productive for copper and tin; at Marazion, those bearing northwest and southeast have been most profitable; whilst, in the center of the county (only about 30 miles inclusive), at Camborne, Redruth, Gwennap and St. Agnes districts, those bearing east and west are alone mineralized. North and south bearing mountains prevail throughout the world, and they as often govern the direction of veins, but profitable veins are found on the slopes and foothills of mountains at all angles of the theodolite.

13. It may be observed that "true fissure" veins seldom dip less than 45° from the horizon, are frequently near to, and sometimes quite vertical; each vein takes independent direction and dip, often passing forward and downward through the others, at all angles within these limits; one may, for instance (as in Fig. 1), dip northerly at 50°, whilst another overlying this may also dip northerly at 60°, and pass down through it; a third may still overlie and dip northerly at 85°, which also, after passing through both, may change its dip from north to south; a fourth dips south through all these at 70°, or any other degree; whilst a fifth may be a "slide," which will also occasionally disorder or shift the lode; the whole being also of somewhat different degrees of direction, and traversed by cross-courses that partake of similar, but transverse differences of the angles of bearing and dip. On this figure, *a* shows a Y intersection; *b*, an inverted Y intersection; *c, c, c*, X intersections; *d*, a "horse" in the vein; *e*, a "carhona;" *f*, a "bonanza," or pocket; *g*, a surface deposit; and *h, h, h, h, h, h*, "feeders."*

14. Some parts of "true fissure" veins, and almost invariably where the dip is more vertical, contain more mineral than others.

15. Certain directions, and corresponding parallelisms, of "true fissure" veins of a district, will always contain more mineral than other directions. * * * * * *

First, let Fig. 2 represent a vertical section of a fissure that had thus changed its dip from that of A to B; and again from C to that of D. A and C are profitable portions of the vein, simply because B and D are *more contracted* and *prevented an equally free passage of the mineral waters*. The arrows represent the *horizontal line of contraction*, that opened the rocks from *original contact* for the *after infiltration* of the matrices and minerals. Now, as the horizontal lines marked by the arrows show the *direction* of the separation of the walls of the vein by

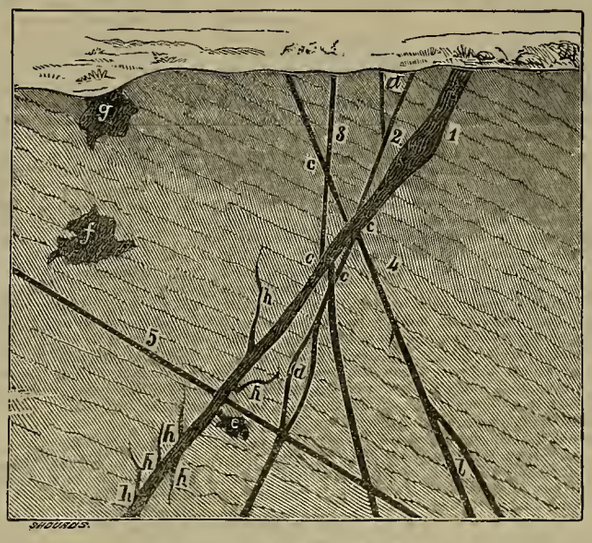


FIG. 1. TRUE FISSURE VEINS.

contraction, so will the corresponding parallel lines at A and B, C and D, measure the *amount* of this contraction through *similar lines* in the vein; whereas, the width of the vein must be measured, in each case, at A and B, as well as at C and D, by *right-angled* lines, to the *separate* and *different dips* of the vein at A and B, C and D.

16. Free passage and much water are regarded as good indications for extensive deposits of the minerals; which also favor these ideas, and that such portions were, and are being, mineralized by infiltration.

17. Lodes often vary in size from other causes than those of direction and dip, as the one wall *actually sliding down* the other, etc.; and the larger places are generally much richer (for the reason of such free passage of water) than other more compact sections.

These frequent expansions or "wallows" of lodes, between irregular walls, that must have been first parallel, may have been also sometimes produced by highly heated water, which would dissolve or hydrate the silicic acid of the silicates of potash and alumina from the adjoining rocks, and thus add to the general solution more of the solvent or matrix, silicic acid, with the alumina or clay, for the joints and walls; whilst the precipitant of potash would also be similarly watered and released from its affinity by this high degree of heat, and provide a natural re-agent for the precipitation of minerals at shallower sections of veins, after the pressure and temperature had become suitable for this change of action.

Organic matter from the surface may have greatly aided these separations and precipitations in the novel manner suggested by the foot note at the end of Chapter X, on mineralized zones or reefs of stratum.

18. Lodes (having also the other necessary conditions) which vary in direction, dip, size, etc., are more plentifully supplied with minerals than those of perfect regularity.

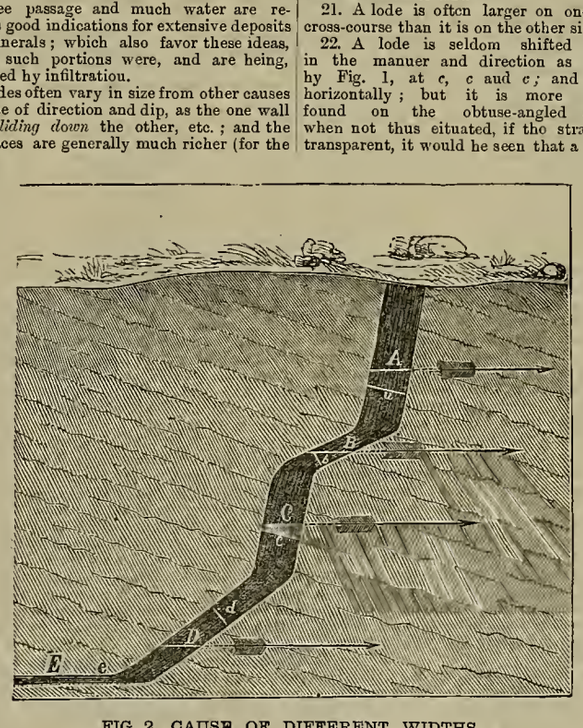


FIG. 2. CAUSE OF DIFFERENT WIDTHS.

19. When mineralized lodes are intersected or crossed in length or depth by "counters," "cross-courses," "slides," or "dikes," they are generally improved at and near their junctions; although sometimes the reverse is the case.

20. A lode is sometimes mineralized on the one side of such intersections, and not mineralized on the other side.

21. A lode is often larger on one side of a cross-course than it is on the other side.

22. A lode is seldom shifted downward in the manner and direction as illustrated by Fig. 1, at *c, c* and *c;* and as rarely horizontally; but it is more frequently found on the obtuse-angled side, and when not thus situated, if the stratum were transparent, it would be seen that a very small intervening block of country had been shifted to accommodate the more regular motions of the much more extensive controlling sections.

23. The length of any one lode is generally, and the total length of all the lodes of a system of veins that have been thus shifted, is invariably less than the present length of the ground in which they now lie; because (as generally supposed) the strata have slidden, or contracted and shortened, more in the one direction than the other.

24. Other guides to the positions of slidden lodes are the comparative percolations and mineralizations (ascertained practically by taste or analysis) of the waters from both ways, and a slight turning of the vein towards its disjuncted part.

25. True fissure veins seldom crop out boldly above the surface of the ground. This is a general rule in Cornwall.

26. Much clay besides the walls and the quartz of the vein, is a good sign for mineral; probably because it was decomposed from a congenial feldspathic bedrock, and also marks a proportionately long time for production, with great age of veins.

27. Rich lodes have their completely barren spots, and the poorest lodes have occasional stones of rich ores, which should not infatuate and deceive.

28. Lodes of regular yield are the desideratum of the miner. They are easily worked and are more reliable.

*A lode or vein, to be recognized as such by miners, whether it be "true fissure lode," traversing through all rocks, or "wedge lode," occupying the spaces between upturned layers of natural stratum, or "intervening lode," within the terminal planes of two entirely different opposing strata, must contain at least one of the matrices, quartz, fluor spar, calc spar, or heavy spar in addition to its metals and metallic ores. Therefore, any formation which is chiefly composed of country rock instead of the above matrices, although lying between equally smooth, well-defined walls, and yielding minerals from irregular seams and pockets, cannot be deemed a lode or vein in a correct mining sense. It is either a mineralized igneous dike, or reef of tilted stratum.

National Thanksgiving Day.

Proclamation by the President.

By the President of the United States—A Proclamation: The recurrence of that season at which it is the habit of our people to make devout and public confession of their constant dependence upon divine favor for all the good gifts of life and happiness, and public peace, and prosperity, exhibits in the record of the year abundant reasons for our gratitude and thanksgiving. Exuberant harvests, productive mines, ample crops of staples, the products of trade and manufactures, have enriched the country. The resources thus furnished to our reviving industry and expanding commerce, and hastening the day when discords and distress through the length and breadth of the land will under the continued favor of Providence, have given way to confidence and energy and assured prosperity. Peace with all nations has remained unbroken, domestic tranquility has prevailed, and the institutions, liberty and justice, which the wisdom and virtue of our fathers established, remain the glory and defense of their children. The general prevalence of the blessings of health throughout our wide land has made more conspicuous the sufferings and sorrows which the dark shadow of pestilence has cast upon a portion of our people. This heavy affliction, even, the Divine Ruler has tempered to suffering communities in the universal sympathy and succor which have flowed to their relief, and the whole nation may rejoice in the unity of spirit in our people, by which they cheerfully share another's burden.

Now, therefore, I, Rutherford B. Hayes, President of the United States, do appoint Thursday, the 28th of November next, as a day of national thanksgiving and prayer, and I earnestly recommend that, withdrawing themselves from secular cares and labors, the people of the United States do meet together on that day, in their respective places of worship, there to give thanks and praise to Almighty God for His mercies, and to devoutly beseech their continuance.

In witness whereof I have hereunto set my hand and caused the seal of the United States to be affixed. Done at the city of Washington, this 30th day of October, in the year of our Lord, 1878, and of the independence of the United States the 103d.

R. B. HAYES, President.

WM. M. EVARTS, Secretary of State.

NEW WATER MOTOR.—Messrs. W. H. Bailey & Co., of Salford, England, have recently designed a new water motor which works under the ordinary pressure of the water sent through the street mains. In appearance it is somewhat similar to an ordinary horizontal steam engine. It has an oscillating cylinder, with parts so arranged that the motion of the cylinder cuts off the supply of water at the end of the stroke, a reciprocating action being thereby obtained and imparted to the fly-wheel by the ordinary crank arrangements. There are no loose valves or tappets in connection with the motor, and all the fixing it requires may be done by a plumber, as there is nothing more to do than to connect the machine with a pipe from the street main. One of the motors is said to be working very successfully at the bottom of a colliery shaft near Bolton, the power being supplied by the water pumped up from the pit by the steam engine. A large number of laden wagons are drawn up an incline with great ease by this means. The motion has also been utilized for sawing timber, printing newspapers, etc.—*Iron Age.*

COFFEE-HULLING MACHINE.—An improved machine for hulling, scouring, and cleaning coffee has been patented by Mr. Patrick McAuliffe, of New York city. This invention relates to an improved machine by which coffee of all grades may be hulled, scoured and cleaned, and different kinds and grades of coffee mixed and turned out with uniform appearance, and by which no annoyance from dust is experienced as the impurities are drawn off and collected. The machine has a continuous operation, as it receives the coffee at one end and discharges it at the opposite end in a uniform and marketable condition.—*Scientific American.*

NEW YORK COTTONS FOR SOUTH AMERICA.—The Utica Steam Cotton Mills Company has received an order for a lot of the Utica gray sheetings from Guayaquil, Equador, South America. This will be the first load they have shipped to the western coast of South America, although it is of frequent occurrence sending goods to the eastern South American seaports.

IN the mills at Wigan, England, 1,079 looms and 94,000 spindles are stopped, and 25,000 looms and 310,000 spindles are running on short time.

Transactions in Public Lands.

A dispetch from Washington announces that J. A. Willimson, Commissioner of the Geueral Land Office, has completed his annual report to the Secretary of the Interior. It shows that during the fiscal year ending Juue 30th, 8,686,178 acres of land were disposed of, and 8,041,011 acres were surveyed, in addition to 721,618,748 acres previously surveyed. The total number of acres of puhlic domain still unsurveyed is something over one thousand million acres. The disposals were mainly as follows: Homestead entries, 4,418,344 acres; timber culture entries, 1,870,434; deeert land entries, 3,105,553; cash entriee, 877,555; grants to railroads, 606,340; swamp lands patented, 202,926; other grants to States, 214,992. These figures show a great increase in quantity of land taken up by the elass of actual eettlers as homesteads and for the purpose of timhor eulture. Cash receipts amount to $2,022,536, being $569,567 more than the receipts for the preceding yeer. Commissioner Williamson recommends in regard to lapsed railroad grants, that Congress should either declare the grants forfeited and restore the lands to disposal as part of the puhlic domain, or extend the time for ths comploton of the road. Among other recommeudations contained in the report are the following: For legislation to transfer auy titlo the United States may possess in islands and beds of "meandored" lands, sloughs and ponds, to the States in which they respectively lie; to nllow affidavits in preemption cases to bo taken before Judgee and clerks of Courts of record anywhere in local districts, instead of eompelling attendanco hefore Registers and Receivers; to repeal tho town site law, except as regards applications made under the law previous to its recent amendments; to euahle the department to extend prompt relief to parties entering puhlic land where a titlo cannot be confirmed, and also in eases where erroneous and illegal exactions havo heen made, by refunding to them the money paid in error. The report exhihite in detail the work done in connection with the euppression of timher depredatore on public leuds, and presents a variety of information with regard to ahandoned military and Indian reservations, the adjustment of private land claims and miscellaneoue matters. In conclusion, the Commissioner refers to and earnestly reitsrates former representations made by him regarding the need of an increase of the numher of clerks and of the amounts of appropriations for the dispatch of the constantly-accumulating business of the land hureau.

The Berrens Quicksilver Furnace.

The *Iron Age* takes from the *Correspondance Scientifique* the following description of an apparatus constructed by Hippolyte Berrens, and tested, with remarkahle results, at Barcelona by a commission of Spanish government engineers:

It consists of a horizontal or vertical furnace, eherged periodically, as its action is not continuous. It connects with a transmission chamber, from which the gases pass into condensers, 17 to 25 in numher, the shape of which resemhles that of two cones united at their base. The lower cone is huried in the ground, the upper, made of sheet iron, is cooled by a continuous stream of water. Eaoh condenser has a capacity of ahout 30 cuhio feet. They communicate with one another at their lower parts. The last one of the system is connected with a chamher containing charcoal, destined to remove the last traces of mercury from the gases. There is no chimney, but an aspirator instead, which permits accurate regulation of the furnace. The walle of the apparatus are coated with a layer of a mixture of equal parts of charcoal powder and cement. The furnace at Barcelona was charged with 15,717 pounds of 2.76% ore. Theoretically, therefore, the yield should have been 455.39 pounds of quicksilver, hut in fact it was 450.96, which proves a loss of 0.79%, although the carbon of the last receiver was not examined. Gold leaf placed at the end of the apparatus did not show the least trace of amalgam. A second trial was made to test the efficiency of the apparatus under the most trying circumstances, and it is but just to state that both the experiments were made in eummer, at a time when work at Almaden is entirely suspended on account of the too heavy loss of quicksilver. In this second trial the exhauster was run at eo high a speed that the ore in the furnace was glazed; the time of the operation was decreased by 25 honrs, and yet the yield from a charge of 15,790 pounds of 2.82% ore was 434.51 pounds, the loss amounting to 3.62%. A horizontal furnace is now huilding at Anfondeguilla capable of working 20 to 30 tons of 1% ore per day.

THE government of India will probably make English gold coins legal tender, prohihiting the importation, after a given time, of har silver. Rupees and smaller coins will be used as fractionel currency.

COPPER or hrass may be coated with bismuth by ueing a bath consisting of 1,000 parts of water, slightly acidulated with hydrochloric acid, in which 25 to 30 parts of ammonia-bismuth chloride is dissolved.

THE receipts at the San Francisco License Office for the transfer of mining etock (ten eent tax), for October, amounted to $8,601.10.

PERU owes to British bondholders £36,000,000.

Useful Information.

Effects of Impurities on Iron.

Tho principal and most objectionable impurities found in iron and steel are sulphur, phosphorus, silicon, calcium, and magnesium. Sulphur and calcium make iron brittlo at a red heat; this is called "red-short" iron; phosphorus and silicon make it hiittle at low temperatnre; thie is kuown as "cold-short" iron.

The latter is the greater defect of tho two. To avoid sulphur, uso fuel, which is free from sulphur; iron, which has been smelted, or puddled with charcoal, or with coke, that is, free from sulphur, is ths strongest and toughest. Hence the high estimatiou in which charcoal is held.

Phosphorus comes either from phosphate of limo contained in the oro, the fuel, or the flux, or from phosphate of iron in the ore—phosphorns being most ahundant in those strata where animal remains are found.

The presence of calcium and silicon can only bo avoided hy the use of ores that contain neither silica nor lime, such as pnre hacmatite or pure magnetic iron ore.

Silicon mekes iron brittle and hard, and has a similar effect on it as phoephorus; it is constantly found in cast iron; hot-blast iron has more silicon usually than ie found in cold-blast iron.

Alloys of iron are of but small importance to the founder. The following may be briefly noted:

Chromium does not readily combine with iron, which it makes excessively hard. [The chromo iron ore, which exists in such large quantitiss on the Pacific coast, may at no distant day he utilized. Chrome iron is so very hard that it may prove peculiarly adapted for mill stamps.—EDS.]

Arsenic imparts a fine white color to iron, but makes it brittle.

Gold combines very readily with iron; it serves as a solder for small iron castings, such as hreast-pine and similar articles.

Silver does not nnite well with iron, but a little may he alloyed with it; it makes iron very hard and brittle. The alloy is very liable to eorrosion.

Copper, if alloyed with iron, is not regarded as a homogeneous compound; but a emall quantity of iron added to brass increases its tensile strength.

Tin with iron makes a hard but beautiful alloy, and can he mixed in any given proportions, which, if nearly half and half, assumes a fine white color, with the hardness and luster of steel.

Alloys of iron are but seldom used at present, owing to the ease and economical waye in which it can he gilded, silvered, end galvanized, or coated with other metals.—*Spretson.*

SEA-WEED AS MANURE.—The following from the Boston *Journal of Chemistry* may serve as a useful hint to some of our farmers. The seaweed, which occurs in such immense quantities along our coast, may, perhaps, be utilized as it is in the countries spoken of: The excellent purpose this manure has answered in Holland has led the farmers in the neighborhood of Bremerhaven to apply the seaweed washed up by the river Weser as a manure for their land. Chemical investigation has proved that it is as rich in quabty as that used in Holland, as it is produced by the same caneee. Like the Ems, the Weser carries along quantities of rich mire, hut as soon as the outflow meets the tide it comes to a standstill, and receives from the ocean innumerable bodies of dead animalcules and plants, which increase in a great degree its fertilizing value. When gathered freshly, seaweed contains more than half its weight in water; but if left to dry the water evaporates, and it is thus eesier of transportetion. Seaweed should not he applied to the land when just taken from the water, as in such case it does harm to the crops. Such menure is found to he especially enitable for saudy and boggy land.

DEPTHS OF LAKES.—The Bavarian *Courier* publishee an interesting comparative statement of the depth of lakes. Among European lakes the Achensee, in the Tyrol, heads the list. At eome points the depth of this lake amounts to 2,500 feet. The greateet depth of the Lake of Constance is ahout 975 feet, that of the Chiemsee about 458 feet, and that of the Walchen and Kouigesee, 611 feet. The measuremeuts made ahout 1870 at the Red sea ehowed that at its deepest part ite depth is 1,836 feet; hut if we consider that the level of this lake is already 1,394 feet helow the level of the Mediterranean, then we lind that the total depreesion in the soil here amounts really to 3,230 feet. The Lake of Tiberias is extremely shallow in comparison; on its eastern part tbe average depth is only 26 feet, while on the western eide it lies hetween 19 and 22 feet. In Lake Baikal depths have heen found whicb, for a leke, are utterly astoniehing. In the upper part of the lake the depth is 10,800 feet (ahout the hight of Mount Etna), but downward the hottom constantly descends, and near the opposite hank the depth amounts to 13.230 feet. The depth far exceeds that of the Mediterranean sea, which, at its greatest part, measures only 7,800.

Estimating the Quality of Cast Iron.

The following aids for roughly estimating the quality of cast iron, are detailed hy Spretson:

When the color is a uniform dark gray the iron is tough, provided there ho also high metallic luster; hut if there bo no metallic luster the iron will be more easily crumhled than in the former case. The weakest eort of cast iron is where the fracture is of a dark color, mottled and without luster.

The iron may be accounted hard, tenacious and stiff when the color of the fracture is lightish gray, with a high metallic luster.

When the color ie light gray without metallic luster, the iron is hard and brittle.

When the color ie dull white, the iron is still more hard and brittle than in the last case.

When the fracture is grayish-whits interspersed with small radiating crystals, the iron is extremely hard and brittle.

When cast iron is dissolved in muriate of lime or muriate of magnesia, the specific gravity is reduced to 2.155; most of the iron is removed and the remainder consists of graphite with the impurities of cast iron. A similar change takes place when weaver's paste is applied to iron cylinders. Sea-water when applied for a considerable time has the same effect. It takes much longer to seturate white cast iron than to affect gray. The soft gray iron yields easily to ths file after the outer crust has been removed, and in a cold state is slightly malleable.

It may also he stated that the quality of iron in a melted state is readily judged hy a practiced eye, from the nature of the agitated aspect of its surface. The mass of fluid seems to undergo a circulation within itself, having the appearance of every-varying network. When this network is minutely subdivided, it indicates soft iron. If, on the contrary, the iron he thrown up in large convolutions, the quality of the metal must be hard.

How to Kill Mosquitoes.

EDITORS PRESS:—When they are on the well take a lighted candle and, holding it above them, carry it toward the wall where they are resting. As the light approaches them lower it gradually, until the flame is just in front of the mosquito; then push it towards the wall, until the mosquito springs into the flame and is destroyed. With care in adjusting the light, they will almost invariably be caught in the flame.

If the candle is brought toward them from heneath, they will feel the heat and escape. If they are on the ceiling drive them off, and attack them when they light on the walls.

This method is quick and sure, and leaves no stain on tho wall. It can he done also inside of mosquito nets, taking proper care not to bring the light in contact with the sides or too near the top. Try it. HENRY LOOMIS.

San Rafael, Cal.

TO MAKE CORKS AIR-TIGHT AND WATER-TIGHT.—A German chemical journal, says the Boston *Journal of Chemistry*, commends the use of paraffine as the hest method of making porous corks gas and water-tight. Allow the corks to remain for about five minutes heneath the surface of melted paraffine in a suitahle vessel, the corks being held down either hy a perforated lid, wire screen, or similar device. Corks thus prepared can he easily cut and hored, have a perfectly smooth exterior, may he introduced and removed from the neck of a flask with ease, and make an absolutely perfect seal.

A REMARKABLE case is given in the *Journal de Medicine* of the effect of the habitual use of milk in white-lead works. In some French lead mills it was observed that in a large working population two men who drank much milk daily were not affected by lead. On the general use of milk throughout the works the colic vanished entirely. Each operative was given enough extra pay to huy a quart of milk a day. From 1868 to 1871 no cases of colic had occurred.

Good Health.

Poisonous Tin Plate.

The Boston *Journal of Chemistry* after commenting upon the many hidden dangere that surround us in our daily life, goes on to say:

Attention has recently heen called to a new riek of chronic poisoning by the old enemy, lead. What we call "tin" veesels—that is, sheet iron coated with tin—are in daily use in every honsehold in the land. They are cheap, durable and convenient, and have been considered perfectly safe for the thousand culinary purposee to which they are devoted. They *are* safe if the tin-plate is honestly made; hut unfortunately this is not always to he counted upon. Tin is oomparatively cheap, but lead is cheaper; and an alloy of the two mentals may he ueed in place of the dearer one, with profit to the manufacturer though with serious detriment to the user. The alloy is readily acted upon by ecids, and salts of lead are thus introduced into food. The Michigan State Boerd of Health has lately bsen investigating this subject, having been led to do so by a letter from a physician who found that certain cases of what had been taken for chorea wore really *paralysis agitans*, which could bo traced to this kind of lead poisoniug. Other cases were brought to light in which children had died of meningitis, fits and paralytic affections, caused hy milk kept in such vessels, the acid in the fluid having dissolved the lead. Malic, citric, and other fruit acide are of course quicker and more energetic in their action upon the pernicious alloy. The danger is the greater, because lead salts are *cumulative* poisons. The effect of ono or two small doses may not be perceptible, hut infinitesimal doses, constantly repeated, will in tho end prove injurious, if not fatal.

Analysis of a large number of epecimens of tin-plate used in culinary articles ehowed tho presence of an alloy with lead in elmost every instance, and often in large quantities. It is safe to assert that a large proportion of the tinned wares in tho market are unfit for use on this account.

That we may not be accused of exciting fears which may he groundless, we will inform our readers how they can settle the question for themselves hy a simple and easy test. Put a drop of strong nitric acid on the suspeeted "tin," and rub it over a spaee as large as a dime. Warm it very gently till it is dry, and then let fall two drops of a solution of iodide of potassium on the spot. If lead is present it will he shown by a hright yellow color, due to the formation of iodide of lead.

It is stated by Dr. Kedzie that a peculiar kind of tin-plate, the coating of which ie largely made up of lead, is coming into general use for roofing, eeves-troughs and conductors; and it is suggested that much of this lead will eventually he dissolved and find its way into household cisterns. Susceptible persons may be poisoned hy washing in the leed-charged water, and all who drink it, even after it is filtered, are in danger of chronic lead poisoning. There is also risk in the use of glazed earthen vessels, if, as is often the case, the glazing contains oxide of lead. The danger in the use of certain enameled iron vessels was pointed out some time ago in the *Journal;* and it is said that these poisonous wares have not entirely disappeared from the markct.

Warts in Skin Grafting.

Dr. Charles A. Seale, of New York, has made a discovery at which all persons afflicted with these handsome excresenees may take comfort. His discovery is announced in the *Medical Record* as follows: As common warts of the skin are collections of vascular papillæ, admitting of easy separation without injury to their excessively thick layer of well-nourished epidermis, the idea was oonceived that, hy their use for the purpose of skin grafting hetter and more rapid results would he ohtained than when the ordinary ekin of less vitality is used. As proof of the theory the following case is cited, where there hed been complete destruction of all the skin on the dorsum of the foot, involving to a great extent the deep cellular tissue, and where for several weeks no healing advanced until grafts of freshly removed warts from the patieut's band immediately started little islande of new tissue, which rapidly increased, until they coalesced and met the margins of the border skin, thereby completely covering the foot hy firm, protecting integument.

Warts of the hand can be used with batter results than smell pieces of uormal skin, in skin grafting, in consequence of beiug easily separated, uninjured, into numerous cylindrical rods of great vascularity, and containiug a large proportion of hypertrophied epithelium, which, when planted in healthy grenulating tissue, readily adapt themselves to the new soil, receiving direct nourishment, and quickly growing as starting points for a new and smooth epithelial covering.

OPIUM AND THE VICTIMS OF FAMINE.—The largest number of victims and the earliest victims to the Chinese famine have heen opium smokers. This fact has been recognized by the government, who issne a stringent edict complaining of the covetous carelessness of the people in raising the poppy rather than cereals, and prohihiting the future cultivation of the noxious drug. The district magistrate of Tientsin has personally visited the opium-smoking resorts and closed them all. Soldiers and officials are strictly prohihited from smoking, uuder heavy penaltiee. This reminds us strongly of the eeneitiveness which those accustomed to the use of alcoholic liquors showed to the yellow fever in our Southern States.

DON'T SWALLOW CHERRY PITS.—A man died in Vermont recently, after euffering from dyspepsia for 20 years. Some peculiar circumetanees in his case led to a post-mortem examination, which revealed 13 cherry stonee imhedded in the mucous membrane of the stomach, causing a thickening of the walle of that organ some three-fourths of an inch, and ultimately the man's death. It was the opinion of the phyeicians that the stones had heen there many years.—*Herald of Health.*

AN account is given of a man who tore hie diaphragm loose, and, as might he expected, died immediately after, hy stuffing himself with potato-soup, tea and milk, and then taking to promote digestion, a good-sized dose of bicerhonate of soda.

MINING AND SCIENTIFIC PRESS.

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NEW ADVERTISEMENTS.
Thompson & Evans, Engineers and Machinists, S. F.

The Week.

The most startling news of the week has been the report of the discharge of men from the Bonanza mines. This is noticed in another column. In fact the Comstock is at present the most gloomy mining district from which we have advices. Nevada county in our own State is jubilant over the prospects of the coming seasou. A correspondent to the Downieville *Messenger*, says of Northern Sierra, that this is the most remunerative year for drift and hydraulic diggings ever known in that section of the country. And the quartz miners of Sierra county are prosperous. The Extra company of Copper City, Shasta, have been sending for the past month an average of $1,000 gold bullion a day to San Francisco, the product of one mine working about fifteen men. The news from Bodie is so invariably good that it becomes monotonous to record it. However, this week a new item may be added: Bulwer and Belvidere expect to become bullion producers at an early date. Within a radius of 30 miles about Winnemucca, Nevada, two new mining districts have been organized, one of them in the range of mountains which separate Paradise and Quin valleys.

In Colorado, Silver Cliff and Leadville have already rivals that may prove dangerous. General mining revival is reported from Montana. The region of Silver City, Idaho, is witneseing greater activity than hae heen noted there at this season for several years. Yankee Fork and vicinity, is said to be steadily improving. Snake River placers are attracting attention. We have heard an old miner dilate upon the riches which he knew capital could extract from placers on this river. His prophecies may he fulfilled. In Tombstone district, Arizona, "eome wonderful developments are taking place." In Glohe district, the word is, "increased force of labors," "night ehifts put on." This district, as well as other parts of Arizona, has suffered through mismanagement. Poor management may blast the hopes of a truely worthy section. But every district must have its era of careless working. This era is past, it is to be hoped on our coast.

"The Way the Wind Blows."

Every day the miner is becoming a more important unit of the community. West of the Rockies, no one is doing more at the present moment to develop all industries and banish "hard times" than is the miner. He furnishes work for the foundries, when steamship companies are so broken that they cannot send in orders. He calls for supplies, when in every other direction the market seems to be glutted, and the provision men are blue. He employs labor in building railroads, and while these are under way he keeps numberlcss teamsters busy on the roads transporting his ore. Even the lawyer finds employment from the miner. And last, but not least, the needy editors come in for a share. A mining camp gets a boarding-house and a saloon, and then it is prepared for a newspaper. The miner is doing all this for the country at present. He is the life of all markets. And any man who is cunning enough to set his sail according to the wind, will address his efforts to the service of the miner.

The miner has many necessities; the man who ministers to them will be paid in bullion. Daily we read of accidents in the mines, by which the lives of the miners are endangered. Many of these, it would seem, cannot be avoided by any meehanical inventions. No safety lamp or patent cage safeties will prevent the occurrence of many a fatal cave. But when a miner is killed by the breaking of the wire-rope by which the cage is hoisted; or when the engineer has to depend upon the counting of tags to determine the depth to which he has let the cage, and, making a mistake, drops the latter too far and upon a miner; or when a pinion-wheel breaks, or a brake-band snaps, and causes the death of a handful of men, tben inventors and mechanics may, if they are quick, see an invitation for them to increase their income.

But it is not only by carelessness of the miuer himself, or by imperfections in machinery, that the miner's life is jeopardized. Much of the danger to the common laborers in mines, arises from incompetence in the superintendents. Caves occur from careless timbering. Most aggravating, because entirely avoidable, accidents happen from criminal neglect of the condition of shafts, and the disposition of material about the mouth of the same. There is no plea whatever for a superintendent who allows rocks to be piled about the mouth of a shaft, or planks to be left insecurely at the entrances of drifts. Yet now and again we hear of miners crushed bcneath rocks and planks falling down tbe shafts, and the verdict of the juries is "Accidental Death," with no additional recommendation, that the euperintendent of the mine at which the accident occurred be warned that any further negligence on his part will he considered criminal. Such accidents as these, happen most frequently at new mines. But they are by no means unknown at older ones that should give better accounts. The mine superintendent is an important character. His is a profession, and he should study it as such. It will profit him to do so.

Aside from that which concerns the miner more directly, there is vast field for the exercise of mechanical skill and inventive genius in matters relating rather to the product for which he labors, be it ore or bullion. Edison's plan for the discovery of bonanzae is not altogether a chimera, even though it is as yet rather uncouth and intangible. Drills are not yet perfect, and if we turn to the field of coal-mining which has important bearings on the bullion product,—even if it is not recognized as a great industry of our coast,—we fiud there that the inventor of a convenient and practicable machine for cutting and loading the product, may rest the remainder of his life. When mining comes to be carried on to such a depth as it is on the Comstock now, and as it will continue to he there and elsewhere so long as true fissure veins exist and human nature remaius the same, it seems incredible that the old-fashioned drum and rope method of hoisting ore can long survive. A recent writer has suggested the use of pneumatic tubes for this purpose. Is it not a very apt suggestion? For it offere solution to another problem, viz: How to overcome the great heat fouud at such depths. This latter ie not to he solved by the manipulation of drafts. The air compressor drills were a step in the right direction. Pneumatic tubes may be the next.

But it ie above ground that the inventor will find widest scope. There is not one metallurgical process that even approaches perfection. The ignorance and clumsiness exhibited in metallurgical worke is simply startling. Quicksilver wasted, gold and silver wasted, fuel and labor thrown away. Yet with all thie there is a profit even now. The lesson is obvious. The children of another generation will, it has been said, work the slag-piles and tailings dumps of their ancestors and grow rich at it. Ore-stamps, amalgamators, settlers, retorts—all require improvement, if not entire reconstruction in both principle and practice. And thie improvement is to come from students in our colleges of mines. When this is read it will call forth many a smile. A mining expert has been defiued—by a Eureka miner, we believe—as a man that "wears glasses, talks Dutch and don't know a durned thing about mining." A contemporary took occasion a short time ago to thus attack college men: "Book learning, broad cloth and frills are not worth a picayune compared with good sound sense, and practical experience. We presume some fine-haired, scientific 'experts' laughed in their sleeves when it was announced that Thomas Peard, a rough miner, working on his regular shift, was put in charge of the Pittsburg. The laugh is on the other side now." And another, shortly after, takes opportunity "to mention that broad-clothed and be-jeweled mining superintendents, who can't tell a mining shaft from a monitor, or a patent deflecting nozzle from an air compressor, are rapidly losing caste with stockholders and their representatives."

The tendency to cry down educated men, which this indicates, is the rcsult of a quick conclusion drawn from iusufficient observation. The professors of our own University understand its origin. Accordingly they say: "We try to make our students understand that when they leave college they are *not fit* to take charge of a mine, or do any other big thing. They must begin at the bottom, study in practice to comprehend the meaning of the principles which they have studied in theory. If they do this, their time will come." It is useless to attempt to give the numberless cases that refute this senseless prejudice. We will merely add that "Ore-dressing," as a science and as an art, grew up entirely from the skillful handling of mathematics by a student.

The Improved O'Harra Furnace.

Mr. D. J. O'Harra, of Reno, Nevada, has recently procured through the MINING AND SCIENTIFIC PRESS Patent Agency, a patent on certain improvements in his furnace, which increases its efficieney and simplify its operation. The furnace is a horizontal one, intended for desulphurizing and chloridizing ores, and is now in successful operation at several mines in this State and Nevada. The improvements consist in constructing the furnace with two longitudinal compartments, so as to form two hearths, one above the other, with a connecting passage between them. On the upper hearth the desulphurization of the ore is accomplished, and in the lower the chloridization. An endless chain, carrying conveyors in which are hoes or stirrers, passes through both compartments in opposite directions through each, stirring up the ore and gradually conveying it from tbe feed to the discharge opening. This chain passes some distance into the open air in its revolutions, so as to bc cooled before again entering the furnace, thus preventing it from being destroyed by the heat. Openings are formed in the side of the furnace, hy which the supply of oxygen may be regulated for ore, more or less highly sulphureted. Doors at the ends of the hearth open and close as each conveyor on the chain passes or enters the furnace.

There are four fire places in the furnace, two in each side. Two of these are arranged that the heat may be directed to hoth the upper and lower compartment, and the other two to discharge the heat into the lower compartment alone, whence it forces way through an opening into the upper one, aud thence to the stack. At each end of the fire places, just under the grates and between them and the ash floor in order of the furnace are a number of small openings passing through the bridge wall that separates the fire places from the hearths. These openings then connect with the lower compartments and admit a large supply of oxygen to the flame of the fire as it passes from the fire place over the bridge wall, thus allowing all the carbon to be consumed, aud proving a first-class acidizing flume.

On the arch of the upper compartment are formed a series of jogs or projections which act as baffilers to intercept the flying particles of ore carried onward by the draft, and precipitate them to the hearth where they are again mixed with the mass of ore.

The ore is fed into a hopper from the battery and falls on to the upper hearth, the conveyors carrying to the opening where it falls to the lower hearth. As the ore passes along the upper hearth it is desulphurized by the heat furnished by the fires and by the combustion of the sulphur in the ore. This action is assisted by the oxygen supplied hy the air admitted through the side openings. For a chloridizing roasting the salt is unused with the ore, as it is fed into the hopper, and becomes thoroughly intermingled with it by the stirring elhow of the hoes. If there is any free silver in the ore it gets the benefit of the chlorine vapors passing up from the lower hearth. When the ore falls through the opening ou to the lower hearth, the fall breaks any spongy lumps in masses that may have formed, and the ore is again stirred over and over and carried elowly along over the lower hearth through the flame and heat. As the ore is moved along in contact with the fires opening into the lower compartment, the salt gives up its chlorine by the action of the sulphurous gases rising from the decomposing metallic sulphates which have been generated which action converts the metalic sulphate into chloride, with the simultaneous production of sulphate of soda.

The process is essentially the same as the well-known Freiberg process, but the mechanical devices of the furnaee, and the peculiarity of the construction, enable the operator to thoroughly desulphurize and chloridize the ore to a higher percentage, and with less cost of fnel and labor. When the desulphurization has been accomplished, and sulphurous acid ceases to be formed, with the old method, it has been necessary to increase the fires to complete the finishing calcination by decomposing the salt so that the chlorine evolved will transform the metallie sulphates into chlorides.

By Mr. O'Harra's method no inerease of fires is necessary. The construction of the furnace is such that the heat is greatest just where it is needed, viz: At the point where the ore has been desulphurized, and where it is ready to receive the chlorine from the decomposing salt, in order to be thoroughly chloridized. The ore, while in the upper hearth is freed from its sulphur, by the combustion of that substance, hy the heat afforded by the fires, and the combustion of the sulphur is assisted by the supply of oxygen admitted through side openings. During all the time a certain amount of chlorine vapor is rising from the lower compartment, and assisting in transforming any metallic silver into a chloride.

By the time the ore drops on to the lower hearth, the metals have became sulphates, and here more heat is required, in order that these sulphates may decompose the salt, by the sulphur being liberated and uniting with the oxygen and hydrogen, forming sulphuric acid, which unites with the sodium and forms sulphate of soda, while the chlorine is set free and converts the metals into chlorides. The ore has became gradually more and more heated in the passage through the upper hearth, and by the time the extra heat ie required, as stated, it comes immediately in front of the same fires, that have during the whole process furnished the heat. As the ore passes along the lower hearths, it reaches the last fire, when the iutense heat will effectually cause the chemical changes described to occur, and the ore is dropped from the furnace tboroughly desulphurized and chloridized, having been stirred over and over in its passage through by the hoes, so that every particle of the ore has been subjected to the action of the heat and chlorine vapors.

By the means described the inventor claims that he can chloridize any silver ores no matter how rebellious or refractory because he can give them any length of time in the furnace that may be necessary, and gauge the heat to suit the class of ore. The ore may be passed through quickly or slowly as its character requires. By decomposing the salt and cooling the chlorine at the point where the ore is exactly in condition to receive it he claims to chloridize to a high degree with about 33% less salt than has been deemed necessary, no salt being wasted by decomposing before the sulphates are formed. Ordinarily the ore will be from four to ten hours in passing through the furnace, according to the character. One man is required to attend the fires, no other attention being necessary, as the ore may be fed to the hopper from the battery by any mechanical means. By the peculiar construction of the furnace, the ore is fed and discharged at the same end. The battery and machinery being at the same end, tbe ore may be elevated and passed to the amalgamating appliances with very little trouble or expense of handling.

The Geological Section.

The Geological Section of the California Academy of Sciences held its first regular meeting last Saturday, November 9th, 1878. There were present the following members: Messrs. Amos Bowman, Major Kup, C. D. Gibbes, J. R. Scupham, also Prof. Jos. Le Conte, Prof. Price, A. Harding, A. W. Jackson, Jr., S. B. Christy. The first business of the society was the reception of the constitution and hy-laws, prepared by a committee composed of Messrs. Bowman, Scupham and Jackson. The constitution reported by them was adopted, with a few slight changes.

The society then proceeded to an election of officers with the following unanimous result: President, Prof. Jos. Le Conte; Vice-President, Prof. Wm. Ashhurner; Council, Profs. Jos. Le Conte, Ashburner and Price; Secretary, S. B. Christy; Treasurer, J. R. Scupham.

The society after some general discussion then adjourned.

The purpose of this society is to gather together what real interest there is on the coast in the subjects of geology, mineralogy and its applications to mining. It is to be hoped that the starting of such a section is not premature, and that there is really sufficient interest in pure science as well as in its applications to make it a success. There is a wide field open to it on the coast, and we hope that the section will be able to show a good record for itself in the future.

MINING PATENTS.—A mineral patent has been issued to D. F. Hughes for the Jewess Quicksilver mine, in San Francisco land district. The issue of a patent on another quicksilver mine, the New Idria, is now occupying the attention of the law officers of the Interior Department.

THE Squaw Lake Co., Oregon, is still piping away on their gravel beds with satisfactory results. They will make a clean-up as soon as their water supply fails—probably in a couple of weeks.

THE Alice M. Co. has subscribed $25 per month toward the erection of a miner's hospital at Butte, Montana Territory.

ON Nov. 13th, 10,000 pounds of Silver King concentrations were shipped from Yuma.

Mines and Works of Almaden.—No. 9.

[Translated for the Press from "ANNALES DES MINES."]

IV.—Abandoned Mines.

Having finished the above study, it remains for us to speak some words of some other deposits of mercury near to those of Almaden, but to-day abandoned.

The principal ones, and those whose exploitation was for the longest time continued, are those of Almadenejos, and of Valdeazogues, at 12 to 15 kilometers to east-southeast of Almaden. At the mine of Concepcion Vieja, situated below Almadenejos, they have exploited two deposits which are parallel and very near to each other, under the names of El Rompimiento and Santa Teresa. Two other deposits, El Lineal and the Auguila, were still exploited in 1860 at the mine Concepcion Nueva, one kilometer west of Almadenejos; about this time the product became so small, that it was decided to abandon it in 1861. Two deposits, San Fernando and Las Esperanzas, at Valdeazogues, were of the same sort.

There were exploited, two or three centuries ago, to the west of Almaden, under the name of the Fucares,* mines which reached the depth of about 400 meters, and in which, to the contrary of those of Almaden, the richest parts were found to the east. More distant finally, to the west, is found another mine called San Julian. Also to the north, cinnabar is taken from the mines of Gnadalperal and Las Cuevas, towards Gargantiel.

*From the name of the German bankers, the Fugger brothers, to whom the use of these mines was for a long time leased.

But all these deposits present a great difference from those of Almaden, even though the nature of the vein be the same. At the Concepcion Nueva the upper levels gave for certain years about 560 tons of mercury, but the ore disappeared almost altogether at the depth of about 50 meters. Less rich at the Concepcion Vieja, the ore was there more constant, but ceased, nevertheless, at 250 meters depth. This has been the same at all the other mines, the reverse of what has been observed at least so far at Almaden.

Should we see in these deposits the prolongation to the east and west of those of Almaden? The cinnabariferous beds of Almadenejos and Valdeazogues seem, when one looks for their prolongation to the west, to disappear at seven or eight kilometers to the south of Almaden. Those of Las Cuevas to the contrary disappear at six kilometers to the north. One recognizes well, between Almaden and Almadenejos, some traces of cinnabar which seem to establish between the two regions a sort of continuity; the mines of the Fucares would be a new station on the same line (Fig. 4). One may then suppose that the ensemble of the deposits forms a great system directed a little more to the south than that of the strata; that the mines of the Fucares, of Almaden, of Almadenejos, indicate the rich parts of this system, in which the fissure followed momentarily the same direction as the strata, with all the inflections which present this direction.

We have endeavored, in the lines which precede, to describe with care the veins of Almaden, the rocks which accompany them, the strata in which they are encased. We have been able to conclude from this study, if not with an entire certainty, at least with a great probability, the approximate age of these deposits. Sundry questions remain doubtful; it would be very interesting, for instance, to arrive at a knowledge of the nature of the emanations which have produced the filling of the veins, and to explain what causes have been able to remove quartzite and to replace it by cinnabar. We leave to others the task of making this clear.

SECOND PART.

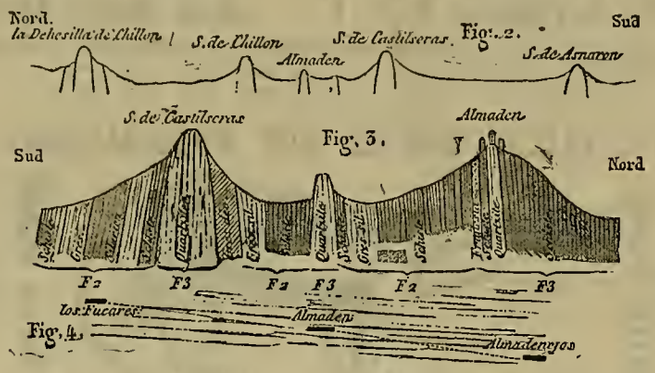
I.—Method of Exploitation.

The actual works of Almaden communicate with the surface by three vertical shafts known under the names of San Miguel, at the eastern extremity, San Aquilino, at the western, and between the two the San Teodoro, which without occupying a mean position cannot but be well placed as a shaft for hoisting and pumping. It is in the vicinity of this last shaft that one finds at different levels deposits of ore and material, as well as the reservoirs for the subterranean waters. Of the three shafts, that of San Teodoro descends to 305 meters, 17 meters consequently below the actual level of the deepest work for exploitation (288 meters). San Miguel descends only to 16 meters, and San Aquilino only to 5 meters below the level of the 9th level. The three shafts communicate with each other and with the deposits, by drifts run both in the sterile rock and in the ore itself.

The distance which separates the levels, one from the other, is now fixed at 25 meters, in spite of the fact that the upper levels often deviate from this figure. The distances apart of these levels are as follows:

1st level	44.80 meters
2d "	29.50 "
3d "	29.03 "
4th "	37.41 "
5th "	29.03 "
6th "	21.10 "
7th "	23.46 "
8th "	22.61 "
9th "	25.91 "
10th "	25.03 "
Total	288.63 "

The method of exploitation actually employed at Almaden was invented by the engineer Don Diego Larranga, and after a lively opposition, finally adopted toward the end of the year 1804. Although it has been already described, *e. g.*, in the treatise of M. Comces, we believe in order to be complete it should not be passed over entirely in silence. We would remark that its essential characteristic is the employment of masonry for sustaining the walls. From the beginning of the last century, under the direction of some German engineers, they had begun to substitute arches of masonry for those of wood which had been hitherto employed. The increasing difficulty of procuring timber of sufficient length on account of the increasing width of the veins, and some accidents which it was feared would some time occur to the whole mine, absolutely obliged recourse to some more efficacious method



ALMADEN QUICKSILVER MINES.

of preserving the workings than had been previously in use. The method of exploitation adopted is in short a method of filling or embanking across the excavated vein, *(une methode en traverse arec remblais).* It presents only two essential particulars:

First—That, far from waiting for the completion of an excavation before attacking the following, they pass to the opposite extreme, removing all the parts of different excavations which correspond vertically, by pits which run from one level to the other, before passing to an adjoining position.

Second—That the filling in is only partly done with stones and bricks taken from outside the mine.

The preparatory works consist of a drift, which, leaving the shaft of San Teodoro runs cutting the deposits on the level on which one wishes to establish the works, and in different adits, or interior shafts, which descend from the drift on the level above to the lower one which is being worked. The crosscuts *(travers-bancs)*, destined for the transport of ore and materials, should have large dimensions, particularly in the neighborhood of the shafts. The adits are opened out to a width of two meters and a length of 3 meters, parallel to the direction of the vein.

They intend to modify, at the 10th level, the method of laying out the tracks till now in use, in the manner indicated in the plan which we have reproduced in Fig. 15. In place of establishing a trackway at each level in each vein, they will place one in the middle of the massive sterile rock which separates the two groups. To the right of each of these future shafts, at spaces of 40 meters, will be established crosscuts. The drifts run in the midst of the vein will then serve only in a restricted measure for transportation; their maintenance (in repair) will then be less costly; the work in the labores having become more free, will be more easy, at the same time that transporation will have become more regular.

To give more clearness to this explanation, we will suppose the work to be divided into three periods quite distinct, except, indeed, that practically the three periods often encroach the one upon the other.

1st Period—Removal of the central zone of the vein.

2d Period—Removal, crosswise (*en travers*), of alternating columns of ore from either side of the central zone, thus leaving other columns intact, as "reserves."

3d Period—Removal of these "reserves."

First Period—When the shafts opened in the center of the mass have arrived at a certain depth, 10 or 12 meters for example, they begin to excavate from the shaft drifts two meters bigh, and one and a half to two meters wide; more exactly, they give to these drifts the width of the preparatory shaft, itself a little variable. New drifts are begun before these are finished, and they continue to explore all the central mass comprised between the two shafts, without attending to whether they reach the lower level; the removal of the central mass begins then by straight steps (*gradins droits*).

When the communication of the drift with the lower level has been established by the shafts, they actively exploit the ore by reversed steps *(gradins renverse)*, following as the first the central part of the vein. As the drifts and the steps are advanced, the surfaces of the two lateral zones laid bare is augmented of course, and they are sustained by strong props of oak, or of holly, upon which are placed boards when they wish to establish a passage *(encamacion.)*

The distance for placing these props varies with the greater or less inclination of the beds or strata, into which the bed of cinnabar divides itself. In cases where they seem to be insufficient, an arch of ore is left to maintain the two lateral walls more effectively than simple props, *(buttes.)* In cases when lastly, neither timber of large dimensions or arches of ore, appear to offer a sufficient security, provisional arches of brick masonry are constructed, abutting on each side upon the ore, and covered above with large stones to the hight of ten meters, to protect it against ruption from lateral pressure, which tends to expel the key-stone.

They are thus enabled, thanks to the relative solidity of the ore, to remove entirely all the central part of the vein, which is simply replaced by props *(buttes)*, supporting in some places stages, until in this way the shafts from which work was started are connected. The distance which separates two of these shafts is always 25 meters, as far as the 9th level. Between the 9th and 10th, the actual distance is 40 meters.

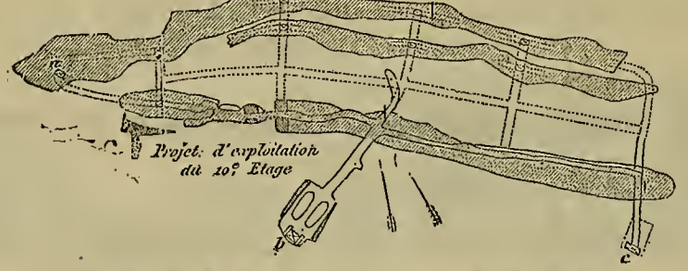


FIG. 15. PROJECTED EXPLOITATION OF TENTH LEVEL.

The necessity of a more rapid exploitation,

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and above all the rapid construction of permanent works for supporting the mine, oblige the habitual commencement in every extensive labore of the second period, before the actual completion of the first.

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Numerous valuable works have been written on the reduction of ores, the theory of the blast furnace, chemical considerations affecting the treatment and manufacture of iron and steel; copper, tin, and silver smelting, are all fully described, but molding and founding appear to have been comparatively neglected. The object of the work before us has been to collect in one volume, every subject on which it is probable that a founder will require information, whatever the material he deals with, and to place that information before him clearly, concisely, and in as practical a manner as the subject will allow. This object, avowed in the introduction, has been accomplished, if we may judge from a hasty examination of the book. In its completeness of detail it is eminently a book for practical men. A founder will find it a guide in the choice of materials and of apparatus. It takes up first the characteristics and mixtures of pig iron. It considers the subject of fuel, and enters into detail with regard to different furnaces. There are chapters upon pyrometers and thermometers; refractory materials; crucibles; blast machines; patterns; molding; general and special; chill-casting; case-hardening; casting on to other metals; drying-stoves; foundry-pits; crane-ladles; foundry-cranes; cast-steel; brass-founding; bronze statue-founding; bell-founding; cleaning and dressing castings; examples of foundries. The whole is fully illustrated.

The book though specially adapted to the needs of practical men, contains much that is interesting to the general reader. The student of the relations between theoretical and applied science, is attracted by the dependence of the forms of casting upon the laws of crystallization of cooling metals. It is interesting to learn that the curves in a great gun or in a heavy pump casting, are not the product of the founder's fancy only, but result from his knowledge of the internal constitution of the iron. In this connection Spretson quotes from Mallet: "It is a law of the molecular aggregation of crystalline solids that when their particles consolidate under the influence of heat in motion, their crystals arrange and group themselves with their principal axes in lines perpendicular to the cooling or heating surfaces of the solid, that is, in the direction of the heat-wave in motion, which is the direction of least pressure within the mass." When the crystals are small, and lie with their principal axes parallel, then they form the most compact structure. But suppose a sharp corner in a casting while it is cooling; the heat-wave passes off at both surfaces. Many crystals point their principal axes in a direction perpendicular to each surface. They no longer lie side by side, but become confused, and a weak place is formed in the casting. Again, the quicker the cooling, the smaller the crystals and the more compact the metal; an application of what the tyro in chemistry studies with a little sand-crucible full of melted sulphur. Other illustrations of this dependence of practice upon theory might be drawn from or suggested by this book.

In his chapter on "Examples of Foundries, Cost of Molding and Casting," Spretson advocates that careful keeping of accounts, which is so necessary to the economical conduct of any business but which is so frequently neglected especially in metallurgical and like works. When less metal comes out in a casting than was put in, the loss should be carefully investigated and accounted for. The man in charge should be as much exercised over a loss of this kind as should the chief assayer in a large reduction works when he finds the furnaces yielding below the assays. Care and economy, in the interest of business success and of science, are advocated now by all technical men. In some branches, these men are in this respect far ahead of the age. Few listen to them now. Their advice will be appreciated by another generation.

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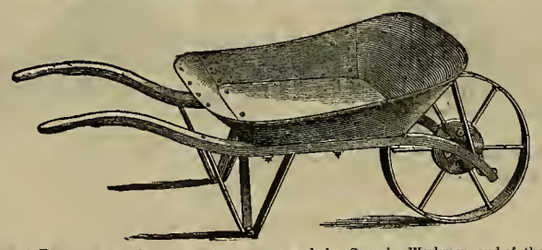

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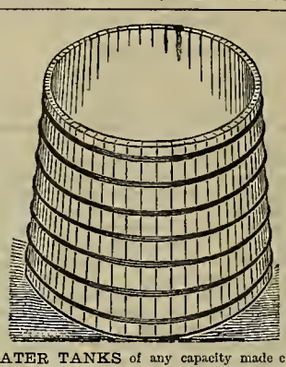

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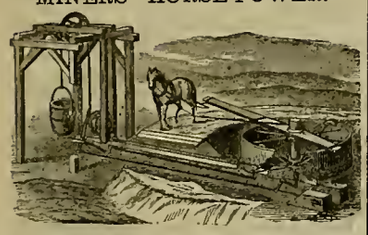

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Never one has Failed.

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The public generally and Hydraulic Miners especially are hereby notified that any parties making or using the contrivance known as the HOSKIN DEFLECTOR will be prosecuted to the full extent of the law, said machine having been declared by the U. S. Circuit Court an infringement upon my patent, the

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Pocket Map of California and Nevada.

Compiled from the latest authentic sources, by Chas. Drayton Gibbs, C. E. This map comprises information obtained from the U. S. Coast and Land, Whitney's State Geological, and Railroad Surveys; and from the results of explorations made by R. S. Williamson, U. S. A., Henry Degroot, C. D. Gibbs and others. The scale is 18 miles to 1 inch. It gives the Judicial and U. S. Land Districts. It distinguishes the Townships and their subdivisions; the County Seats; The Military Posts; the Railroads built and proposed, and the limits of some of them; the occurrence of gold, silver, copper, quicksilver, tin, coal and oil. It has a section showing the lights of the principal mountains. The boundaries are clear and unmistakable, and the print good. 1878. Sold by DEWEY & CO. Price, postpaid, $2; to subscribers of this journal, until further notice, $1.

Continued from page 309.

which includes the Prescott, Heuston and King's Hill.

KING'S HILL.—On the Orleans property, is being worked by Beau & Ryan. Last week they had a good cleau-up from 35 loads of rock.

JUDD & CASEY GROUND.—Is situated on Ben Franklin hill. A crushing of 30 loads of rock has heen finished at the Allison Ranch mill, which yielded about $1,800 or $60 to the load. The ledge is still 18 inches wide.

PILLOW & CRASE.—Have taken up the gravel mine formerly known as the Jenny Lind, situated on Alta hill, west of the Godfrey mine. They feel confident that they are on the channel.

SILVER STAR.—This ground, west of Scaddeu's Flat, has been sold by Joseph McCauley to Joseph Winn for a very valuable consideration.

NORTH STAR.—Is being worked on tribute, Mr. James Bays being chief contractor; many rich deposits of ore have been extracted from this mine.

BRANCH & Co.—Have leased ground from Watt & Judd on Gold hill; their shaft is about — feet in depth, and they have a good ledge, which shows free gold.

SHAMROCK.—Situated at Forest Springs, is working a crushing of 20 loads at the Allison Ranch mill. The owners feel confident that they have a good mine.

PLACER.

CISCO COMING TO LIFE.—Dutch Flat *Forum*, Nov. 7: From recent tests made (through new processes) of the rebellious ore taken from Meadow Lake district, it is claimed to be demonstrated beyond a doubt that those exteusive ledges cau he made pay well for the working. As easy access to Meadow Lake can be had by way of Cisco, the latter place, of course, bids fair to reap large benefits from the travel and freight shipped from this point. Still she has other hopes. A large amount of float hase metal is found on Red Mountain, north and less than three miles from the station. Mr. Camphell, who keeps a store of general merchandise at tbis place, gathered and had a carload of the metal shipped below, receiving $40 per ton for the same.

MICHIGAN BLUFFS. — *Argus*, Nov. 9: A short time ago two tons of rock from the Old Bird valley lead yielded $75 per ton. Since then five tons more of quartz rock were taken out of the mine, which is now called the Centennial Quartz Lead, and it averaged about $80 per ton. This success has naturally caused something of a flutter among local mining experts, and Messrs. Knoufel & Slifer have located an extension of the claim. The prospect of obtaining good pay is very favorahle, gold heing freely seen in the rock. This extension is about a thousand yards south of the Centennial.

PLUMAS.

A RICH GRAVEL RANGE.—Quincy *National*, Nov. 9: Chaparral hill is situated upon what promises to he the richest gravel range yet discovered in northern California. It has already heen traced for a distance of perhaps 40 miles, and it traverses this county for twenty miles, running in a southwest and northeasterly direction. The mines previously located upon this famous channel of auriferous deposits are the Gopher Hill, Badger Hill, Hungarian, Clermont and Golden Enterprise, all of which are in successful operation. It is also apparent that Rich Bar, Rich Gulch, Golden Canyon, Lucky Strike, Home Stretch and other old mining camps of this county, which yielded almost fabulous wealth, were all fed from this immense gravel helt. The property claimed in the Chaparral hill survey has the formation of an immense hasin of gravel about one mile square.

TWENTY-TWO FEET OF ORE.—The Savercool Co. have now a good five stamp mill running on good paying rock, and the lode where they are working is 22 feet in width, nearly all of which is good ore. The only drawhack is the fact that they have to haul their ore ahout a mile and a half, which may interfere somewhat with the work during a portion of the winter. It is reported that two other ledges have been lately discovered by W. S. Dean, near the Savercool mine, which give some fine prospects on the surface.

NEVADA.

WASHOE DISTRICT.

CALIFORNIA.—Gold Hill *News*, Nov. 13: The daily yield of ore has heen increased to 300 tons per day, which keeps the Consolidated hattery mill and the California pan mill still busy crushing. There is no change of value to report of any of the ore-producing sections of the mine.

SIERRA NEVADA.—At the 2200 level two drifts have been started at the station, one northward and the other southward. The south drift is intended for the crosscut or main working drift through the ore vein now heing gradually turned to reach the ore vein, which it will in all probability do in three days more. The north drift will he louger in reaching the ore. Everything is working well.

CON. VIRGINIA.—Daily yield of ore, 140 tons. It is likely that even tbis small amount of ore extracted will be greatly decreased during the month to come. The main south drift on the 1950 level is heing steadily advanced, the face in quartz and low grade ore mixed with streaks of porphyry. It is now in 410 feet from the Califoruia line. The principal work on the 1850 and 1750 levels is the enlargement of the winzes and drifts, so as to keep good the circulation of air. But three men are now employed to the shift on each of these levels. Enlarging the main east and west drift on the 1650 level, connecting the C. & C. and Consolidated shaft, is making good progress. Enlarging crosscut No. 2 and the southwest drift from the C. & C. drift on the 1500 level is making steady headway. The main east drift on the 1400 level is also being repaired. The southeast drifts on the ore streaks from the south end of the ore stopes on the 1300 level is making good progress, the face still showing small veins of good ore. Sinking the C. & C. shaft is going steadily forward.

GOULD & CURRY.—Sinking the new Best & Belcher joint shaft is making good progress, the hottom in good blasting ground. On the 1900 level crosscut No. 4 from the bottom of the joint winze is steadily advancing. Crosscut No. 2 on the same level is also making good progress, the face in blasting porphyry.

BEST & BELCHER.—The south drift from the joint Con. Virginia winze on the 1,900 level is making slow progress on account of the great heat. Good ventilation of the entire level will be attained in a day or two more.

JULIA CON.—The south lateral drift on the 2000 level is being pushed, the face affording low assays. A large drain for the water is being cut underneath the car track in this drift. This will have the effect of greatly cooling off the entire 2000 level, as the drain will be covered close so that the hot steam cannot escape. By this arrangement the heat has already been decreased some 12 degrees.

NORTH CON. VIRGINIA.—Over 200 men are employed in grading, laying the heavy stone fonndations, framing the timbers for the hoisting frame and building, and in sinking the main shaft. Sinking the main shaft progresses.

CALEDONIA.—The east crosscut on the 1600 level during the first part of the week cut a strong flow of water, which was, however, only a pocket.

UTAH.—Sinking the main incline is going vigorously forward, the bottom still in good sinking ground. The new boilers are heing put in place, and the frame work of the new building is about complete.

ALTA.—The face of the north drift on the 1550 level shows signs of a near approach to the ore chimney recently sunk upon by the winze below the 1450 level. The face of the drift is showing some good ore, which bids fair to open out a large and valuable deposit. The bottom of the winze below the 1450 level is in good ore.

SILVER HILL.—Sinking the main incline preparatory to opening the 1100 station is making good progress. The south drift on the 800 level is now heing advanced in St. Louis ground. The south drift on the 900 level is steadily advancing, the face in a favorable vein formation.

YELLOW JACKET.—The south drift on the 2400 level has passed through considerahle quartz, and the face is now in ledge porphyry.

BULLION.—The oast side of the shaft is cutting into a fine quartz formation which is liahle to make into ore at any time. Opening the 2050 station is being pushed ahead energetically, to prospect the ore vein to the eastward at that point. Work has heen resnmed in the west crosscut on the 2000 level, which is heing pushed to prospect the ore vein and connect with the main incline for air purposes.

OPHIR.—No work has heen done in the east crosscut on the 2100 level during the week, at which point the flow of water from the drill hole continues quite strong. The north drift on the 2000 level is being pushed, the face still in eoft vein material showing great regularity, and carrying occasional streaks of quartz and small veins of low grade ore.

JUSTICE.—The prospecting drifts north on the 1300 level are opening up a splendid prospect of good ore. The south drift on the 1450 level of the Alta is showing good ore. Negotiations are pending for the leasing of the Devilsgate and Pioneer mills with which to crush the ore.

TROJAN.—Both the main northeast drift and the west crosscut on the third station level are advancing in low grade ore. The ore stopes on the second station level yield the usual quantity of good ore.

HALE & NORCROSS.—The pumps are again lowering the water. The east drift on the 2000 level is heing rapidly advanced.

CROWN POINT.—There is no change of value to note of any of the prospecting drifts on the 2300 levels. Work progressing well at all points.

MEXICAN.—The joint Union Con. winze is making fair progress. The flow of water from the Union Con. drift gives no further trouble.

OVERMAN.—At the old mine the east drift on the 1600 level, which is being run in order to reach a point far enough east to sink a winze to the 1800 level, is making good headway. The north drift on the same level is heing driven vigorously ahead.

BELCHER.—Sinking the main north incline shaft below the 2460 level is making good progress. The 2560 level will soon be reached, when a new prospecting station will he opened.

UNION CON.—Men are engaged in cleaning out and repairing the main drift on the 1600 level, preparatory to resuming work at the point where the water was struck. It is more than likely that when the drift is again advanced a quartz vein will he encountered.

SAVAGE.—The station at the bottom of the north winze below the 2000 level is completed and a crosscut started to prospect the ore vein at that point.

SOLID SILVER.—The crosscut east from the main tunnel has ahout 20 feet further to the east ledge. Preparations are making to supply the requisite air in drifting from the bottom of the winze to the west ledge.

COLORADO.

RIVALS FOR LEADVILLE.—Denver *Tribune*, Nov. 6: Carbonates have been found on Four-Mile creek, Boulder county. The first reports came from Left-Hand. The prospectors then hranched out into new fields, and began operations on Four-Mile creek. The hunt was successful. The pick of the prospector had been stuck into hut few places when the carbonate was found—even richer than that taken from Left-Hand. Assays made showed the surface ore to run all the way from 60 to 450 ounces to the ton. The ore is of the same character as that found at Leadville. There is no difficulty in mining it, and, like the Leadville ore, it is easily worked—almost pure gain. It can be taken out very rapidly, and, at 450 ounces to the ton, a few tons are a fortune.

RIVALS FOR SILVER CLIFF.—On Oct. 27th it became known to a few that near the head of Sacramento gulch, neighborhood of Alma and Fairplay, Park county, some rich discoveries had been made by Messrs. Toble, Dweller, Birdsall, La Duc and Mullen. The spread of the news has caused the usual rush. For a while discoveries were confined to the above claims. But later mineral was struck on two claims, owned respectively hy Dennis Findley and William P. Cook. The ore thus far found resembles the mineral of Mounts Bross and Lincoln, and as it occurs in the same mountain system, viz: the Mosquito range, and in the same geological formation, a contact hetween porphyry and lime. The ore thus far discovered is of uniformly high grade, not a single assay of less than 100 ounces having been made from any sample taken, while many have exceeded 500 ounces. No mill run has yet been had, but the Sacramento lode will ship to-morrow a two-ton lot, taken out in sinking their discovery shaft, which is only down at present about seven feet. The owners expect this lot to average over 200 ounces. The camp has every advantage of location, being below timber line and surrounded on all sides, and above and below by dense forests of heavy pine. A town site has been surveyed. The new place has been christened Carbonate City.

OREGON.

PERMANENT AND EXTENSIVE.—*Oregonian*, Nov. 4: It is established heyond a douht that the mines of Granite creek, Grant county, are permanent and extensive. The Monumental has 300 tons on the dump and 4,000 in sight. The Phil. Sheridan, at a depth of 36 feet, showed a 1½-foot ledge, assaying as high as $500 per ton. A rich discovery has just been made about half a mile north of Sheridan.

HYDRAULIC MINES.—*Sentinel*, Nov. 6: The Josephine mine is now ready to commence piping. Two giants will he used. Certain Portland capitalists have purchased mining property and several water rights and ditches in the vicinity of Willow Springs. They expect to put in about 1,500 feet of pipe this season. Al. McKenzie is Superintendent.

GOOD YIELD.—Dan Fisher last week completed the crushing of 1,500 pounds of rock taken from the mines of the Fort Lane Quartz Co., and realized $216 in gold. This company has some 50 or 60 tons of the same rock in sight, and they are now talking of huilding another arastra for crushing it. They also have some placer mines adjoining, and are now making preparations for working them this winter. Thos. Kahler is Superintendent of these mines.

UTAH.

BINGHAM.—Salt Lake *Tribune*, Nov. 10: It is estimated that from 50 to 60 tons will be daily put through the Stewart mine mill, when the whole number of stamps get to work. The Steamhoat is working four men prospecting. The Last Chance has closed down and will not resume operations hefore spring. The Alameda, working on lease, is turning out some high grade ore. The St. John is leased to Martin & Co. and looks well. The Miller is under lease to A. Lawson & Co. They have out some eight tons of fair ore. The Wall Street has heen leased to W. Hoskins and considerahle prospecting has heen done. The Jordan is as usual turning out her quota of ore and keeps the tramway cars husy-in taking it to the concentrating works of Prof. Holden at the Jordan. The Mayflower has reduced her staff ahout half. Hanson & Janson have out ahout 40 tons of first-class concentrated ore, which they prefer to keep rather than sell at sacrifice. The Atalanta is looking but indifferent. The present indications of ore look dnhious. The Clipper owned hy Mr. Couch, is looking first-rate. The Flag in Muddy is working a force of three men, and the ore now heing taken out assays well. The Orphan Boy and Utah are still idle. The Shettle hoys have closed down their leaching works on the Northern Light, the weather having become too cold for further operations. I. G. Eastman has a lease on the Lone Pine, and a tunnel is heing run to tap the ledge. A little ore is in sight of high grade. The late decline in the ore market affects the camp much.

BEAVER.—Salt Lake *Tribune:* The Frisco smelter is running full hlast, and turning out the usual amount of hullion every 24 hours. Cullen, Camphell & Co. have their refining works at Chicago, and are enahled to refine their own bullion.

THE capital of the Sierra Nevada M. Co. is to he increased from $10,000,000 in 100,000 shares, to $50,000,000 in 500,000 shares.

News in Brief.

LARGE fire at Cape May.

THE monetary crisis in Chile is increasing.

THE Czar will adhere to the treaty of Berlin.

GRANT was most cordially received in Portugal.

RUSSIA has ordered the construction of several iron-clads.

THE last of the English Fenian prisoners has been released.

THE wine interests of California represent $60,000,000.

GERMANY will occupy the whole Samoan Archipelago.

ONLY nine deaths from yellow fever, at New Orleans, Nov. 5th.

THE famous colt "Duke of Magenta" has been taken to England.

THE phylloxera has devastated about 750,000 acres of vine in France.

THE Russian occupation of Roumania will cease on the 27th instant.

THE Sioux, Blackfeet and Assiniboines are fighting among themselves.

AN audacious robbery of a jewelry store was perpetrated in New York. Nov. 7th.

THE Cabinet is a unit upon the question of resuming specie payment next January.

FIGHTING has heen renewed in South Africa between the British and Kaffirs.

THE Austrian Emperor has granted general amnesty in Bosnia and Herzegovina.

BY the upsetting of a boat at White Haven, Saturday, four men were drowned.

THE Constitutional Convention have concluded the consideration of the Bill of Rights.

RUSSIA has raised this year 218,000 recruits, instead of the peace contingent of 150,000.

THE occupation of the Turkish provinces, will probably cost Austria 40,000,000 florins.

MONCASI, the would-he assassin of the Spanish king, will be sentenced to death.

THE Port Ludlow mill and town have been sold to the Puget Sound Mill Co., for $64,800.

PORTIONS of British Columbia are suffering greatly from the effects of the recent drouth.

GERMANY, while favoring peace, will not join in any combined action to enforce the treaty of Berlin.

IF the weather keeps clear a few weeks longer, the raisin crop will be tho largest ever raised in this State.

DURING the past four months there were 40,000 cases of yellow fever in New Orleans and vicinity.

THE coming Cuban sugar crop promises to he excellent, and the estimated yield will reach 700,000 tons.

MINISTER ROMERO has recommended the passage of a law permitting the free exportation of silver from Mexico.

MOROCCO has promised to indemnify the families of Spaniards assassinated, and to salute the Spanish flag.

JOHN O'CONNOR, an ex-member of the Ohio Legislature, has been arrested at Dayton, O., charged with forgery.

THE mail routes of the United States were increased ahout 9,146 miles during the year ending June 30th, 1878.

CABUL priests have heen making collections to support a sacred war. Natives shrink from the taxation entailed hy war.

DR. PIEDRA has established at Lambayeque works for the extraction of quinine from cascarilla hark. A new industry.

IT is estimated that there is enough nitrate in the province of Tarapaco, Peru, to supply the world for the next 600 years.

THE Phœnix elevator, at Peoria, Ill., with over 100,000 hushels of grain, was destroyed hy incendiary fire, Nov. 3d.

THREE car-loads of cats recently passed over the Canada and Southern railroad, destined for the granaries of the West.

A REWARD of $25,000 has been offered for the return of the hody of the late A. T. Stewart, stolen in New York, Nov. 7th.

DRESBACH & Co., who have loaded on their own account this season, no less than 25 cargoes of wheat, suspended on the 5th inst.

THEY are shipping tomatoes to London from Rochester, picked when perfectly green and wrapped in tissue paper like oranges.

A GERMAN American citizen has heen sentenced in his Fatherland to confinement, for speaking disrespectfully of Emperor Wilhelm.

THE Canadian government has offered to set apart 5,000 acres of land for the locked-out English lahorers who may immigrate to Canada.

IMMIGRANTS to the United States for the year ending June 30th, 1878, numhered 157,776. Of these 1,549 were miners and 14,843 farmers.

THOSE presenting greenhacks for redemption, when resumption commences, will, it is not unlikely, have the option of heing paid in gold or silver.

A JUDGE of Pierce City, Idaho, fined a man $5 for killing another, and the miners are threatening to lynch hoth the Judge and murderer.

THE Constitutional Convention vest the pardoning power in the Governor, with the provision that no criminal twice convicted of felony shall he pardoned.

A MOVEMENT is on foot to induce depositors of the City of Glasgow Bank to accept a composition of 15 shillings on the pound, so as to relieve shareholders.

FIFTY thousand eucalyptus trees are to be planted ahout the City of Mexico, and it is expected they will cause a very material modification of the rainfall ahout the Mexican capital.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[From Official Reports for the Mining and Scientific Press, DEWEY & CO., Publishers and U. S. and Foreign Patent Agents.]

By Special Dispatch from Washington, D. C.

For the Week Ending October 29th, 1878.

Bush Inserters—Geo. H. Mixer, S. F.

Combined Knife and Match Safe—John G. Rahner, Portland, Oregon.

Grain Spouts—John Scholl, Elk Grove, Cal.

Band Saw Guides—Joseph A. Wells, Oakland, Cal.

Hot Atmosphere and Medicated Baths—Geo. M. Baronidis, S. F.

Pumping Apparatus for Raising Water—Francis A. Bishop, S. F.

Cigars and Cigarettes—Trademark—Harris Bros., S. F.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s Scientific Press American and Foreign Patent Agency, the following are worthy of special mention:

Band-Saw Guide.—J. A. Wells, Oakland, Dated, Oct. 29th. This invention relates to an improved guide for band-saws, and the improvements consist in mounting on journals, on a plate which is suitably secured to the guide stem, a pair of rollers or wheels between which the saw passes and which serve to guide it, said rollers or wheels being provided with flanges or extended rims at the back which prevent the saw from being pushed from between the wheels when at work. The rollers or wheels are so arranged as to be adjustable to saws of varying thickness or widths. This device reduces the friction on guides for hand-saws to a minimum. It may be secured to the guide stem of any of the machines now in use. The peculiar formation of the pulleys with their rear flanged disks is such as to render it impossible for the saw to get out from its proper position between the wheels. Pressure on the cutting edge of the saw, even in the case of sawing heavy blocks, does not materially increase the running friction, since instead of the rear edge of the saw pushing against a solid piece of metal, firmly fixed, it impinges on a surface revolving in the direction of its line of travel at an exactly proportionate rate of speed. The friction on the sides of the blade is nominal, since the surfaces on which they impinge are running in the same line of travel and at a rate of speed exactly corresponding to that of the blade.

Knife, Match Safe and Tape Measure.—J. G. Rahner, Portland, Oregon.—Dated October 29th. The device forms a combined pocket knife and match safe, and consists in making a case or safe with a movable hinged cover, in which safe matches, pins, toothpicks and similar articles may be carried. On the inside of the cover is secured a tape line, which is wound around a staple provided for it and secured in place by a rubber hand. On the side of the case is a penknife blade, having the usual guard—the whole device being made of the size of an ordinary pocket-knife.

Grain Sacking Device.—John Scholl, Elk Grove, Sacramento county. The object of the invention is to provide a device for the continuous sacking of grain as it passes from a threshing machine and separator, without interruption while substituting empty for full sacks, and without the loss of grain which usually occurs during such a change. It consists of a chute, or spout, through which the grain can flow, and which is provided with an outwardly flowing diaphragm; just at the mouth, so that the chute is divided into two outlets at this point. Each of these passages is provided with an independent set of hooks for holding the sacks, and the chute has a gate made to move across its width just back of the diaphragm, so as to stop either of the passages alternately. A lever passes through the covered top of the chute and operates the gate. While one sack is being filled, the flow of grain is cut off from the other half, and an empty sack can easily be adjusted to the other side. When the first sack is full, the flow is diverted to the empty sack without wasting a grain, and time is allowed for removing the full sack and replacing it by an empty one.

Fresh attractions are constantly added to Woodward's Gardens, among which is Prof. Gruber's great educator, the Zoographicon. Each department increases daily, and the Pavilion performances are more popular than ever. All new novelties find a place at this wonderful resort. Prices remain as usual.

For Printing Materials, the publishers of this paper patronize Marder, Luse & Co., Pacific Type Foundry and Printers' Supply Warehouse, 532 Clay street, San Francisco, Cal. Send them a stamp for specimen sheet, and say advertised in this paper.

Examine the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.94. Lewis C. Grover, President; L. Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

Model Maker and Machinist.—I. A. Heald, No 514 Commercial St., San Francisco, (fourth floor).

METALS.

[Wholesale.
Wednesday M., November 13, 1878.

Iron.—	
American Pig, soft, ton	24 00 @26 50
Scotch Pig, ton	25 50 @26 50
American White Pig, ton	23 00 @24 00
Oregon Pig, ton	26 50 @— —
Refined Bar	2½@ 3
Horse Shoes, keg	5 00 @— —
Nail Rod	—@ 7½
Norway, according to thickness	6½@ 7
Copper.—	
Sheathing, lb	34 @ 35
Sheathing, Yellow	19 @ 20
Sheathing, Old Yellow	— @—
Steel.—	
English Cast, lb	16 @ 17
Black Diamond, ordinary sizes	16 @—
Drill	16 @ 17
Flat Bar	16 @ 19
Plow Steel	8 @ 19½
Tin Plates.—	
10x14 I C Charcoal	8½@ 9
10x14 I C Coke	7 @ 7½
Banca Tin	18 @— 20
Australian	15½@ 17
Zinc.—	
By the Cask	9 @— —
Zinc, Sheet 7x3 ft, 7 to 10, lb, less than cask	9½@— 10
Nails.—	
Assorted sizes	2 80@3 00

LUMBER.

Wednesday M., November 13, 1878.

Cargo Prices of Redwood.		Puget Sound Pine	
		Retail Price.	
Rough, M	13 00	Rough, M	18 00
Refuse	9 00	Fencing	18 00
Clear	23 00	Flooring and Step	28 00
Clear Refuse	13 00	Narrow	30 00
Rustic	23 50	2d quality	25 00
Refuse	13 00	Laths	3 50
Surfaced	20 00	Furring, lineal ft	½
Refuse	14 00	**Redwood.**	
		Retail Price.	
Flooring	20 00	Rough, M	18 00
Refuse	12 00	Refuse	14 00
Beaded Flooring	23 00	Pickets, Rough	15 00
Refuse	13 00	Polished	16 00
Half-inch Siding	16 00	Fancy	22 60
Refuse	14 00	Siding	20 50
Half-inch Surfaced	20 00	Surfaced & Long Beaded	30 00
Refuse	14 00	Flooring	30 00
Half-inch Battens	16 00	Refuse	22 50
Pickets, Rough	11 00	Half-inch Surfaced	30 00
Rough, Pointed	12 50	Rustic, No. 1	30 00
Fancy, Pointed	18 00	Battens, lineal ft	
Shingles	1 75	Shingles M	2 00

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by Sutro & Co.]

San Francisco, November 13, 3 P. M.

Legal Tenders in S. F., 11 A.M., 99¼@99.95. Silver, 1¼ @1⅝. Gold in New York, 100⅛.

Gold Bars, 890@910. Silver Bars, 8@22 ₰ cent. discount.

Exchange on New York, ¼, on London bankers, 493/8@ 49½. Commercial, 50; Paris, five francs ₰ dollar; Mexican dollars, 89¾@90⅜.

London Consols, 95 13-16; Bonds, 107⅛ ex coupon.

Quicksilver in S. F., by the flask, ₰ lb, 40@41c.

Signal Service Meteorological Report.

San Francisco.—Week ending November 12, 1878.

Highest and Lowest Barometer.						
Nov 6	Nov 7	Nov 8	Nov 9	Nov 10	Nov 11	Nov 12
20.87	29.95	30.00	30.10	30.13	30.07	30.17
29.77	29.81	29.04	30.01	30.03	30.01	30.00
Maximum and Minimum Thermometr.						
65	65.5	61	61.7	64	63.5	61
50.5	57	62	55	52	52	55.5
Mean Daily Humidity.						
45	54	81	73	74	78	81
Prevailing Wind.						
NW	W	SW	NW	N	W	N
Wind—Miles Travelrd.						
257	203	165	140	108	134	100
State of Weather.						
Clear.	Clear.	Fair.	Fair.	Clear.	Fair.	Fair.
Rainfall in Twenty-four Hours.						
Total rain during the season, from July 1, 1878, 1.95 in.						

San Lorenzo, December 6th, 1877.

Messrs. Dewey & Co.—*Gentlemen:* I received the Letters Patent for my invention on the 5th inst., and beg to thank you for the gentlemanly and business-like manner in which you have dealt with me from the beginning of my application. I shall always feel it a pleasure to recommend you to all I come in contact with who need Letters Patent. Respectfully, Wm. Dale.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

General Robert Allen Silver Mining Company.

—Location of principal place of business, San Francisco, California. Location of works, Pinal County, Arizona.

Notice is hereby given that at a meeting of the Board of Directors, held on the 29th day of October, 1878, an assessment of twenty-five (25) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin to the Secretary of the Company.

Any stock upon which this assessment shall remain unpaid on the 30th day of December, A. D., 1878, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the second day of January, 1879, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

M. C. SOUTHARD, Sec'y.

Office, No. 411½ California street, Room 11, San Francisco, California.

Land Purchasers' Association.—Location

of principal place of business, San Francisco, California.

Notice is hereby given that at a meeting of the Board of Directors, held on the 5th day of November, 1878, an assessment of four ($4) dollars per share (being a part of the $30 installment on the subscription to the stock) was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at No. 641 Sacramento street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 9th day of December, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before will be sold on Saturday, the fourth (4th) day of January, 1879, to pay the delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors.

O. S. WRIGHT, Sec'y.

No. 641 Sacramento St., San Francisco, Cal.

Mineral Fork Mining and Smelting Company.

—Location of principal place of business, San Francisco, California. Location of works: Big Cottonwood District, Salt Lake County, Utah Territory.

Notice is hereby given, that at a meeting of the Directors held on the 31st day of October, 1878, an assessment (No. 1) of two (2) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, Room 20, Safe Deposit Building, No. 328 Montgomery street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the seventh day of December, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Monday, the 30th day of December, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

OTTO METCHKE, Sec'y.

Office, Room 20, Safe Deposit Building, No. 328 Montgomery street, San Francisco, Cal.

Mount Jefferson Milling and Mining Co.—

Location of principal place of business, San Francisco, California. Location of works, Garrote Mining District, Tuolumne County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the seventeenth day of October, 1878, an assessment (No. 5) of five (5c.) cents per share was levied upon capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, Room 6, 318 Pine St., San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the twenty-fifth (25th) day of November, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Tuesday, the seventeenth (17th) day of December, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK, Sec'y.

Office, Room 6, No. 318 Pine St., San Francisco Cal.

New Basel Con. Gravel Mining Company.

—Location of principal place of business, San Francisco, California. Location of works: Placer County, Cal.

NOTICE.—There are delinquent upon the following described stock on account of assessment (No. 4) levied on the 24th day of September 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Name.	No. Certificate.	No. Shares.	Amount.
G Mahe	6061	1500	$75 00

And in accordance with law and an order of the Board of Directors made on the 24th day of September, 1878, so many shares as may be necessary of each parcel of such stock will be sold at public auction at my office, rooms 5 and 0, No. 434 California street, San Francisco, California on the Eighteenth (18th) day of November, 1878, at the hour of twelve o'clock, noon, of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

D. F. LeGAYE, Sec'y.

Office, 434 California St., San Francisco, California.

Summit Mining Company.—Location of

Principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, Cal.

Notice.—There are delinquent upon the following described stock, on account of assessment (No. 5,) levied on the 10th day of September, A. D., 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
C Lehmann, Trustee	200	5	$ 25
C Lehmann, Trustee	201	5	25
C Lehmann, Trustee	202	5	25
C Lehmann, Trustee	203	5	25
C Lehmann, Trustee	204	5	25
T Scotland	13	6,250	312 50
F B Whiting	28	200	10 00

And in accordance with law, and an order of the Board of Directors, made on the tenth day of September, A. D., 1878, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, on Tuesday, the nineteenth day of November, A. D., 1878, at the hour of two o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

J. W. CLARK, Sec'y.

Office, Room 6, No. 318 Pine Street, San Francisco, Cal.

The California Fruit Growing Association.

—Location of principal place of business, San Francisco, California. Location of property, El Dorado County, California.

Notice is hereby given, that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 9) of three ($3) dollars per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, No. 641 Sacramento street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 30th day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Mouday, the 21st day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco, Cal.

POSTPONEMENT.—At a meeting of the Board of Directors of the California Fruit Growing Association, held September 23d, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till Saturday, the 26th day of October, 1878, and the day of sale of delinquent stock is hereby postponed to Friday, the 22d day of November, 1878. D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco.

POSTPONEMENT.—At a meeting of the Board of Directors held on the Nineteenth day of October, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till November 30th, 1878, and the day of sale of delinquent stock is hereby postponed to December 21st, 1878.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento Street, San Francisco, Cal.

Vigorit Powder Company.— Location of

principal place of business, City and County of San Francisco, California. Location of works, California City, Marin County, State of California.

Notice.—There are delinquent upon the following described stock, on account of assessment (No 1) levied on the first day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. of Cert.	No. Shares	Amount
Louis McLane, Trustee	30	437½	$218 75
Louis McLane, Trustee	32	½ of 875	218 75
G W Grayson, Trustee	62	1312½	656 25
H H Shinn, Trustee	91	400	200 00
H H Shinn, Trustee	92	400	200 00
H H Shinn, Trustee	93	400	200 00
H H Shinn, Trustee	94	112½	56 25

And in accordance with law, and an order of the Board of Directors, made on the First day of August, 1878, so many shares of each parcel of stock as may be necessary will be sold at public auction, at the office of the Company, Room No. 1, 109 California street, on Wednesday, the second day of October, 1878, at the hour of 2 o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale. JAS. W. BAKER, Sec'y.

Office, No. 109 California street, Room 1, San Francisco, California.

POSTPONEMENT.—By an order of the Board of Directors made on the First day of October, 1878, the above sale is postponed until Monday, October 21st, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

POSTPONEMENT.—By an order of the Board of Directors made on the Eighteenth day of October, 1878, the above sale is postponed until Friday, November 1st, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

POSTPONEMENT.—By an order of the Board of Directors made on the first day of November, 1878, the above sale is postponed until Monday, November 18th, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

Amusements.

BALDWIN'S THEATER.

THOMAS MAGUIRE.....Manager.
F. Lynter.....Acting Manager.
G. R. Chipman.....Treasurer.

CLARA MORRIS.

Corner Market and Powell Streets. Open every evening and Saturday matinee. Box office open daily.

BUSH STREET THEATER.

Chas. E. Locke.....Lessee and Manager

OATES COMIC OPERA COMPANY.

Open every evening and Saturday Matinee.

CALIFORNIA THEATER.

Barton & Lawlor.....Manager.
Barton Hill.....Acting Manager.

ADA CAVENDISH.

Bush Street, above Kearny. Open every evening. Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance.

STANDARD THEATER.

M. A. Kennedy.....Sole Lessee and Manager.

RICE'S SURPRISE COMBINATION.

Bush Street, above Montgomery. Open every evening. Seats may be secured six days in advance.

CERTIFICATE OF PARTNERSHIP.

The undersigned, having formed a partnership to carry on the business of General Publishers under the firm name and style of Dewey & Co., Publishers, this certifies that the principal place of business of said partnership is situated at 202 Sansome street, in the city of San Francisco, State of California; and that Alfred T. Dewey, residing in the city of Oakland, State of California, and Warren B. Ewer, residing in the city of San Francisco, State of California, are all the members of said partnership.

Alfred T. Dewey.
W. B. Ewer.

State of California, } ss.
City and County of San Francisco, }

On this second day of October, in the year one thousand eight hundred and seventy-eight, before me, Chas. E. Kelley, a Notary Public in and for the said city and county, personally appeared Alfred T. Dewey and W. B. Ewer, known to me to be the persons whose names are subscribed to the within instrument, and they acknowledge to me that they executed the same.

In witness whereof, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written. Chas. E. Kelley,
[Seal.] Notary Public.

Endorsed—Filed October 7th, 1878.
Thos. H. Reynolds, County Clerk.
By J. Whalen, Deputy Clerk.

CERTIFICATE OF PARTNERSHIP.

The undersigned, having formed a partnership to carry on the business of Patent Agents under the firm name and style of Dewey & Co., Patent Agents, this certifies that the principal place of business of said partnership is situated at 202 Sansome street, in the city of San Francisco, State of California; and that Alfred T. Dewey, residing in the city of Oakland, State of California, and Warren B. Ewer, residing in the city of San Francisco, State of California, and George H. Strong, residing in the city of Oakland, State of California, are all the members of said partnership.

Alfred T. Dewey,
W. B. Ewer,
Geo. H. Strong.

State of California, } ss.
City and County of San Francisco, }

On this second day of October, one thousand eight hundred and seventy-eight, before me, Chas. E. Kelley, a Notary Public in and for the said city and county, personally appeared Alfred T. Dewey, W. B. Ewer, and George H. Strong, known to me to be the persons whose names are subscribed to the within instrument, and they acknowledged to me that they executed the same.

In witness whereof, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written. Chas. E. Kelley,
[Seal.] Notary Public.

Endorsed—Filed October 7th, 1878.
Thos. H. Reynolds, County Clerk.
By J. Whalen, Deputy Clerk.

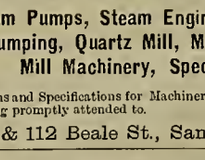
J. Thompson. C. H. Evans.

THOMPSON & EVANS,

(Successors to Thompson & Parren.)

Engineers and Machinists.

Rubber Suction Hose Made to Order.



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Steam Pumps, Steam Engines, Hoisting, Pumping, Quartz Mill, Mining, Saw Mill Machinery, Specialties.

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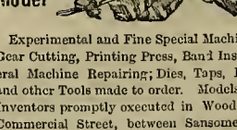
AND



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Experimental and Fine Special Machinery, Planing and Gear Cutting, Printing Press, Band Instrument and General Machine Repairing; Dies, Taps, Punches, Reamers and other Tools made to order. Models and Patterns for Inventors promptly executed in Wood or Metals. 514 Commercial Street, between Sansome and Leidesdorff, Third Floor), San Francisco, Cal.

I. A. HEALD, Proprietor.

Iron and Machine Works.

THOS. PENDERGAST. HENRY S. SMITH.

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and MACHINERY

OF ALL KINDS.

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PRACTICAL BOILER MAKER,

Marine, Stationary and Portable Boilers, Smoke Stacks, Hydraulic Pipe, Oil or Water Tanks, Ore and Water Buckets, Casometers, Girders, Bridges and Iron Ship Building.

ALL KINDS OF SHEET IRON WORK.

Repairing promptly attended to at the lowest possible terms.

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ROOT, NEILSON & CO.,

MANUFACTURERS OF

STEAM ENGINES, BOILERS AND ALL

Kinds of Machinery for Mining Purposes.

Flouring Mills', Saw Mills' and Quartz Mills' Machinery constructed, fitted up and repaired.

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MANUFACTURING COMPANY,

Manufacturers of all kinds of

Wharf and Bridge Bolts, Railroad Trestle Work, Car Frames and Bolts, Machine Bolts, Set Screwe and Tap Bolts, Lag or Coach Screws.

ALL STYLES OF FANCY HEAD BOLTS.

HOT AND COLD PRESSED HEXAGONAL AND SQUARE NUTS, WASHERS, BOLT ENDS, TURNBUCKLES, ETC., ETC.

13, 15 & 17 Drumm St., near California,

SAN FRANCISCO, CAL.

Golden State & Miners Iron Works,

Manufacture Iron Castings and Machinery of all Kinds at Greatly Reduced Rates.

STEVENSON'S PATENT

Mold-Board AMALGAMATORS,

Golden State Pressure Blowers.

First St., between Howard & Folsom, S. F.

WM. H. BIRCH. JOHN ARGALL.

California Machine Works,

BIRCH, ARGALL & CO.,

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☞General Mechanical Engineers and Machinists. Steam Engines, Flour, Quartz and Mining Machinery. Sole manufacturers of Brodie's Patent Rock Crushers and Steel-Faced Tappits. Steam, Hydraulic and Sidewalk Elevators. Repairing promptly attended to.

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SAN FRANCISCO, CAL.

All kinds of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Bells and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch. ☞PRICES MODERATE.☜

J. H. WEED. V. KINGWELL.

STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

J. HENDY, 49 and 51 Fremont Street, S. F.

THOMAS THOMPSON. THORNTON THOMPSON.

THOMPSON BROTHERS,

EUREKA FOUNDRY,

129 and 131 Beale St., between Mission and Howard, S. F

MANUFACTURERS OF CASTINGS OF EVERY DESCRIPTION.

WIND MILL. One of the best made in this State for sale cheap on easy terms. Address, W. T., care of Dewey & Co., S. F.

GEORGE W. PRESCOTT. IRVING M. SCOTT. H. T. SCOTT.

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BUILDERS OF

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Home Industry.—All Work Tested and Guaranteed.

VERTICAL ENGINES,
HORIZONTAL ENGINES,
AUTOMATIC CUT-OFF ENGINES,
COMPOUND CONDENSING ENGINES,
SHAFTING,
BABY HOISTS,
VENTILATING FANS,
ROCK BREAKERS,
SELF-FEEDERS,
PULLEYS,
STAMPS,
PANS,
SETTLERS,
RETORTS,
ETC., ETC.

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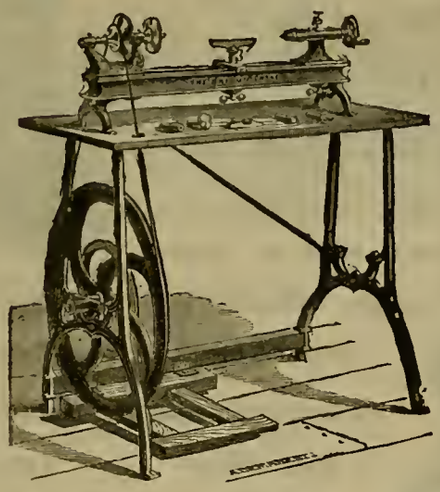

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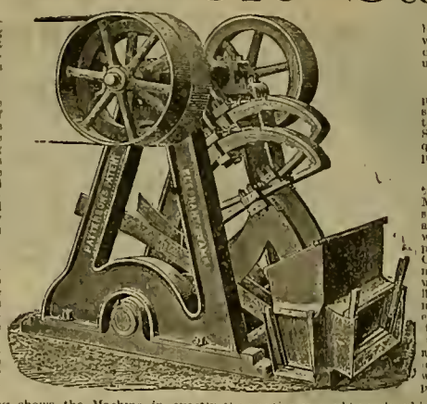

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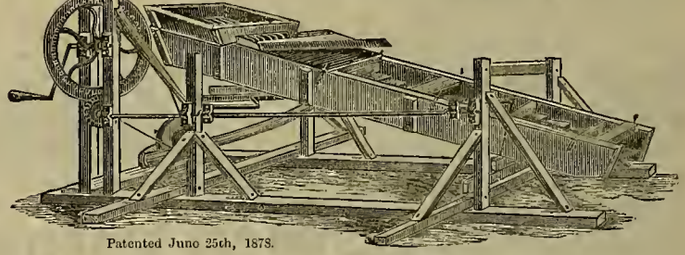

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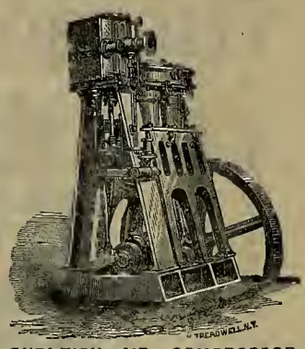

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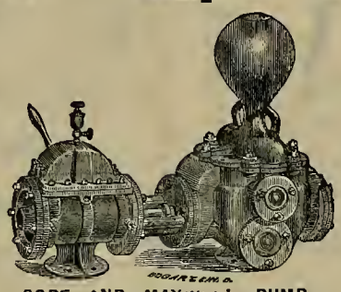

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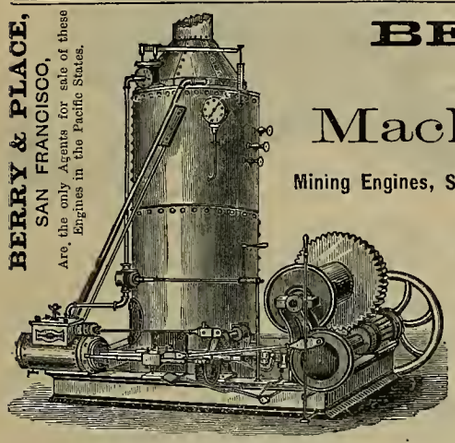

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Publishers.

SAN FRANCISCO, SATURDAY, NOVEMBER 23, 1878.

VOLUME XXXVII Number 21.

An Improved Hydrant Suction.

A patent has been secured, through the MINING AND SCIENTIFIC PRESS Patent Agency, by James Stoddard, for a hydrant suction, which is a great improvement over those formerly in use. A "hydrant suction" is the pipe or hose connecting a steam fire-engine with the hydrant, and they have until now been made of a rubber and canvas hose, inside of which was a spiral coil, to prevent collapse. This style of suction is heavy, apt to collapse, and soon wears out, and it has remained for a member of the San Francisco fire department to invent a device which will take its place by answering the purpose better in all respects.

The engravings show pretty clearly the construction of the device, which is extremely simple in use. At one end is the usual coupling, or collar, having studs by which it is screwed on to the engine suction-pipe by a spanner. This collar fits loosely on to the neck of the outer half of the ball or flange, in the neck holding it in place, and a washer, preventing leakage. The ball, of which this neck is part, as shown in the sectional view, is formed in two parts, which screw together at the center. Inside of the inner half ball fits a hemispherical plate, having a projecting neck or pipe, with screw threads both on the inner and outer surface. This hemispherical plate has a washer of corresponding shape, so that the plate will fit closely to the ball, and the neck projects outward through an opening in the hall, somewhat larger than said neck, so that the ball may be revolved for a certain distance on the plate.

Over the projecting neck or pipe is slipped a cap, which encircles the outer surface of the half ball. Behind this is screwed on the pipe a collar, having lugs, by which it is screwed up. The ball may revolve for a certain distance on the plate, between the plate and cap; but by screwing up the collar it presses the cap tightly against the outer surface of the hall, and at the same time draws the inner plate back firmly against the inner surface of said ball, thus closing the joints tightly, and preventing the hall from turning.

A sleeve, having screw threads formed on its outer surface at both ends, is screwed into the pipe connecting with the plate. On the other end of said sleeve, on its inner surface, is formed a shoulder. The telescopic pipe, which passes through this sleeve, has a flange formed on its end, so the pipe cannot be drawn out of the sleeve when once in position; and the joint between pipe and sleeve is tightened by the stuffing-box, as shown.

The telescopic pipe screws into the neck or projection of the opposite plate, said neck and pipe being connected with the hall-and-socket joint at that end precisely alike in every respect to that previously described.

These two hall-and-socket joints, with their connections, are united in the manner described by the telescopic pipe, which allows the distance between them to be lengthened or shortened, while connection is still maintained. The pipe may slide back and forth through the sleeve, and when in proper position, the stuffing box is screwed up and the joint made tight. When the telescopic pipe is pushed on or closed, the appliance occupies very little room, and may readily be carried on a fire-engine. On arriving at a fire, one coupling is screwed to the hydrant and the other to the suction pipe of the engine. While thus connecting the engine and hydrant, the balls may revolve freely in their sockets, and it is not necessary to have the engine directly in line with the hydrant opening, since the one on the engine will adjust itself off of the line sixteen inches or more, and that on the hydrant will accommodate itself to the other. The telescopic pipe adjusts itself, since, when drawing one coupling out after the other is screwed to the hydrant, the pipe will be drawn out to the proper length. When the connections are made the collars on both sides are screwed against the caps. This pushes the caps firmly against the balls, and draws the inner plates, with their washers, firmly against the inner surfaces of the balls, preventing the balls from turning and making tight joints.

This coupling can be connected and set firm in a short space of time. It is never in danger of collapse, as is the carbolized suction pipe. Being short while together, it can be more easily handled, and the telescopic pipe adjusts itself. Play enough is given to the ball and socket joint as described, so that no delay is necessary to adjust the engine with reference to the hydrant, and the connection is metallic, these hydrant suctions being made of brass.

The Stoddard patent suction has been in use in the San Francisco fire department, and its advantages over the common rubber suction have been in all respects realized. It weighs about 60 pounds, and from the fact of its being telescoped it can readily be handled and adjusted by one man, contracted or extended as the distance of the engine from hydrant may require. An easy flow of water from hydrant to engine is secured, as there are no bends or kinks. Being made of brass it will stand any pressure required, avoiding all loss of time from bursting suctions. Its parts are made in duplicate, so in case of any accident the whole suction need not be condemned. Any one with experience in fire matters can readily see the advantages of this new device, and experience has proved its value. The inventor Mr. Stoddard, is at the corporation yard, No. 50 Sacramento street, where this suction may be seen by those interested.

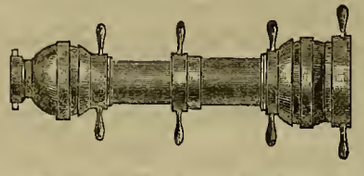


Fig. 2. Stoddard's Hydrant Suction.

GUIDE TO MONO COUNTY MINES.—Mr. Jos. Wasson has just published a complete guide to the Mono county mines, giving a description of Bodie, Esmeralda, Indian, Lake, Laurel Hill, Prescott and other mining districts, with maps and illustrations. It is a new edition of his work on Bodie and Esmeralda, containing much late and fuller information and a great deal of new matter on other districts. It is in pamphlet form. The object of the present publication, which is merely supplementary to the one in question, is to give a more complete description of the mining region of which Bodie is the chief center of attraction at present. Several new districts have been organized, and one or more old ones brought to the point which give promise of important results. These additional notes were gathered during a prospecting tour through Mono and Inyo counties, in July and August, and will be of great service to those contemplating a trip in that direction next spring. The little pamphlet is well written and the information given in condensed form. It is of great value to all mining men—either those interested in mines or stocks.

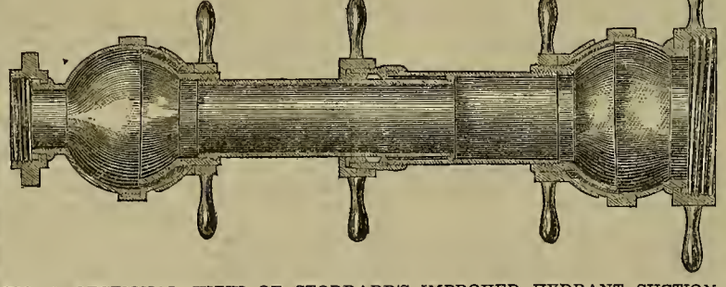


FIG. 1 SECTIONAL VIEW OF STODDARD'S IMPROVED HYDRANT SUCTION.

OF upwards of 200,000,000 persons carried on American steamers during the last year, only one person and one-tenth were lost in each million.

NORWICH, England, is inundated by a freshet of the river Wensum. Several persons drowned; 3,000 or 4,000 dwellings uninhabitable.

THE Stormont Co., of Silver Reef, Utah, are working 45 men on the Last Chance mine.

Lake District, Mono County.

We had an opportunity this week of conversing with Mr. A. Caldwell, who recently made an extended trip through the Mono county mines, and from him we gain some valuable information concerning Lake district, which will be of interest to our readers. The district is about sixty miles southeast of Bodie, on the eastern slope of the Sierras, or rather on a spur from those mountains running northerly. The district is approachable from the Maderia station of the S. P. R. R., distance 90 miles, of which 40 miles is made by stage, and the balance by trail. All the freight goes in now by way of Mohave and Bishop's Creek. Both water and wood are very abundant. Water power for mills is supplied from a chain of seven lakes lying west of the Mammoth mountain—the center of the district—between the main range and Mammoth mountain. There are thousands of acres of heavy pine timber in every direction. The eastern side of Mammoth mountain is about 1,200 feet above the valley, and a plateau on top slopes to the west, so that the western side is about 1,000 above the valley. The mountain is about three miles long and nearly as wide.

There are in the district at present between 500 and 600 men, most of whom are prospecting, some, however, working on the mines which are now being opened. Many more are expected when spring opens, and there is a better chance to work. There are two town sites laid out—one called Pine City and the other Mammoth City. The ores of the district are free milling, silver predominating, the rock, however, carrying some gold.

The district is a new one, having been opened within a year, yet there are several promising mines being opened with very good prospects. The most prominent of these is the Mammoth mine in which Gen. Dodge, Thos. Bell, Sol. Heydenfeldt, M. S. Latham and others are interested. Edward Clarke is Superintendent. The company own a series of mines, and the estimated width of the ledge matter in this one is 75 feet. The mine is worked at present by an open cut, but a tunnel has been started in at the foot of the mountain. At present, however, the ore is quarried out as in a stone quarry, from the open cut. The ore is slid down a chute of about 1,000 feet to the valley below, and thence carried by tramway for a quarter of a mile to the mill. The mill is a 30-stamp one, but only 20 stamps are in place; run by a Knight water wheel. They estimate 80,000 tons of ore already in sight. The Mammoth has milled 400 tons of ore since the mill started up, which has worked $30 per ton. The amount of bullion shipped to date, is about $10,000, of which 30% was gold, and 70% silver. The gold is worth $21, and the the silver runs 968 fine. The ore was worked up to 92% of the average assays, and the cost of milling and mining was $5 per ton.

The True Blue is another prominent mine of the district, and was recently incorporated with John Neate, as President; S. M. Holmes, Treasurer, and J. H. Sayre, Secretary. The ledge is over 30 feet wide and an average of ore assays shows an assay value of ore of $136 per ton, the lowest being $52.74, of which $47.72 was silver, and $5.02 gold. The ore can be mined and milled for $5 per ton. The mine is about 900 feet above the mill site, with a gradual descent to the mill, so that the facilities are good. The situation of the mine being so advantageous no very great expeditures will be needed to develop it, and the company contemplate the erection of a mill very shortly.

The Lake View is a series of four mines on the west side of the mountains, represented by Neate, Holmes and others, and has had assays from eight samples averaging $117. The Don Quixote in the same district is represented by Rutherford, Epstein & Co., and the North Star is another prominent location. The Alpha is one of the oldest locations, and has a bright future before it.

The ledges in the district are said to be very wide, but all the available ground has been located. Most of the work has been done by the Mammoth, that company having been largely instrumental in the development of the district.

There are several other districts in the neighborhood, Laurel Hill being only four miles distant, a district having good base metal prospects, but with nothing sufficiently developed as yet to determine value. Prescott is another new find of base metal, about 20 miles north of Lake.

The Quicksilver Furnace Litigation.

In our issue of the MINING AND SCIENTIFIC PRESS of February 12th, 1876, we noticed the "furnace litigation" between the patentees of the Knox & Osborne quicksilver furnace and the Great Western Quicksilver Mining Co. for infringement of patent, the case having at that time just been tried before a jury who fully sustained the patents of the plaintiffs and also found the defendants had infringed the same. These patents having been secured through the MINING AND SCIENTIFIC PRESS Patent Agency, we have felt considerable interest in following this case through its various phases to a final result. This seems now to be accomplished so far as the Circuit Court can go, by a decision rendered last Monday confirming the report of the Master in Chancery, and a judgment for $92,785 and costs of suit. In the article above referred to we said:

"This being the first attempt to sustain these patents, and there being some 15 or 20 furnaces built which are claimed as infringements, the case created great interest and was to some extent a combination of all the interested parties in the State to break the patents and thus end the possibility of claims against the other companies being made in the future. In the course of the trial, every furnace which was ever heard of, which was thought to contain any one of the devices of the Knox & Osborne furnace was brought forward and described by the experts who gave learned opinions on all the old furnaces and lime-kilns ever sketched in books or ever heard of, yet nothing was produced showing a continuous working quicksilver furnace until the Knox & Osborne furnace was built. * *"

"This may be regarded as a test case, having been very thoroughly and vigorously contested on both sides, and although there may be other suits embracing the same points of law as this, it is probable that the results of this one will be held conclusive."

The decision in this case last Monday confirms the opinion expressed by us nearly three years ago, and we have little doubt the Supreme Court of the United States will put the final confirmation upon this case, making it in fact conclusive. It is particularly gratifying to the managers of our Patent Agency to know that their work for their clients stands so thoroughly the test of the Courts, of which this case by no means furnishes the first example.

THE Jersey mine, Humboldt county, Nevada, is looking well.

THE Tower, Montana, mills are running steadily.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—Eds.

Artesian Wells in Stanislaus County.

EDITORS PRESS:—There are no flowing wells in Stanislaus county at present, but two are in progress. Much interest is manifested in wells all over the county, and as soon as water is struck in the first well nearly every land-owner will bore one. The soil and the general configuration of the country in Stanislaus county is very similar to that of Merced county, where there are so many flowing wells. Stanislaus has a soil and a climate that, with water, can raise every product in perfection.

The Rodgers Well.

Stephen Rodgers was the first man east of the San Joaquin river to attempt artesian well-boring. He commenced one in 1877, and penetrated to the depth of 386 feet, when the well was abandoned on account of insufficient tools. The well is on Mr. Rodgers' place, half a mile west of Paradise City, on the Tuolumne river. The strata encountered are as follows, viz.: Surface soil, sandy loam, 4 feet; hard-pan, 10 feet; sand with streaks of blue cement, 2 to 4 inches thick—running through it, 175 feet; water-worn gravel, apparently the bed of a stream or lake—stones the size of a pebble to the size of an egg, 3 feet; blue clay, under which water was found and rose to within 12 feet of the surface, 74 feet; sand, with thin strata of blue clay running through it, and in several places black sand, large mica scales all through the sand, 117 feet; blue sandstone, or cement, with gravel running through it, very hard, 3 feet. Here the boring stopped.

In the strata of blue clay was found wood and leaves very much decayed, the species unrecognizable. Mr. Rodgers will soon resume boring in this well, and believes a strong stream will be struck just below this last stratum of cemented gravel. A windmill is at present pumping water from the well. The water is rather strong mineral water, its medicinal properties very good; has been used with advantage by invalids of Modesto. Dr. Sherman, of Oakland, has made a partial analysis of this water, which he says contains lime, sulphur, a quantity of organic matter and carbonate of soda.

The Temple Well.

Ten miles south of the Rodgers well, is the Temple ranch on which an artesian well is being bored by Haas & Manning's steam well borer. A depth of 270 feet has been reached, and the work is temporarily delayed by the bending of the pipe at the bottom of the well. This well was commenced over a year ago at the suggestion of Mr. John Amos, formerly with Vanderslice & Co., of San Francisco, and at the recent decease of Mr. Temple, heir to the estate. The boring will be resumed as soon as the pipe can be sprung back. Strata of the well: Surface soil, 5 feet; hard-pan, 3 feet; sand with alternate layers of clay 2 inches in thickness, 62 feet; quicksand, 138 feet; gravel, 3 feet; gravel and cement, 1 foot; blue clay, increasing in hardness as the depth increased, 58 feet; total depth, 270 feet. Struck redwood at 200 feet. This well is three miles east of the San Joaquin river.

Modesto Water Works Well.

Five miles northeast of the Rodgers well lies Modesto. In the block facing Front street and back of the postoffice is a surface well 190 feet deep, bored last summer, for Messrs. Walthall & Rodgers. Another one 90 feet in depth, bored in 1875, is close to this. Strata of the 190-foot well: Surface soil, 6 feet; quicksand, 6 feet; hard-pan, 20 feet; fine sand, 3 feet; hard-pan, 8 feet; quicksand, streaks of red cement running through it, 127 feet; coarse gravel, 20 feet; stopped in clay. An abundance of good water is pumped by steam power.

Stephen Broadhurst's Well.

Ten miles south of the Temple ranch and two miles inside the Merced county line, a well is being bored on the ranch of Stephen Broadhurst. This well is bored by horse-power; work suspended at present owing to the breaking of the auger-rod, leaving the auger fast in the bottom of the well. Depth reached, 200 feet. Strata as follows: Surface soil, 3 feet; hard sand, 157 feet; blue clay, 3 feet; dark, heavy quicksand, 23 feet; gravel, fine on top, growing coarse toward the bottom, 14 feet; stopped in stiff, hard blue clay. No water yet.

The Evans Well.

One mile south of S. Broadhurst's place is Mrs. C. M. Evans' well, one of the best in the San Joaquin valley. This well was completed about six week ago. Depth of well, 310 feet. Strata as follows: Surface soil, 3 feet; hard-pan, 12 feet; quicksand, with thin strata of clay running through it, 76 feet; quicksand, 122 feet; cobblestone, 20 feet; heavy, coarse gravel, hard blue clay, 50 feet. After penetrating this the first flow was obtained, rising within 3 feet of the surface. Sandstone, 1 foot; quicksand, 22 feet; white clay, under which was obtained the present flow, 4 feet. The hore of this well is 7 inches. After striking the first flow, 6-inch casing was sunk, and below that point somewhere, another flow was obtained, beyond which 5-inch casing was used; the second flow brought the water just above the top. The pipe rises above the surface 2 feet, and water comes up in a steady rapid current 3½ inches above the edge of the pipe. Old miners estimate the stream at 22 inches, miners' measurment. Others estimate a flow of 175 gallons per minute, or 252,000 gallons per day. The area which it will irrigate is variously estimated at from 40 acres to 320 acres. This is purely guess work, as no one has data by which to determine; and the area irrigated by two wells of equal capacity will vary widely according to locality and degree of heat, and consequent evaporation, and according to the different kinds of soil to be irrigated and the kind of vegetation raised upon it. Again, the amount of water required after the second year will be much less than that required the first two years, before the soil becomes thoroughly saturated. The land on Mrs. Evans' ranch is a light sand loam, heavier than the soil east of her, and lighter than that north and close to the San Joaquin river. Her well is 3½ miles north of Hills' Ferry, and one mile east of the river. The total cost of the well was $450. The land is unproductive without irrigation and very productive with it. Had she not obtained water she would have been obliged to abandon her ranch, as dependence on stock ranging over a half-section, and a small garden afforded but a meager support. Everyone rejoices at the fortune which insures comfort to her declining years, and a little competence to her children.

Charles Broadhurst's Well.

This well is a quarter of a mile east of Mrs. Evans' well. It was bored last February, and is 300 feet deep. Strata are as follows: Surface soil, 3 feet; hard-pan, 18 feet; quicksand, with thin layers of cement running through it, cement strata 2 to 4 inches thick, 102 feet; blue clay, 19 feet; quicksand, with thin layers of blue clay running through it and gravel mixed through the last few feet, 39 feet; gravel size of hen's eggs, 1 foot; solid blue clay (first flow), 54 feet; quicksand, 60 feet; light-colored clay, 4 feet. Here a flow of water was struck, flowing about 20 gallons per minute, now increased to 30 gallons per minute. At the depth of 102 feet, a petrified molar tooth was found. It was shown in Merced City, but it was not known to what species it belonged. At the depth of 200 feet, several pieces of wood, supposed to be redwood, were brought to the surface. One piece was about 5 inches long by 3 inches wide.

Mr. Broadhurst's soil is a light sand loam, well adapted to gardening. Chas. Broadhurst was the first one to strike flowing artesian water north of the Merced river.

Wells on the West Side in Stanislaus County.

Two attempts have been made to get artesian water on the west side of the San Joaquin. The first attempt was made on the Smith ranch about 10 miles northwest of Hill's Ferry, on the Big Salada. This well was bored between three or four years ago. We could gain no definite information relative to this well. It was bored about 350 feet, and abandoned. A flow of water was struck coming to within three feet of the surface. A ditch was cut down to the water and led into the creek. The water is unfit for any purpose, save physic, as it is as salt as brine.

Mr. N. E. Bunker sunk a well 300 feet, on the Chapman ranch, out towards the Cottonwoods and close by Lux & Miller's ditch, some years since. He passed through two thick strata of clay and stopped in gravel and cement, getting a flow of water to within 4 feet of the surface.

Points of Similarity.

The wells we have been considering on the east side of the San Joaquin river are scattered over a line of territory 28 miles in length, from Modesto to Hawkins' landing on the Merced river. A short distance above Hawkins' landing we are told that another well has recently been bored on the Stephenson ranch. We did not visit this well. In the six wells, the strata of which we have given, we notice that a stratum of coarse gravel, from three to 20 feet in thickness, is encountered at a common depth ranging from 175 to 213 feet in depth. In the Modesto well a stratum of gravel 20 feet thick is found at the depth of 170 feet; in the Rodgers well at from 189 to 192 feet, three feet thick; in the Temple well, at 208 to 211 feet, three feet thick; in S. Broadhurst's well, at 186 to 200 feet, 14 feet thick; in the Evans well at 213 to 233 feet, 20 in thickness; in C. Broadhurst's well at 175 to 180 feet, five thick mixed with sand. In each instance the gravel is water-worn and evidently marks the depths at which it is found, as the bottom of a large inland stream or lake of some former period. In five of these wells the stratum immediately above the gravel was sand. In the Rodgers well, the Temple well and the Evans well, the strata above the gravel occur in precisely the same order, though varying in thickness, and in each the stratum just above the gravel is sand, ranging in thickness from 175 to 200 feet. In each of the six wells, blue clay lies just below the gravel, and in four wells, where it has been penetrated, it ranges from 50 to 74 feet in thickness. In four of these wells mention is made of wood brought to the surface, supposed to be redwood; in two wells at a depth of 200 feet in blue clay; in a third at 200 feet in quicksand; and in the fourth at 188 feet in gravel. It is an open question whether or not this was driftwood from higher lands, as we believe it to be, or grew on the spot. Something resembling tule was found in the Temple well, and the "leaves" in Mr. Rodgers' well may have been the same.

A line drawn south from Oakdale to a point about five miles east of Turlock would divide the level sand lands on the west from the rougher, more uneven, red lands, adobe and mulatto lands, on the east. We believe all that portion west of such a line down to the San Joaquin might be, to a large extent, irrigated with profit, and that it may be considered an artesian well belt in which an overflow may be obtained, with reasonable certainty, by boring from 300 to 425 feet. All the flowing wells obtained thus far, north of the Merced river, have been bored by those least able to take any risks. There are several large landholders, however, who have not contributed one cent, who will heroically face the new situation and put up the price of their land on the strength of it, with a steady nerve that comes of far-sightedness above ground based on occult demonstrations beneath.

Artesian Wells in Stanislaus County.

There is water here. All that is wanted is some one to go after it and employ men with suitable tools, and men who know how to handle them. The day of ditches, long and expensive, has not yet come. Twenty years hence, when our population is more dense, ditches will be an imperative necessity. To-day artesian water, where it can be obtained, is perhaps preferable, for the ground has to be prepared and the people must grow into the knowledge of the most economical method of applying water for satisfaction or profit.

H. E. HALLETT.

Turlock, Nov. 11th.

The Martin White Case.

[Continued from last week.]

The Plaintiff Appeals.

The plaintiff, appealing from the judgment and from the order denying her motion for a new trial, makes a number of assignments of error, which, however, are all involved in the three propositions following. It is contended:

First—That the Paymaster claim was not located in conformity with the act of Congress and the rules of the district, and consequently that it was void.

Second—That the Paymaster locators, if they ever had a good claim, abandoned it. And,

Third—That they are estopped by their own acts from asserting any claim adverse to the Shark.

Keeping these propositions entirely distinct, and confining our attention for the present to the first, it is to be observed that there is no question that the locators of the Paymaster were the original discoverers of the ledge in controversy; that they made a *bona-fide* attempt to locate it; that their claim was notorious; that they and their successors have continued to occupy and develop the property; that the Shark locators were aware of the priority of the Paymaster claim, and originally repudiated any intention of locating upon the same vein. These facts being conceded, the only position open to the appellant, and the only position her counsel have attempted to maintain, is that a mining claim cannot be held except by compliance with certain requirements of the mining laws; that the Paymaster locators did not conform to those requirements, while the locators of the Shark did, and that, as a necessary consequence, the law gives her the property. Aside from the questions of abandonment and estoppel, she claims nothing except from a strict application of the law, regardless of any seeming hardship in depriving the defendant of a mine which its predecessors were the first to discover, claim and develop. There can be no doubt as to the

Correctness of the Position

Upon which the claim is founded. The United States have granted to their citizens, and to those who have declared their intention to become such, the right to explore and occupy the public mineral lands. (U. S. Revised Statutes, Sec. 2319.) Those qualified locators who comply with the laws of the United States, and the local regulations not in conflict therewith, governing their possessory title, have the exclusive right of possession and enjoyment of their locations. (R. S. 2322.) He who complies with the law has the exclusive right. Therefore, if it is true that the Shark locators complied and those of the Paymaster did not, the plaintiff must take the mine, no matter who is entitled to the credit of the discovery.

What Constitutes Compliance?

The questions involved in this branch of the case have led to a very thorough and elaborate discussion of the mining laws of the United States, and particularly of the act of Congress of May 10th, 1872 (R. S., Sec. 2319, *et seq.*), under which these claims were located, and which embodies the most important features of the mining legislation. The same questions were, to some extent, involved in the case of the Golden Fleece Co. vs. The Cable Con. Co. (12 Nev., 312), but were not very fully argued, and were discussed in the opinion only so far as seemed to be necessary for the disposition of that case. Some of the conclusions then announced have been questioned by counsel for respondent in this, but after a thorough re-examination of the whole subject, with all the light that has been thrown upon it by the most elaborate argument, oral and written, we remain entirely satisfied with that opinion. So far as it goes it is a correct expositiou of our present understanding of the law. But it does not cover the whole ground, and is, perhaps, not sufficiently explicit upon some of the points adverted to. The magnitude of this case and the great importance of the subject to a mining community warrant a restatement of our views in a more complete and, we hope, a more convincing form.

Distinct Marking Necessary.

One of the imperative requirements of the statute—an indispensable condition precedent of a valid location—is that it shall be "distinctly marked on the ground so that its boundaries can be readily traced (R. S., 2324)." By reference to the foregoing statement of facts it will be seen that one of the locators of the Shark in April, 1874, marked the boundaries of that location by setting stakes at the four corners of the claim. It is conceded that this was a sufficient marking of that location; but it is contended that the Paymaster had been sufficiently marked since October 10th, 1872, by means of the two stakes at the ends of the claim on the line of the croppings and by the location monument at the point of discovery. Whether this marking was sufficient to answer the requirements of the statute is the principal question in the case, and, as a step towards its solution, counsel have devoted a great portion of their argument to the preliminary question:

Of What does a Mining Claim Consist?

What are its essentials, what are its incidents? Is it the surface ground that is located or is it the vein with the surface as an incident? It is conceived that a determination of this point will greatly facilitate the inquiry as to what sort of marking of boundaries is required. Counsel for appellent contend that the location is of the surface and that stakes at the corners of the claim are essential. Counsel for respondent insist that the location is of the vein as the principal thing with the surface as a mere incident, and that stakes to define the limits of the claim upon the vein are sufficient.

What we said in the Golden Fleece case we think expresses the truth in regard to this matter: "It is true that the vein is the principal thing and that the surface is but an incident thereto; but it is also true that the mining law has provided no means of locating a vein except by defining a surface claim, including the croppings or point at which the vein is exposed, and the part of the vein located is determined by reference to the lines of the surface claim." (12 Nev. 339.)

Silver Cliff—A Mistake.

A correspondent of the Denver *Tribune* comments upon an article in that paper regarding the new chloride discoveries as follows:

"You say: 'Intelligent prospectors are beginning to be uneasy about the lasting character of the claims they have staked, *especially as depth does not indicate increasing richness.*' The italics are my own. I want to ask why 'intelligent prospectors,' so called, still cling to the absurd and wholly unwarrantable notion that mineral deposits increase in richness with depth? No class of mineral deposits, he they veine or otherwise, show this characteristic. The idea is directly opposed to all experience in this or the Old World. It has no foundation in fact, and no support in reason, and yet the prospectors believe it, against the evidence furnished by their daily labor, and the credulous public accept it in silence without question." Without stopping to ask this correspondent why it is that the mines of Virginia City are worked at immense expense to great depths while rich surface deposits are idle all over the country, we will simply refer him to the articles on Almaden now running in the PRESS.

Bullion for the Year.

Linderman's report for the year ending June 30th, 1878, will show the bullion product for that year to have been as follows:

	Gold.	Silver.
California	$15,260,676	$ 2,373,339
Nevada	19,546,513	28,130,350
Colorado	3,306,404	5,394,040
Montana	2,260,511	1,609,635
Idaho	1,150,000	2,200,000
Utah	382,000	5,208,000
Arizona	500,000	3,000,000
New Mexico	175,000	500,000
Oregon	1,000,000	100,000
Washington	300,000	250
Dakota	3,000,000	.....
Lake Superior	.....	100,000
North Carolina	150,000	.....
Georgia	100,000	.....
Other Sources	25,000	25,000
Total	$47,226,107	$46,726,314

ANTHRACITE coal has been discovered in Washington Territory, southeast of Mt. Ranier, and within three miles of the projected Cascade Mountain road of the Northern Pacific. There are several veins of 8 feet, and one of 23 feet.

THE Los Angeles Oil Company have resumed work at Santa Barbara. The well is down 1,460 feet and is being cleaned out preparatory to putting in a new pump.

THE work of developing the copper mine on Guemes island, in Puget sound, has commenced, and will be diligently prosecuted.

A CONTRACT has been let for running a thousand-foot tunnel in the extension of the Bald Mountain claim, at Forest City.

IT is estimated that the bullion product of the mines of Lake county, Colorado, will aggregate $1,500,000 for the current year.

BULLION district, Piute county, Utah, is creating some excitement.

MECHANICAL PROGRESS.

Simple and Compound Engines.

Jnhn Bourne, an English mechanical engineer, has written a new work nn steam eugines, in which some points of comparison are set up between simple and compound engines. We qnete as follows: It has been found that, instead of the speed of engines being limited to the pace employed in the last century, they may be run much faster, provided that the momentum nf the reciprocating parts is balanced, that the ruhbing area nf the bearings is increased, aud that the other parts aro suitably constructed for the higher speed. The advantages nf tho acceleration are, that the motion is more equahle, and that the engine is hoth lighter and cheaper for the generation of a given power, while, from the onlargement of the rubbing surfaces the wear is no greator than it was before. The compouud engine, as uow made, is much more economical in fuel than the simple engine nf the old-fashioned type; hut it is not so much from the use of the double-cylinder arrangement, as from the simultaneous employment of steam of a high pressure worked expansively, that the repnted economy of the compound system has been derived. Engines of similar size using steam of the same pressure and working with the same measure of expansion will consume the same quantity of fuel in generating any given power, whether the engines are nn the simple or compound principle, and it is, therefore, rather in the large use of expansion than in the adoption of the compound principle that the secret of modern economy consists.

Claim for Precession Over Edison.—Reforring to the alleged discovery of Mr. Edison for using an indehnite nnmher of lamps on one circnit, Mr. J. Berger Spence writes: Having speut a considerahle part nf the year in Paris, and being brought specially into contact with the various appliances for lightiug in my capacity as juror in oue hranch of this subject at the exhibition, I have not failed to be a keen observer of the electric light. Until recently my conclusions were certainly not in favor of its ever superseding gas, from its indivisihility, and, consequently, the impracticability of conveyancc. Intelligence from America tells us that Edison has succeeded in this great achievement; hut I think it right to state that Mr. Richard Werdermann is the first in the field, aud to him is the credit due. The best testimony of this is that some weeks ago he had 10 lights from one circuit, and shortly he will have some hundreds. Having myself seen this new invention in practical operation, I have no hesitation in giving it as my opinion that electricity will now be a success in gcueral lighting."

A French Match-Making Machine.—At the Paris exposition Pernet Jouffroy exhibits a match-making machine, the peculiar feature of which is that the name of the firm is printed on every match. A cylindrical block of wood about a foot in diameter is placed on the machine and caused to revolve before a stationary cutting tool, which pares off a slice of the thickness required for the match, and six small blades having a vertical motion cut up this slice into splints, which then fall into a hasket placed below the cutting tool. The work is fed to the tool by hand, and the printing ou the match is effected before the block reaches the tool.

Swiss Method of Steel Hardening.—An excellent method for hardeuing cast steel, as practiced hy Swiss cutlers, is said to be the following: Four parts of powdered yellow resin and 2 parts of train oil are carefully mixed, and 1 part of heated tallow added. The object to be hardened is dipped into this mixture red-hot, and is allowed to remain in it until it is quite cold. Withont having previously cleaned it, the steel is again put into the fire, and is then cooled in boiled water in the ordinary manner. The edges of tools thus hardened are said to resist excellently.

Pulsating Lubricator.—*Engineering* illustrates a very simple pulsating lubricator, the invention of Dr. Paulson, of Loughborough. It is an oil cap which, by a small passage, communicates with the cylinder, into which the lubricant has to be admitted. In this passage is placed a small ball valve, the lift of which may be adjusted. At each stroke of the engine there is a greater or less variation of pressure on the under side of the valve, and the latter is thus made to beat at each stroke, allowing a small quantity of the lubricant to pass into the cylinder at each stroke. The lubricator acts only when the engine is running.

Driving-Wheels on the Pennsylvania Railroad.—Experiments with the locomotives having the five-and-a-half-foot driving-wheels have proved eminently satisfactory. Two of these engines were placed on the road about the 20th of July. For a time they did not work well, and it was found that the power was not evenly distributed in the driving-wheels. The wheels were too light, so they were removed and a new panel inserted in each wheel. This overcame the difficulties in a measure. Larger injection-pumps were added, and now these engines are the fastest on the road.

Utilization of Solar Heat.

The *Mining Journal* brings farther information nf the sucesses of M. Mouchot, of Paris, in the utilization of solar heat. His experiments had for nbjects, on the nne hand, the cooking of food, and the distillation of alcohols; on the other, the use of solar heat as a motive force. In the matter of cooking it was found that mirrors nf less thau one-fifth square meter sufficed to roast half a kilogramme of beef in 22 minutes, to coupleto stews in au hour and a half that required four hours with an ordinary wood fire, and to raise to hoiling in half an hour three-quarters of a liter of cold water. A puro brandy was obtained in a short time from the distilling apparatus. For nbtaining the motive power M. Mouchot had constructed a large solar receiver, the mirror having an aperture of ahout 20 square meters. In its focus was placed an iron hoiler weighing with accessories 200 kilogrammes, and having a capacity of 100 liters, 70 being devoted to water. This apparatus was put in action on Sept. 2d, for the first time; in half au hour the water was raised to boiliug, and a pressurc of six atmospheres was ultimately registered. On Sept. 29th, a pressure of seven atmospheres was reached in two hours notwithstanding several passing vapors. On different occasions the steam (with a pressure of three atmospheres) was made to drive a Tangye pump, raising 1,500 to 1,800 liters of water per hour a hight of two meters; and to produce ice in a Carre apparatus.

File-Cutting Machine.—In the *Iron Age* reports of the Paris exposition, we read of a file-eutting machiue exhibited hy its inventor, M. Mondon, of Paris. This machine is capable of cutting all kinds and all sizes of files, whether flat, square, round, half-round, three-sided, taper or parallel, from rough to the finest cut. It is composed essentially of a shaft carrying cams, one of which transmits motiou to a lever. This lever moves a system of gearing, which iu its turn transmits motion to a feed screw. This feed screw acts upon the carriages carrying the files. These principal parts, combined with auxillary parts, enable the shaft and the cutting tool to he raised or lowered without altering the relative position of the gearing and the lever. The system of gearing emiployed causes the file to stop in its forward motion during every stroke of the cuttiug tool, and the cams are so arranged on the shaft that the blow of the tools takes place at short intervals, iucluded in the stop produced hy the gearing. The machine exhibited can cut four files at once. It has four hammers, two carrying their chisels and the otber two striking on two chisels mounted differently, hut included in the patents.

Taking Levels for Dressing Floors and Buildings.—A simple and ingenious little apparatus for taking and indicating levels and perpendiculars for buildings and similar purposes has been invented by Mr. John Ryan, of Battersea, England, who purposes to take a hoard of wood of a suitable length (or it may be a length of metal or other suitable material), the edges of which are planed or made perfectly level and true one with the other. In the center a dial is let in or mounted, arranged with divisions to indicate the level or amount of the angle of any horizontal or perpendicular line upon which the edge of the levelling instrument is placed. A pointer is mounted upon an axis in the center of the dial, the opposite end of the pointer being weighted so as to cause it to assume a perpendicular position at all times by its own gravity, and thus indicate upon the dial level perpendicular and angular lines, according to the position in which the instrument is placed.

Novelty in Telegraph Wire.—The *Engineering and Mining Journal* reports that the National Tube Works, at McKeesport, have succeeded in making a novelty in insulated telegraph wire which bids fair to insure the doing away with the unsightly telegraph poles in the streets of our cities. It consists in rolling an iron tuhe around a glass tube which insulates one or more copper wires. The new wire is to be used in underground lines in Philadelphia. It is claimed for it that it is better insulated than the ordinary telegraph wire suspended in air, and that, therefore, less battery power will be needed than with the present system.

Australian World's Fair.—The Department of State has been informed hy the American Vice-Consul-Geueral at Melbourne that it has been decided to hold an international exposition in that city, commencing October, 1880. A puhlic garden in the center of Melhourne has been secured for the exposition, and Parliament has voted $300,000 for the erection of the necessary huildings. This will be the greatest exhihition ever held in the Southern Hemisphere. The Vice-Consul-General suggests that American inventors, for their own protection, should take out pateuts in each of the Australian colonies, each colony having a different patent law.

Malleable Brass.—A German periodical is responsible for the followiug method of making malleable brass: 33 parts of copper and 25 parts of zinc are alloyed, the copper being first put into the crucible, which is loosely covered. As soon as the copper is melted, zinc purified by sulphur is added. The alloy is then cast into molding sand in the shape of bars, which, when still hot, will be found to be malleable and capable of heing brought into any shape without showing cracks.

SCIENTIFIC PROGRESS.

Falls of Dust on Oceans.

These curious phenemena aro commented upon in *Iron*, as follows: About the latitude of the Cape Verde islands, on the Atlautic, it is a frequeut experience of voyagers to observe falls of dry dust and a dry kiud of mist. The material of the dust-mass was examined microscopically many years ago by Ehrenberg, and his opinion was that small particles carried aloft from all countries here formed a transparent dust zone, from which they sometimes sank down, and in whirling movement came to the earth's surface. The material of observation open to Ehrenhorg was somewhat scanty. The phenomenon has therefore heen lately studied auew, and in a more thorough way, hy Herr Hellman, who examined the log-books of 1,096 ships that had passed through the region in question during the years 1854 to 1871. He deals with the case chiefly from a meteorological point of view, aud the following are some of the facts elicited: Most of the dust-falls occur in the zone of the Atlantic between 9 deg. and 16 deg. N. South of 6 deg. N. they are extremely rare, and the furthest south hitherto was in 2 56 N., 26 W. The two furthest west were both in 38 5 W., both about 300 miles from Cape Verde. Dust-falls often occur very simultaneously at very different points of the "Dunkel Meer," or Dark Sea (as Ehrenberg called it). In one case they were 150 miles apart. They also ofteu last for several days, *e. g.*, ten (April, 1859). Surfaces of very different size, up to 100,000 square miles, may receive dust-falls. There is a yearly period in the frequency of the falls. It seems that near the African coast most occur in winter; further west, in the early spring. The direction of the wind during dust-falls was from the east quadrant, and most frequently north-northeast to northeast. The dust-falls observed are very irregularly distributed over the years in question. Of sixty-three, taken at random, there were eight falls of sand and three of sand or dust. Sometimes sand aud dust fall simultaneously. The dust-falls, with great extent east and west, are deuser nearer the African coast. In forty out of sixty-five instances the color of the dust was red. Sometimes there is no coloration. The dry mist of the dark sea is in casual connection with the dust-falls. Herr Hellmann concludes, from the facts, that the dust material comes principally from Africa and the Western Sahara. The possibility of occasional mixturc of particles from South America is not excluded. The distribution of the dust-falls, both in space and in time (they follow the movements of the trade winds), supports the hypothesis, as also does the fact that the falling material is coarser in the east than in the west.

Another Fruitless Cruise for the Pole.—Advices from the eastern coast are to the fact that Captain Tyson's latest Northern venture was fruitless. Captain Tyson says that during his passage north to Disco they had to work their way through 200 miles of ice, and very heavy weather was encountered during the whole passage. At Disco they expected to meet the expedition steamer, but she did not appear, and after waiting in vain many days they at length started on their rcturn passage to Cumberland straits on the 22d of August. Several terrific gales were experienced on this passage, one of which lasted four days, during which time the vessel was hove to, drifting helplessly among immense icebergs, which threatened at every moment to destroy the frail craft. The sufferings of those on board during these four days cannot he adequately described. They almost gave up in despair, and had not the vessel being of the strongest possible build, it probably could not have weathered the gales. They finally arrived at Cumberland straits on the 31st of August, and remained there nearly a fortnight, resting and recuperating after their rough experience. September 12th, they sailed for home, and trouhle hegan again almost immediately, nor seemed to end until they anchored in Provincetown Harbor. They had gales all the way.

A Quartz Thermometer.—Quartz, by its rotatory power, M. Jouhert asserts in the *Comptes Rendus*, constitutes a thermometer of extreme sensihility, fulfilling the essential condition of every thermometer, comparahility. When once the apparatus is fitted up it is merely ueedful in order to find a temperature to read off an angle, and refer to a tahle calculated once for all. It may therefore be hoped that science, aud even industry, may find in this new thermometer an instrument comparable to the mercurial thermometer for the simplicity of its use and the certainty of its sindications. The author's experiments extend from—20° to + 840°, or perhaps 1,500°.

Internal Heat of Rocks.—Daubree reports some experiments upon the heat which may be developed by mechanical action in the interior of rocks, especially in clays, and applies his results to the theory of metamorphism. He finds that the heat increases much more rapidly when the mass is tenacious than when it is plastic, the particles in the latter case heing, as it were, lubricated and slipping over one another. The experiments may, perhaps, also have an important bearing upon Mallet's theory of earthquakes and volcanoes.

Extraction of Iodine and Bromine.

Mr. R. Galloway, F. C. S., has read a paper before the Royal Irish Academy, in which this matter is dealt with at cousiderable length. In the course of it he says: "Many methods have heen proposed for the extraction of the two metalloids, iodine and bromine, from the ash of sea-weed; but the only one, as far as I am aware, which has been followed in the United Kingdom, at least up to a very recent period, is the one ascribed to Wollaston. By this method they are set free from the metals with which they are combined by the addition of sulphuric acid and manganese peroxide tn the mother liquor which remains after the extraction (of course, as far as it is practicable) of potassic sulphate and chloride, and what are termed the kelp salts, which are a mixture of sodic sulphate, carbonate and chloride. The sulphnric acid is added for a twofold purpose; a portion is required for the decompositiou of the alkaline sulphites, sulphites and hyposulphides present in the mother-liquor; the other portion, along with the manganese oxide, liberates the iodine and bromine from their combinations. When the sulphur, which is set free from the decomposition of the hyposulphites, has completely deposited, the clear liquid is drawn off into the iodine still and the manganese peroxide is then added to it. When this process first came into operation, bromine had not been discovered in the ash of sea-weed; even the late Dr. Anderson, in his well-known and often quoted analysis of the ash of sea-weed, does not give it as a constituent. New analytical investigations of the ash of the various sea plants are wanted; the plants ought to be carefully freed, before incineration, from all adheriug salt water, so that the qnantities of chloride, bromine and iodine they naturally contain might he correctly ascertained. The investigation would lead, most probahly, to the discovery that there are, properly speaking, bromine, as well as iodine, producing plants."

Another Electric Lamp.—The announcement of Edison's departure from the old styles of electric lamps has stimulated investigation and invention in that direction. The latest device of which we read is styled the "Sawyer-Man" lamp and is being shown in New York city. The lamp is said to be entirely different from any now in use, as the "electric arc," or the illumination of a current of electricity passing between two carhon points, is not used. In one respect the lamp resembles that proposed by Edison—the incandescence of an indestructible substance, and the subdivision of the current to any extent for use in the lamps. The Sawyer-Man lamp consists of two sets of conductors supporting a diaphragm. On the diaphragm is an upright metal bar, from the top of which extends transversely another metal bar. Immediately under the transverse har is an upright piece of metal called the "anvil," which is also fixed to the diaphragm. Between the transverse piece of metal and the "anvil" is a carbon pencil about one-sixth of an iuch in thickness, which is the light-giving suhstance. This whole apparatus is inclosed in a glass tube closed at the top and fastened to a stand at the bottom. The entire lamp is 7½ inches high and 2½ inches in diameter. The principal value of the apparatus depends upon the fact that when the globe is placed over the lamp the atmospheric air is displaced by nitrogen gas, in which no body heated to an intense degree will undergo oxidization—that is, be burned. The carbon pencil of this lamp, which is readily destroyed hy an electric current in the open air, suffers no change whatever in the nitrogen, although the light caused by the intense heat of the cnrrent suffers no diminntion.

Sulphide of Carbon as a Fire Extinguisher.—At the meeting of the Societe de l'Encouragement of France, Mr. Paliard read a paper on sulpbide of carbon as a fire extinguisher for hurning chimneys. The products of combustion are sulphurous acid gas and carbonic acid gas; there is no necessity to plug the chimney, and the cost of the sulphide is trifling. The firemen of Paris are stated to be expert in its use, and to have nsed it in January last in 32 out of 51 fires, in February in 81 ont of 103 fires, in March in 138 ont of 165 fires, or in 251 out of a total of 319 fires, the extinction being almost instantaneous.

Absorption of Carbonic Oxide by Living Organisms.—N. Grehant has experimented with mixtures of air and minnte portions of carbonic oxide. He finds that a man or an animal, when compelled for a half hour to breathe an atmosphere containing only 1-779 of carhonic oxide, absorbs that gas in sufficient quantities to saturate about half of the red globules of the blood so that they become incapable of absorbing oxygen. In an atmosphere containing 1-1449 of carhonic oxide, about a quarter of the red globules are similarly saturated. Tbese results are interesting and important in relation to physiology and hygiene.

The Phonograph and the Telephone.—In a communication to the *Comptes Rendus* M. Bouilland discusses the question whether the phonograph repeats words on a principle similar to that of the echo. He asserts that, as regards force, tone, speed and quality, the words of phonographic origin differ notably from those which have been uttered, which is not the case with words repeated by an echo. Touching on the telephone, he expresses [doubts as to the part played by the electro-magnctic machine.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending Oct. 31.	Week Ending Nov. 7.	Week Ending Nov. 14.	Week Ending Nov. 21.
Alpha	15½ 13¾	15¼ 13	14⅝ 13⅜	11 6
Alta	15 12½	14½ 12⅞	13½ 11	14½ 9½
Andes	75c 50c	1¼ 50c	1.05 90c	1 50c
Alps	... ...	80c ...	... ...	... ...
Argenta	7½ 6	7¾ 7	6 4½	4½ 3¾
Atlantic	1.15 1	1.30 1	1.30 1.20	1.20 ...
Aurora Tunnel	2½ 1	1 70c	80c 70c	75c 50c
Baltimore Con	3 2½	3 2½	3½ 3	2.60 2¼
Belcher	9⅜ 8½	8⅞ 7¾	9½ 7⅞	8½ 4¾
Belmont	2.65 1.70	2¼ 2⅛	2⅛ 1⅝	1½ 1¼ 50c
Best & Belcher	25 22½	26 23	25½ 20½	23 15
Bullion	15 11½	14½ 11½	13⅜ 11½	13 6¾
Bechtel	1.35 1½	1 90c	85c 60c	80c 50c
Belle Isle	60c 50c	50c 40c	45c 30c	40c 30c
Bodie	21 19½	20 17½	17¾ 16½	19 16
Benton	7⅞ ...	7½ 6¾	7 6¾	6¾ ...
Bulwer	17 16½	16½ 16	16 13	18 13
Boyle	... ...	... ...	... ...	... ...
Black Hawk	1½ 1	1½ 1	1.05 1	1 ...
Belvidere	1.80 1	1½ ...	... ...	1 ...
Booker	1¼ 1	2 1.10	1½ 1.10	1¼ 75c
Castle Craig	5½ 3½	5¼ 4.60	4.40 4¼	4½ 3.65
California	12 11½	13 11½	12½ 8½	10 8
Challenge	1.90 1.05	2 1½	1.80 1.60	2 1.40
Chollar-Potosi	68 53½	61 58	59 50	54 30
Comanche	... ...	... ...	... ...	... ...
Confidence	11 10	11½ 10	11½ 9	10½ 6¾
Con Imperial	1.35 1	1.35 1½	1.30 1.10	1.10 70c
Con Virginia	12 11½	13½ 11	13½ 8¾	9⅝ 8
Crown Point	11½ 10	11 9½	10¼ 9	8½ 5
Con Washoe	1.95 1.90	2 1½	3.10 3	3.45 ...
Champion	1½ 1½	1¼ 50c	75c 40c	60c 40c
Concordia	... ...	... ...	1 50c	... ...
Dayton	... ...	... ...	... ...	... ...
DeFrees	20c ...	20c 15c	15c 10c	10c ...
Daney	... ...	... ...	... ...	... ...
Day	85c 70c	70c 60c	50c 40c	45c 25c
Eureka Con	39 33	35 33½	36 30	36 32
Exchequer	5⅝ 3¾	5¼ 4.60	4.60 4¼	4½ 2¾
Endowment	95c 70c	85c 50c	60c 45c	45c 30c
Gen Thomas	... ...	... ...	... ...	... ...
Grand Prize	6¼ 6½	8½ 6¾	8⅜ 7⅞	8¾ 8
Gila	40c ...	20c ...	40c 35c	25c 20c
Golden Chariot	50c 15c	50c 25c	25c ...	25c 20c
Golden Terra	... ...	... ...	4½ 4¼	2½ ...
Goodshaw	75c 50c	65c 60c	65c 50c	55c 45c
Gould & Curry	18 15⅞	18½ 16⅝	18½ 15⅞	17⅜ 8¾
Hale & Norcross	25 23½	24½ 22½	22¼ 17½	18⅝ 9
Hillside	4 3¾	4 3¾	4 3¾	4 3¾
Highbridge	2.40 1.95	2.65 2	2.30 2	2.60 2
Homestake	... ...	10 ...	10 ...	2 1⅜
Hussey	35c 25c	60c 40c	60c 45c	50c 40c
Independence	2.60 2	2½ 2.40	2¾ 1½	1.95 1
Julia	7 6½	6⅝ 5½	6 4½	5 2½
Justice	9⅛ 8½	8¾ 7⅞	8½ 6½	7½ 4¾
Jackson	10 9	8¾ 8	8¼ 8	7½ 6½
Jos Scales	... ...	... ...	... ...	... ...
K K Con	... ...	... ...	... ...	... ...
Kentuck	7¾ 6½	8½ 7¼	7½ 6	7 4
Kossuth	30c 25c	30c 25c	30c 25c	30c 25c
Keystone	... ...	... ...	... ...	... ...
Lady Bryan	3½ 2.90	3½ 2½	3 2½	3½ 1.40
Lady Wash	3 2	3½ 2½	2½ 2	2 1⅜
Leopard	1 80c	80c 60c	75c 50c	1.10 1
Leviathan	1 80c	95c 85c	85c 60c	65c 45c
Leeds	2 1½	2 1½	1.20 1½	1 ...
Lee	... ...	... ...	... ...	... ...
May Belle	... ...	80c 40c	75c 50c	70c 60c
Modoc	55c 50c	55c 50c	60c 50c	60c 35c
Manhattan	3⅞ 3½	3⅝ 3½	4.60 3½	4.80 3.90
Martin White	10 ...	9½ 9¼	9¼ 8½	9 8
McClinton	75c 60c	75c 60c	75c 50c	75c 50c
Meadow Valley	... ...	50c 45c	40c 30c	... ...
Mexican	65¾ 56½	76½ 67½	74 65	75 35
Mides	... ...	... ...	... ...	... ...
Morning Star	3½ ...	3½ 3	5½ 5	4½ ...
North Con Virginia	8¾ 7⅜	12⅜ 10	12 10	12 6½
New York	1.80 1½	1⅝ 1.30	1.60 1	1½ 50c
Northern Belle	10⅜ 10½	10½ 10¼	11 10¼	10⅜ 10
New Coso	... ...	... 10c	5c 25c	5c 5c
Navajo	1 90c	85c 60c	75c 60c	60c 40c
Occidental	1 ...	... ...	... 1	75c ...
Ophir	51 46½	58½ 51	58 49	57¾ 37½
Oriental	1½ 95c	1.05 40c	1 65c	75c 45c
Overman	27 24½	28 24	26½ 22½	23¾ 12½
Panther	... ...	... ...	... ...	... ...
Phenix	4 3½	... ...	... ...	2½ 2½
Phil Sheridan	1¼ 1	1½ 1	1.10 95c	1 50c
Prospect	... ...	... ...	20c ...	... ...
Raymond & Ely	6¾ 6	11 6½	8¾ 7	6⅜ 6
Richer	1⅜ 1¼	1¼ 1	1 ...	1 75c
Rock Island	50c ...	... ...	... ...	... ...
Rye Patch	2½ 2	... ...	... ...	... ...
Rough & Ready	1 ...	2½ 2	2 1½	... ...
Savage	24½ 22	23 18½	20⅞ 15½	17 9½
Seg Belcher	... ...	... ...	... ...	... ...
Sierra Nevada	190 163	200 182	194 133	197 60
Silver Hill	3½ 2.15	3½ 2½	3 2½	2½ 1⅜
Silver King	18 ...	15 ...	16½ 16	17 15
Silver Prize	... ...	... ...	... ...	5c ...
Succor	1½ 1.10	1.30 95c	1½ 1	1½ 60c
Summit	1½ 1½	1.40 1	1 90c	1 ...
Scorpion	5 4⅜	4½ 2⅜	2⅜ 2¼	4 2
Solid Silver	1½ 1	... ...	1.10 1	1.10 1
South Bodie	60c ...	60c 40c	65c 50c	55c ...
South Standard	60c 50c	50c 40c	50c 30c	30c 25c
Star	75c 55c	70c 50c	60c 55c	60c 50c
St. Louis	80c 50c	1 90c	1 40c	75c 65c
Syndicate	3½ 2	... ...	... ...	1 ...
Tioga Con	2½ 2¼	2½ 1¾	2¼ 1.90	2¼ 1.80
Tiptop	1⅜ 1.30	1.40 1	1 1⅜	1¼ 1¼
Trojan	30c 25c	50c 25c	55c 10c	40c 30c
Union Con	160 143	161 148	159 142	155 55
Utah	36 31½	45 34	43 40	42½ 22
Vermont Con	6 5½	6¼ 6	6¼ 7	... ...
Ward	1½ 1.30	1¾ 1	1.30 1	1.10 75c
Wells-Fargo	80c 45c	85c 55c	70c 50c	65c 20c
Woodville	60c 40c	50c 40c	55c ...	40c ...
White Cloud	... ...	... ...	... ...	... ...
Yellow Jacket	23½ 21⅜	25 22½	24½ 20	22½ 14½

Sales at S. F. Stock Exchange.

Friday A. M., Nov. 15.

720	Alta	11@10½	260
190	Alpha	14½	540
100	Atlantic	1.20	385
220	Andes	90c@1	
205	Best & Belcher	23½@23	500
1565	Bullion	13c@12½	530
483	Belcher	8½@8¼	200
135	Benton	6¾@6	250
483	Baltimore Con	2½@2.60	565
4010	Con Virginia	9@9¼	370
820	California	9¼@9¼	150
85	Chollar	54	650
850	Crown Point	8½@8¼	250
1175	Con Imperial	1.20@1.15	750
920	Caledonia	4.65@4½	1040
190	Confidence	10@1.01	1000
520	Challenge	2@1.80	620
1240	Exchequer	7⅜@7¼	100
755	Flowery	90c	540
400	Fairfax	47	200
435	Gould & Curry	17@17	450
615	Hale & Nor	18¾@18¼	35
150	Justice	7¼@7¼	150
350	Juha	5@4.90	310
100	Keutuck	7@6¾	400
250	Kossuth	35@30c	150
350	Leviathan	63c@50c	1130
900	Lady Bryan	3@2.95	150
935	Mexican	75@73½	925
1000	N Sierra Nevada	15c	100
2380	N Bonanza	3½@3¼	2220
470	N Con Vir	12@11½	110
50	New York	1¼	320
370	Overman	23½@23	400
1845	Ophir	56@57¼	50
50	Occidental	75c	2020
1540	Phil Sheridan	1	125
1600	Solid Silver	1.03	600
50	Succor	1¼	50
185	Sierra Nevada	197@194	1900
430	Savage	17@16½	50
175	Senator	30c	1200
340	Scorpion	4	100
50	Silver Hill	2¼	50
50	Trojan	40c	2800
820	Union Con	152@153	9100

Saturday A.M., Nov. 16.

330	Alpha	13¾@13½	670
1210	Alta	9¼@8¾	725
400	Argenta	4@4¼	690
100	Andes	1	150
100	Atlantic	1.20	
335	Best & Belcher	21@20¾	
650	Belcher	12½@12	870
375	Belcher	7¼@7	3660
150	Belmont	1¾	1040
105	Bodie	18@17½	695
100	Bulwer	16	2215
100	Bechtel	80c	200
235	Bechtel	1.00@1.05	1300
1470	Con Virginia	9½@9	1545
1340	California	9¾@10	1670
40	Confidence	10	60
310	Chollar	5¾	1875
180	Crown Point	8¼	2235
1830	Con Imperial	1.15@1.10	1300
1385	Con Imperial	1.20@1.10	1300
1140	Challenge	1.80@1¾	1885
350	Con Washoe	3.45	795
775	Champion	50c	3390
550	Con Pacific	3@3.10	2275

110 Ophir	36¼@37½	200 Solid Silver	9c@11
20 Phil Sheridan	69c	100 Trojan	34c
20 Savage	9½	190 Utah	22@24
10 Sierra Nevada	75	80 Ward	70@65c
370 Silver Hill	14½	100 Yellow Jacket	15@14½

California Board—Latest Sales.

Wed'sday A.M., Nov. 20.		230 Julia	3½@3½
500 Almaden Q	6½	90 Justice	7@7½
450 Atlanta	55c	40 Mexican	46@45½
100 Ætna	15c	300 Mint	15c
60 Alta	5@7½	100 Mackey	1½
85 Best & Belcher	17½@17½	75 Ophir	44@45
125 Bullion	14@7½	40 Overman	14½@15
180 Caledonia	3½@3	4200 Pictou	35@30c
85 Con Virginia	8½@8	30 Savage	12½
50 Crown Point	6	40 Sierra Nevada	83@100
250 Con Imperial	85@90c	250 Santiago	1½
10 Challenge	1½	200 Senator	30@13c
100 Cosmopolitan	8c	50 Silver Hill	1½
200 Endowment	30c	200 Trenton	1½
140 Exchequer	5½@5	20 Utah	32½
20 Fairfax	4.10	30 Union	86@87
70 Gould & Curry	11½@11	1300 Union Flag	6@8c
145 Hale & Norcross	12½@12½	10 Yellow Jacket	15½

Mining Share Market.

The telegrapb bas probably carrisd before now to all wbom this may rcach, news of the tsrrible crasb in tho stock market. Follow down our list of stock quotatious for tbo week, and feel your hreath almost taksn away by the dangerous jumps tbrougb mid-air that the Comstock stocks bave taken during the last few days. But if you would realize tbe full extsnt of ths crash, and gain at ths same time a littls insigbt into tbe absurdity of stock inflation, glance, as the *Bulletin* has dons, at the fluctuations in the valuc of somo of the mines as indicated by tho quotations of ths sbares. "Fivs months ago," says the finaucial editor of ths *Bulletin*, writing on the evoning of the 20th, "ths Sisrra Nevada mine was rated at $400,000 for tbe wholo property, and it is doubtful wbetber it could havs been sold for that figure at that tims bad the whole capital stock heen thrnwu on the market at once. Six weeks ago the mins was rated at $26,000,000. At one moment to-day it was rated at $10,000,000, then at $6,000,000, aud at 3 P. M. at $8,600,000. What it will he when this is rcad it is hard to tell." This morning, November 21st, it was worth from $6,800,000 to $8,000,000. The *Bulletin* goes on to say: "Five montbs ago, Union Consolidated was selling at tbs rate of $500,000. Six montbs ago tbe price had advanced to $19,500,000, showing a gain of $19,000,000 during the interval. Ths stockholders added ths appreciation to tbeir wealth, and counted themsslves fortunate in their investments. To-day the mine was selling all the way from $9,000,000 to $5,500,000, and which of thess values it will bs rated at tbe next call, it is impossible to tell."

This morning it was worth from $5,700,000 to $6,800,000.

He is wisest wbo says notbing about ths causes of these fluctuations. Let it be sufficient tb say that it is probably no fault of tbs mines.

Bullion Shipments.

Since onr last issue, we have noticed the following abipments of bullion:

California.—Bodie, Nov. 14th, $11,641.81.

Nevada.—California, Nov. 16th, $97,140.40; total to date, $178,441.04; Con. Virginia, Nov. 16th, $65,611.78; Independence, Nov. 18th, $12,500; Indian Queen, Nov. 11th, $4,473; Manbattan, Nov. 17tb, $11,700; Navajo, Nov. 18th, $5,300; Northern Belle, Nov. 9th, $4,468.43; 11th, $3,415.32; 13th, $3,874.90; Raymond & Ely, Nov. 12th, $5,340.11.

Utah.—Leeds, $2,981.02; Silver Reef, $2,998.93; $7,918.23.

PACIFIC COAST POSTAL CHANGES.—The following postal cbanges were recorded last week: Postoffices establisbed—New Hope, San Joaquin county, California, Arthur Thornton appointed Postmaster; Kamilahe, Mason county, Washington Territory, John Campbell appointed Postmaster; Summit, Chehalis county, Wasbington Territory, H. D. Taylor, appointed Postmaster. Postoffices discontinued—Home, Baker county, Oregon; New Antrim Prairie, Lewis county, Washington Territory; Shauntie, Beaver county, Utah Territory; Thistle Valley, San Pete county, Utah Territory; Signal, Mohave county, Arizona Territory. Postmastera appointed—J. M. E. Atkinson, Newcastle, King county, Wasbington Territory; Sallie L. Ball, Sitka, Alaska Territory; Joseph Collingwood, Florence, Pinal county, Arizona Territory; William Bracken, Rush Lake, Tooele county, Utah Territory.

THE oyster abucker strikera of Baltimore have at last returned to work at tbe rate of 15 cents for eight quarts.

IT is said that the Russian army in the new Asiatic provinces of Russia, has again been placed on a war footing.

IN tbe Spanish Cortez a proposition that press offenses be made triable by jury and under common law was rejected.

THE river Save has overflowed its banks, involving serious loss of life and immense destruction of military stores.

IT is asserted tbat tbe German government is about to permanently appropriate the funds of the late King of Hanover.

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

CALIFORNIA.

AMADOR.

DRYTOWN.—*Dispatch*, Nov. 16tb: Ths mining and milling machincry pnrchased from tho Coney mine, is intsnded for the Hercules minc, ownsd hy Mr. Humphrsy Recse, of Sutter Creek, and situated on the north bank of Dry creek, about 300 or 400 yards below the Cantennial mine. To all appearances, Mr. Recse intends prosscutiug work vigorously. The croppings are distinctly to he traced directly from Dry creek to ths Phœnix mine, in Plymouth. Tbere is no douht but that this body of quartz is a continuation of tbe Gover. Tho Centennial has now got through sinking at a dspth of 350 fset, and the rock looks as well as usual; hut they must havo soms tims to drift on tho lsdge before one can tell mucb about it. Thsre is no doubt of their having a largs hody of ore. Tbs mill is ready to go to work at almost any time. The Pennsylvania is nearly through sinking, and in another week they will be about ready to run levsls. Ths Potosi is still idls, still tied up in ths law. Gsnerally speaking the quartz interest is looking very much improved.

PLYMOUTH.—*Ledger*, Nov. 16: The Burleigb drill has commenced work upon the ore body at ths Phœnix,'at ths 1100 level. From 160 to 200 hucksts of ore are sent to the surface every 24 hours. The rock being soft, goss through the hatteries very fast. Mr. Hewitt from Amador City, is prospecting a quartz claim, one milc and a half nortb of Plymouth. He is running a tunnel parallel with the ledge. Tbere is a fair sized body of quartz in sight. Ths Empire mill is at a standstill. Grading bas commenced at the Hercules. A quantity of the macbinery and material for the huildings is on the ground. The intention is to put down a new sbaft.

ITEMS.—About 95 tons of rock are now hsing crushed daily at tbe Keystons miue, wbich yields an averags of $9 or $10 per ton. Mr. Fairbanks, Superintendent of the Pennsylvania, has let a contract to sink 100 feet. General prospects of this mine, most cheering. The Gover mine, New Cbicago, looks very well. Purintons' ditcb at Fiddletown, and the American Flat claims at Oleta, are beiug prepared for the rains. Messrs. Mattingly and Bartlstt have purchased Kendall's one-stamp mill, near Volcano, and will operate it on a small quartz vein near Aqusduct.

INYO.

KEARSARGE.—*Independent*, Nov. 9th: The long tunnel Supt. Gray bas been running on the Kearsarge is now fairly into the ledge. The full width of the ledge matter is not yet known; crosscutting still continuing. Soms ore is found, in appearance like tbe croppings 450 feet above, hut no body of it, as yet, of consequence. It appears that the ledge whicb runs north and south nearly, dips some 35 feet in 100 vertically to the west and into the mountain. An extensive body of ore, assaying from $150 to $500 a ton, is exposed in the old shaft, and we feel quite as confident as Mr. Gray it will grow larger if no richer the deeper and further in toward tbe Cliff mine it is followed into the mountain, all of wbich, hy means of this tunnel, will now be an easy task.

BELMONT MINES.—Supt. Peter Taylor will soon atart up hia mill at Lee district, when the miners of Belmont, three miles south of Cerro Gordo, expect to sell their ores at good rates, as all the mines on tbat side carry high grade silver ore. The minea are looking well, and as soon as they bave a market plenty of ore can be extracted. Mr. Taylor is now hauling wood from within two miles of the Belmont mine. This cbange will do away with the expensive method of packing ore on mules to tbe furnace at Cerro Gordo.

THE EMIGRANT.—The Emigrant M. Co., at Lee district, have the water now running to their new mill at the mines. Tbe reduction works are probahly now in operation. The company have a large quantity of ore on the dump already, with plenty more in tbe mines.

PROSPECTING.—A. C. Harvey is engaged prospecting on the south end of what is known as the Buena Vista Hill, Cerro Gordo, with fine prospects ahead. C. R. Jones is in the same locality opening a mine which will aome day amply pay him for his expense and trouble. These mines are situated close to the Beauregard, owned by Porter & Co., and is by good judges claimed to be equal to the famons Union mine.

CERRO GORDO.—The Union Con. have commenced a crosscut at the 700 level, cutting across the slate dyke under the old Santa Maria mine. This ground has long been considered, hy those best qualified to know, as the hest in the hill. Otber drifts, three in numher, are being driven as fast as possible through hard lime rock.

BEVERIDGE DISTRICT. — Messrs. Porter, Hughes, Hunter & Brittan are working about 10 men in Beveridge district, with very satisfactory results. The arastras work very well, and the mines improve as they go down. They will soon make another clean-up.

SILVER SPROUT ORE.—The opinion is given that there is now enough good ore on the dump and in sight in the Silver Sprout mine alone to pay off the present assessment of the company (tbe Rex Montis).

WHITNEY ASSESSMENT WORK.—Supt. Gray has lately been doing some assessment work on ths croppings of a littls ledgs situated some 300 feet below the mouth of the Kearsage tunnel, and called ths Whituey. At first ths ore assayed only about $3 a ton, but as it continuously grew richer and mors plentiful as the work advanced, hs bas continued to drive ahead upon it beyond assessment reqnirements until it now assays $50 a ton right along, and is altogstber a most encouraging prospect. He thinks, howsvsr, it is but an off-shoot or feedsr of the Kearsage or main lode proper.

EL DORADO.

COLOMA.—*Mountain Democrat*, Nov. 16th: Mr. Burgess has been prospecting quartz from Travis creek, about 14 miles above Georgetown, whers he says hs found such ore comparatively unlimited. Ths quartz, after crnshing and careful panning, yielded a prospect of $65 per ton. Mr. Monday, from Union creek, reports some rich gravel prospects and a lively mining rsvival in that vicinity. Fully 100 locations have been made, and ths prospecting thus far done bas yielded most flattering results.

SMITH'S FLAT.—H. L. Robinson's mine, at Smith's Flat, is in fins shape. The 10-stamp mill will soon be ready for work. It is to he run hy a burdy-gurdy wheel, the pressure coming from the E. D. W. & D. G. M. Co.'s ditch above the falls. The Benfisldt mine is prospecting finely. The inclins is down 360 feet, with a fall of about 50 feet.

MARIPOSA.

LEASE OF MARIPOSA LEAD.—*Gazette*, Nov. 16: Mr. John W. Wilcox has leased from tbe Mariposa land and mining company, for the term of five years, with tbe privilege of extending tbe time, that portion of ths grant containing the valuable quartz veins and uines known as tbs Mariposa Lead, and Missouri Gulch mines, together with thc mills, macbinery and appurtenances thereto attached.

MONO.

ITEMS.—Bodie *Standard:* Crosscuts ars being vigorously pushed to the Packard & Morton vein of the Red Cloud Con. One bas reached it. It is 13 feet wide and has perfect walls. Ths whole ledge will mill profitably. The stopes of the Standard look well and yield the usual amount of ore. Rsports from the Bodic are favorable. A daily average of 40 tons of ore is raissd. Tbe mill runs steadily. Pay ore has been struck in tbe University. More encouraging quartz veins in the South Bodis. Everything progresses favorably in the Champion. McClinton ledge is somewhat smaller, hut of good quality and witb prospects of widening. With a shaft 100 feet deep, and a drift 42 feet long, the Republic Con. has cut a ledge 11 feet thick, assaying from $10 to $45 per ton. Present outlook for Queen Bee reported good. "Fine ore" is the word from the Bulwer. The ledge in the bottom of the Noonday shaft continues fins. The South Bulwer will sink 250 feet, make a station and tben crosscut towards the ledge.

WEST PACIFIC.—This mins is situated on High Peak bill, adjoining the Con. Pacific, and in the immediate vicinity of the Bulwer, Belvidere, Standard, Bodie and Summit mines. Tbe West Pacific was discovered and located about a montb since, on croppings. Has a very fine ledge of gold-hearing quartz, samples of which assay from $85 up to very high figures. A timbered shaft has been sunk 30 feet, and in it two otber fine ledges have heen struck, both of wbich prospect well in gold. The sole owners of this piece of mining property are General George R. Vernon and Judge D. V. Goodson, who intend at once to incorporate in San Francisco.

SOUTH BELVIDERE.—Work commenced on shaft. Energetic sinking will be continued throughout the winter.

RIQUEZA.—Progress made last week, 10 feet; total depth of main shaft, 270 feet. Sinking was delayed the past week on acconnt of breaking tbe whim post, wbich is, however, now repaired and in working order. Crosscuts on 210 level is making fair progress in favorable ground, and are being continued.

MAYBELLE.—Shaft down 280 feet; bottom still continues in favorable sinking ground, and evidences go to show the near approach of the same olass of ore as found in the Dudley on the north, and the Red Cloud on the south, as the shaft is heing sunk on tbe line of tbe recent discoveries made in tbese two last-mentioned mines. Lumher is being received for the erection of a new shaft-bouse and blacksmith shop.

SPAULDING.—Since last report, north and eouth drifts from 330 level have been started. The north has advanced 10 feet and the south drift 12 feet. The shaft has reached a total depth of 330 feet. The north drift on 230 level is now in 85 feet, ledge looking well in face. Machinery in good order, and mattere ahout the mine ahove and below ground in first-class order.

GLEN DALE CON.—Looking favorahle. Main working double-compartment shaft down 27 feet. Struck some very fine quartz feeders bearing to the main ledge. The ground is favorable for working and a canvas house is being erected for temporary use, until lumher can be ohtained. It is the intention of the company to build steam hoisting works soon.

WHITE CLOUD.—The east crosscut from the bottom of tbe shaft, 94 feet, is now in 32 feet, and the formation indicates the close proximity of the ledge. A stratum was cut six inches in width, assaying $18. A drift is being run south on the ledge from the Red Cloud to connect with this mine.

CON. PACIFIC.—Work is being pushed as rapidly as possiblo in crosscnt No. 1 from Pacific vein No. 2 to Pacifio No. 1, and it is expected that ths ledgs will be cnt during tbe present week. Work bas been resumed on tbe new working sbaft, wbicb is 275 feet south of the mnnth of ths tunnel. Ths shaft is now down 36 feet, and work is heing pressed with a full force of msn. Ths nsual quantity of rich ors is bsing taksn from the stopes of Pacific No. 2. A road has been made to the ore dump, in preparation for bauling to the mill. Crusbing will bs commenced between ths 20th inst. and Decsmher 1st.

GOODSHAW.—Works all inclosed with a fine huilding, and sverything working nicely. Work hslow in this mins is progressing rapidly, and a large amount of rock heing boisted to tbc surfacs.

TRUE BLUE.—Ths west crosscut bas attained a leugth of 30 feet; progress during the week, 12 feet. Several small feeders have been cut, pitching toward ths ledge. Work progressing favorably.

MISCELLANEOUS MINES.—Feeders of quartz in tbe Syndicate west crosscut. Assays in the hottom of the Sitting Bull sbaft yield over $100 per ton. The west crosscut on the 400 lsvel of ths Blackhawk is in 42 feet; the east, 55, in softer formation mixed with quartz. Engine at nsw shaft is sst. The Dudley looks well. Another 100 feet will he sunk befors crosscutting. Ths ledgs in the Summit soutb drift is tbree and one-half feet wide and looks well. Shaft of the Nevada pushed with energy. The Bodie tunnel is in 580 feet. Ventilation good. Crosscutting contiaues in the Orisnt. Sinking progresses favorably in the Relief Con. Operations in the Ajax will be resumed as soon as possibls. Crosscutting is probably progressing already in the Mono. Soutb Standard shaft is down 330 feet. Work will shortly be recommenced in the Chieftain and continued througb winter. Mono and Cross shaft still sinking. Jesse Bradford will run the Bulletin and True Blue.

NEVADA.

ROUGH AND READY LIVES.—*Transcript:* Prospects look hetter here now than they have for years. New quartz mines are being discovered and old ones developed. Tbe Iron Clad has shut down for repairs. The company is putting up a one-stamp battery of the Kendall patent. They ars down about 95 feet on the ledge, and are running drifts east and west. Ons they are in about 120 feet from the main sbaft. Tbe ledgs is widening and looks well. The company intends in the spring to put up a large mill if it turns out as expected. C. C. Bitner and Wm. Walker are sinking on an sxtension of the Iron Clad with favorable indications.

WASHINGTON MINE.—Grass Valley *Union*, Nov. 17: This mins is situated a half mils or more northeast of the Idaho. Work was first commenced upon it ssveral years ago, but only diligently prosecuted within the last six montbs. The incline bas been sunk to a deptb of 140 feet and a drift nortb of the vein bas now reached a distance of 100 feet, whers the ledge is found full two feet in width, and carrying largely in sulphurets. It does not show in free gold, but the assays go to $36 per ton. The rock is of a bandsome character, and looke as if it would pay well by mill process. No crushings have ever been made of it, but the company are now having 10 or 12 loads taken out, which is to he put through the mill.

SWAMP ANGEL.—*Union*, Nov. 17: Everything is ready for systematic working. Sufficient ground is open to give working breasts for fully 12 months. In the meantime other drifts will be run, and more backs of ground opened for future working. The first clean-up under the new management was made last week, of a six days' run, which yielded $1,100. Weekly clean-ups will he made in the future. The gravel is not of a very rich character, but it pays regularly and washes easily, as it is not cemented. The company have a large body of ground, wbich it will take years to exhaust. The claim paid a large amount of money to ite former owners, who recently sold it to the present company, a Boston party, for $42,000.

ITEMS.—Mr. Jones, who lately honded the Live Yankee mine, has succeeded in organizing a company to operate it. The rock already taken from the vein is rich. The 650 keg hlast lately exploded in tbe Blue Tent diggings proved a perfect snccess. In one Meadow Lake mine, the Excelsior, it is estimated that there are 1,000,000 tons of gold-bearing quartz above a depth of 100 feet from the surface. The Wild Cat company, prospecting at Steep Hollow, have struck good gravel by tunneling 2,200 feet and then sinking 50 feet. A fine-looking tunnel bas been struck on Wilson Ranch. A drain tunnel will be run to the shaft. Mining Agent Sackett is reviving tbat old hullion-producer—the Sneath & Clay, Gold Flat. There is talk of operating again on the Lecompton ledge. It is thought that the tunnel of the Union Gravel M. Co., at the head of Slate creek, will soon strike the gravel channel. A three-foot ledge, rich in sulphurets, was found a few days ago in the independent, extension of the Murchie.

NEVADA.

WASHOE DISTRICT.

SIERRA NEVADA.—Gold Hill *News*, Nov. 20: At the mine worked has progressed steadily and without a change of any kind whatever. At thc 2200 level the station has heen completed and two drifts started, one in a northerly and

Continued on page 332.

Mines and Works of Almaden.—No. 10.

[Translated for the Press from "Annales des Mines."]

Second Period.—From the shafts of division in the ore mass, and at three or four meters abovs or below the line of the drifts which are destined for transportation, crosscuts are run until they reach the walls of the lode, and at distances apart of 3.4 meters. They serve for the construction of brick arches, laid in a mortar of lime and sand; these arches abut upon the walls when these offer a sufficient solidity, and when they do not they penetrate them until they find sufficient support; the excavation for the foundation in the wall is called by the name *rafa*, that for the roof by the name *cabexcadro*. These arches, whose cord is placed perpendicularly to the walls to be sustained, have usually a curvature varying with their width; their thickness is about 0.84 meters (a vara of the old Spanish measure). They construct one of these transverse arches above the drift for tramming, to form the roof of it, while the other serves to support the floor by means of longitudinal arches running from one of these arches to the other. These arches, to which have been given the name fundamental arches, have frequently a span of 12 to 14 meters, sometimes even of 18 to 20 meters, on the lower levels of the deposits of San Francisco and of San Nicholas. These veins are, in fact, so near the one to the other, that it has been thought necessary to remove the small sterile mass which separates them at the west, and to unite the northern wall of San Nicholas to the southern wall of the San Francisco by a kind of grand arch.

Upon each of these fundamental arches of 3.4 meters of length, parallel to their generatrix, is constructed a mass of masonry of solid sandstone, taken from the quarries on the surface near the shaft San Teodoro. This mass is raised as fast as the prisms of ore (on either side of the central zone) above the arch are removed. From time to time vaulted openings are left in the masonry which correspond on the same level, in all the works; these openings are connected by small bridges from two intermediate stages. The two sketches (Figs. 5 and 6) show, the first, the aspect of the works during the construction of the mass of masonry; the second, their appearance at the end of this construction. The fundamental arches are not constructed alone to form the roof or the floor of the drifts for tramming; they are also established sometimes when it is judged necessary at intermediate points, sometimes to accelerate the construction of the mass of masonry, and consequently the removal of the ore, at other times to diminish the pressure upon the inferior arch.

The walls of masonry to which we have given the name of works *(obras)*, are continued till they meet the arch of the floor of the upper level. They are then so arranged as to inclose the provisionary arches; it evidently suffices in order that this may be done, in establishing them, to take the precaution to construct them vertically over the points where later the fundamental arches will be established. The works are calculated and classed according to their direction and their position, with reference to the crosscuts coming from San Teodoro shaft which serves for the point of reference for their establishment; one speaks thus: 1st, 2d, 3d, work to the east, or to the west, in each of the three deposits.

Fig. 7 represents one of these veins, cut by its median plane at the end of the second period. The removal of the columns of ore left between those works constitutes the third period of the exploitation of a mass.

Third Period.—While the exploitation of the columns of ore which are removed during the second period is accomplished by beginning below and working upwards in replacing them by a mass of masonry—that of the reserves is on the contrary always exploited by beginning at the top and working downward. The columns being already cut upon three of their faces, and adhering often but feebly to the walls when these are schistose, the price for the reserves is much the least elevated. When the roof is schistose the workmen are protected against the falling of the rock, sometimes by a covering of planks stretched from the neighboring works, sometimes by a layer of masonry raised upon longitudinal arches, thrown from one work to the other.

It has often happened that they have put off the removal of the reserves, either because they considered it a measure of economy, or because they put off a removal thought to be less easy, perhaps, than that of the first series. A polemic, lively, if not sometimes acrid, upon this subject, engaged divers engineers about 1860; it had the effect of showing the inanity of the objections which were made to this method of exploitation, to prove not only that the removal of the reserves was possible, but even that it was very easy, and finally led them to decide to diminish their importance, and only to preserve those which were really important to the security from all interruption in the production. The removal of nearly all the reserves from the sixth to the eighth level, has show that the fears so strongly expressed by M. M. Bernaldez and Rua Figueroa, in their *Memoria sobre las minas de Almaden*, were not founded.

II.—Organization of Labor.

Let us see now under what economical conditions are executed the operations of tramming, stoping and supporting.

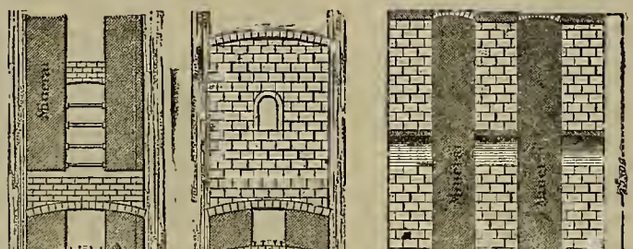
All the miners engaged in interior excavations, whether in the ore or in the barren rock, go by the name of *barreneros*, from the drill called *barreno*, which they principally use. They all work by contract, that is to say, by the taking of a contract at so much for the unit excavated, the unit varying with the nature of the excavation.

These contracts are renewed every month; the regulations oblige the administration of the establishment to observe vigorously all the formalities of a public adjudication. This system in appearance the best of all, certainly does not give at Almaden but poor results; it defends but very badly the interests of the State of which it proposes to be the safeguard. It is already a long time since the miners have taken the plan of associating themselves together and of distributing among themselves the various labores by a sort of lottery. Each group makes then an adjudication of a contract which has expired, without meeting any opposition on the part of the other group, which would deprive them of their good fortune.*

Every labore is then awarded to a group of 20 workmen, who divide themselves into parties of two, three or four men, according to the nature of the excavation it is designed to undertake. These different parties relieve each other in shifts of six hours each; the first shift works from midnight to six in the morning, the second from six to noon, the rest in order. The stopers (in the ore or the rock) work in the three first shifts, the fourth do the tramming of the material as far as the tracks of the principal roadways and the excavations for the timbering.

The price for excavations are usually such that the day of six hours should pay four to five *piecettes* (a *piecette* is about 1.05 francs at current rates, the *piecette* is really of the same weight as the franc. Usage imposes upon each workman that he should drill in these six hours a hole 0.28 meters deep in the ore, and two of these in the schiste or frailesca.

The administration furnishes to the miners tools except hammers, which each man possesses for himself. The tools are deposited in the interior magazines placed upon each level in the neighborhood of the San Teodoro shaft, the expense of lighting and the cost of powder are charged to the account of the workmen.



MASONRY IN ALMADEN MINE.

The number of workmen occupied in the mine at different hours of the day is very variable; one may reckon as a mean for every day as follows:

1st shift	40 to 60 workmen
2d "	300 to 340 "
3d "	180 to 200 "
4th "	180 to 200 "
Total	700 to 800 workmen

The total number of workmen occupied in the interior is, however, much greater, and varies from 2,250 to 2,500.

Every workman then works on the average a shift during three days; but on account of certain work being less dangerous to the health of the men than that of stoping, this work is done every day, or nearly every day, by the same workmen, while those engaged in stoping and in mason work, work in the mine but little more than six hours every five or six days.

The timbering (*entibacion*) is confined to workmen who constitute a special body (the *entibadores*), comprising two classes of workmen. Each of the first class, called *entibadores* of the first class, has under his orders two of the second class. All the timbermen form therefore 40 troops of three workmen; they are charged with all the timbering, renewing of the ladders and supports. One group has for its special duty the constant inspection and repairing of the column of pumps which runs from the seventh level to the surface. Each timberman of the first class gets 2.75 francs per day; each of the second class 2.25 francs; the administration furnishes them with light and tools. They are the best workmen and the most disciplined. The wood used is oak or holly (*chene vert*); it comes from the neighboring forests, and is furnished by contract on an average at 70 to 75 francs per cubic meter.

The masonry work is done by special workmen called *alarifes*; they are paid at so much for the cubic meter of arch, or so much per cubic meter of the solid work. They are placed under the superintendence of master masons, called *maestros de obras*. The administration delivers to them the material; they have to prepare their own mortar, and to raise it as well as the bricks with which they work to the arch or to the construction they are building. They employ in doing this a hand windlass.

The bricks are made at a little distance from the establishment, and are contracted for. They are paid for by the hundred; the cubic meter comes to about 20 francs.

The stone is obtained from the quarries upon the surface, on the hillock south of Almaden in the great banks of white quartzite. Five to six francs per cubic meter is paid for the rock, in place.

The lime comes from the banks of silurian limestone, which are found some 12 or 15 kilometers from Almaden; it is paid for, delivered at the mine, at the rate of 2.25 francs to 2.50 francs per hectoliter. It is of an excellent quality; also the works of masonry have great solidity, a result partly effected no doubt by the waters of the mine, which contain magnesia and lime to the extent of not less than two kilogrammes of deposit per cubic meter.

To be Continued.

* See further on the deplorable riot of 1874, in which perished by assassination MM. Monasterio, Inspector-General of mines, and Buceta, engineer in ordinary.

The British Mineral Yield.

During the year 1877 the mineral product of the United Kingdom was as follows: Coal, 134,610,763 tons, against 133,344,766 in 1876; iron ore, 16,692,802 tons, against 16,841,583 the previous year; lead ore, 80,850 tons, against 79,095 in 1876; tin ore, 14,142 tons, against 13,688 the year before; copper ore, 73,041 tons, against 79,252 in 1876; salt, 2,735,000 tons. The total value of minerals and metals obtained from the mines, etc., of the United Kingdom in 1877 reached £68,281,405—namely, £18,742,960, the value of metals; £47,113,767 coal, and £2,424,679 minerals, earthy, not reduced, together with the value of salt, clays, etc. The produce from these ores may be summed up as follows: 61,403 tons of lead, of the value of £1,262,600; also, 9,500 tons of tin, of the value of £695,182; and 4,486 tons of copper, of the value of £340,067. There were 501,435 oz. of silver obtained, almost all from lead, of the value of £114,877, and 143 oz. of gold, almost all from Merionethshire, of the value of £656. The great item in these returns is the quantity of £6,608,664 tons of pig iron, of the value of £16,191,236; it is estimated that in its manufacture 15,342,445 tons of coal were used.

The *Mining World* comments as follows: It seems matter for regret that so many mines have resigned themselves to the lot of throwing their produce on the market at a loss; but the effort in most cases, we imagine, has been to prevent the complete stoppage of the mines by just paying their working expenses, and, to do this, prices having fallen still further, the output has been augmented. That this policy has only partially been successful, the records of the winding-up court show. As a means to the very salvation of a large number of mines, it is necessary that better prices should be obtained, though when these will be brought about no man dares to prophecy.

The deepest tunnel at Colorado's new mining camp, Carbonate City, is that of Brown & Ghaskell. It is in 75 feet, and yet nothing but a pick and shovel has thus far been used.

It is expected that in about two weeks the new machinery of the Los Angeles Co.'s oil well in Ventura county will be set up to replace the former works, which were burned.

A deposit of antimony sulphate has been found near Greymouth, New Zealand. The analysis gives 84 ounces of gold and 36 ounces of silver to the ton.

Parties are mining gold near Nicasia. A shaft has been sunk 25 feet, and ore assaying $20 per ton has been extracted.

The third shipment on October account, of 22,000 lbs Silver King concentrations, was forwarded Nov. 4th, to San Francisco.

The Tombstone mine, Arizona, is to have a ten-stamp mill.

A four-stamp quartz mill is being set up at Tucson.

The Engineer.

Engineering Notes.

Narrow gauge, says the *Railway Age*, has friends in Scotland, it seems, as it is proposed to build a railway of three feet gauge, 40 miles long, into the Aberdeenshire highlands. The route is through somewhat difficult country and in one part there would be a series of gradients of one in forty. The estimated cost is £4,000 ($20,000) per mile, which is very low for a British railway, and doubtless considerably less than a standard gauge line would cost.

The Grand canal of China, 600 miles long and floating 10,000 flat-bottomed boats employed in the transportation of grain, is likely to be abandoned, as the cost of repairs every year is enormous and the stoppages of navigation are frequent and long continued. The failure of this great highway may help materially to do away the absurd hostility to railways in that country, which certainly cannot long oppose the march of civilization in the form of steam.

An English exchange says: The cylinders for the last pier of the Severn bridge have been founded, and it is hoped that the structure will be ready for opening next spring. The weight of the iron used in the bridge is estimated at about 7,000 tons. The width of the river at the point crossed is 1,186 yards, and the total length of the bridge, including the masonry, viaduct and swing span, will be 1,387 yards.

The rails on the Pembina branch of the Canadian Pacific had reached Niverville, 22 miles south of Winnipeg, November 1st. It is reported that the incoming government purposes constructing the connecting link between Rat Portage and English river, thus completing the road from Thunder bay to Winnipeg, by letting the work in sections, according to the plan introduced and carried out by Mr. Mackenzie. The road west from Red river will be pushed on to the Saskatchewan river as speedily as possible, and thence westward in sections of 100 or 200 miles a year, as the settlement of the country and other circumstances may render desirable. This track is now completed from Ft. William, at Thunder bay, to English river, 113 miles. From there to Rat Portage, or Keewatin, the line has hardly been located, and it is said will not be completed for three or four years. From Rat Portage to Selkirk, 173 miles, the line is nearly finished, as is also the Pembina branch from Selkirk, south to Emerson, 85 miles.

Another Fine Scotch Bridge.

The *Iron Age* says that a great engineering work, which is perhaps scarcely second in importance to the Tay bridge, was commenced last week. Mr. John Waddell, contractor for the foundations of the North British Railway bridge across the Forth, began operations with a large staff of workmen. Starting from abutments on the high ground overlooking the foreshores on either side of the Firth, the bridge is to be carried in the form of a light lattice girder structure upon cylindrical brick columns to the edge of the deep water. As far as this part of the work is concerned, it is not believed to present any feature of difficulty. But in the two great spans, each 1,600 feet long, which are to form the central portion of the structure, there has to be faced one of the most difficult engineering feats imaginable. Regarding this portion of the work the *Scotsman* says that at the point on each side of the estuary where the bottom begins to shelve rapidly downward, there is to be placed an immense composite pier, consisting of four groups of iron columns—sixteen columns in all—firmly bedded on hassments of masonry and securely braced together throughout their entire hight. Over the tops of these piers will he carried immense chains, whose shoreward ends will he anchored to ponderous masses of masonry; and these being continued over two similar piers, placed on the island of Inchgarvie in mid-channel, will afford, on the suspension principle, such assistance as is estimated to be required in supporting the spans, which of course will also rest at either end upon the framework of the piers. The hight of the great 1,600-feet spans has been fixed at 150 feet, to reach which level the shoreward section will require, as in the case of the Tay bridge, to have a certain gradient; and when it is added that the piers will reach the hight of from 500 to 600 feet, some idea may be formed of the imposing appearance which the completed structure will present.

Narrow-Gauge Railway Convention.

The eastern narrow-gauge men held another convention (Cincinnati, Oct. 23d), of which mention is made as follows in the *American Manufacturer:* Eighty-six delegates were in attendance. Col. E. Hurlburt, of Bedford, Indiana, presided and delivered an opening address. The President submitted the report of committe on machinery and rolling stock, with remarks in which he stated that on the first of last January there were nearly 3,100 miles of narrow-gauge railways in operation in the United States, and as many more were now projected. It was claimed in this report that a narrow-gauge engine of the same capacity as a standard engine, could take up the same grade more tons of paying freight, because it had less weight of cars, and that in transportation of

passengers the same rule would prevail. The following questions were submitted for discussion by the Executive Committee: How far narrow-gauge saving in first cost, interest account, dead weight, wear and tear, repairs, etc., affect freight weight; comparison between standard and narrow-gauges as means of development; the general availability of narrow-gauge lines to localities now deprived of any line of railway; to demonstrate that narrow-gauge railways economically constructed and operated are safe investments. The National Central Executive Committee were constituted a Board of Statistics to collect information relative to narrow-gauge construction and operation. The convention adjourned to meet in June next, without a place named, subject to the designation and call of the President.

The Mining Engineer.—At the late meeting of the American Institute of Engineers, an address was delivered by President E. B. Coxe. Mr. Coxe began by calling attention to the fact that the profession of mining engineering was comparatively new in this country. Thirty years ago there were scarcely any educated mining engineers here and few in England, and there was no institution in which a young man could study this profession in the English language. The few we then had worthy the name of mining engineer had mostly studied on the Continent or graduated from the school of practical experience. Their work consisted principally in making surveys and maps of mines and mineral properties, geological surveys and analyses of ores. The inducements were too small to encourage young men to enter the profession, and those who did were commonly regarded merely as baits with which unsophisticated capitalists were to be caught. His opportunities for professional success and usefulness were small, he was compelled to compete with unprincipled adventurers and charlatans, and the profession as a profession had no recognized status. Within a comparatively few years all this has changed; the mining engineers, in the broad sense in which the term is understood by the institute, have become the indispensable allies of capitalists in all undertakings looking to the development of our great and varied national resources, and the profession is now regarded as one of great importance, with a valuable literature peculiarly its own.

Promotion of Transcontinental Lines.—A meeting of friends of the proposed Texas Pacific railway, was held at Chicago last week, at which the following, among other resolutions, was adopted: That we firmly believe that the period has arrived when the general welfare of this country demands that Congress should extend to our communications by water, ocean, gulf, lake and river, the fostering care and generous aid which have been heretofore devoted almost entirely to our communications by land. That we are convinced that such cheap rates of transportation across the continent, from the Mississippi valley to the Pacific coast, as will encourage and develop our trade with China, India, Japan and Australia, will never be secured until the monopoly possessed by the present Pacific railroads shall be broken down by the construction of the Northern Pacific and the Texas Pacific lines, and we recommend that Congress take such action as will lead to the speedy completion of these competing lines on such terms and under such conditions as will secure the Government against pecuniary loss.

Marking Patented Articles.—The Patent law says: All patented articles must be marked with the word "patented," together with the day and year the patent was granted. If the article itself cannot be so marked, a label containing the notice must be affixed to the package containing one or more of the articles. The marking is intended as a notice to the public that the thing is patented, and in any infringement suit by the party failing so to mark, no damages shall be reported by the plaintiff, unless it is proved that the defendant had due notice of the infringement. Any person who falsely marks an article patented that is not patented, or marks anything for which he has not obtained a patent with the name of another who has obtained a patent, or who marks an unpatented article with the word "patent," or any word importing that the thing is patented, for the purpose of deceiving the public, is liable to a penalty of $100 for every such violation of the law, one-half to go the informer.

The Metrical Convention.—The President has officially promulgated, through the State Department, the Convention which has been ratified between the United States and the nations of Europe (except Great Britain) and most of the South American republics, providing for the establishment and maintenance at Paris of an "International Bureau of Weights and Measures." The duties of this bureau will embrace the custody of the international prototypes of the meter and kilogramme, and periodical comparisons of them with the national standards, and with the fundamental standards of the non-metric weights used in the different countries for scientific purposes.

Caustic Soda.—Arnott prepares caustic soda by heating common salt with phosphate of iron—an abundant mineral in some parts—and causing steam to act upon the mixture. The muriatic acid given off is condensed for use or sale. The soda residue is exhausted with water, thus producing a solution of phosphate of soda, which is readily converted into caustic soda by means of lime.

Useful Information.

How to File and Set a Hand-Saw.

The following instructions, although somewhat wearisome, perhaps, to the mechanic, may be of practical use to some of our readers who are removed from saw-sharpening facilities: When a saw is in bad order, the teeth are irregular in length and pitch. This occurs through improper filing, and results in the saw working hard. The reason is that a saw irregularly filed, or set, cuts only with the longest teeth and those that have the most set. To remedy these defects, it should be pointed and filed until the teeth are all of even length, and are pitched so that the front of each tooth is at right angles with the back of the saw. The saw is fastened into a clamp, which consists of a pair of jaws fixed upon a stand, and moved by screws. The ends of the teeth are brought to a level by running a flat file lengthwise of the blade. The best form to give the edge is a slight curve from end to end of the saw, making the middle slightly rounding outward, never hollow.

The handle of the saw when in the clamp should be to the left, and not be changed during the filing. The part held in the clamp should be filed completely before being moved, if the jaws are not long enough to hold the whole. On a rip-saw, the teeth will be filed square on a cross-cut, they are beveled upon alternate sides. Both sides should be filed without moving the saw, which may be done by changing the position and manner of holding the file. A beginner should provide a handle at least a foot long for his files; this will enable him to hold it steadily, which is very necessary for good work. The proper size for a file is three and one-half inches long for a saw having eight teeth to the inch. A saw is set before it is filed. The set given for easy cutting should be such as to make the cut as wide as twice the thickness of the blade.

Several good sets are sold at the tool shops which are self-regulating, and make even work. If only a few of the teeth are short, they need not be pointed, but may be touched with a few strokes at each filing, until the rest are worn down to them. If one has no clamp, a strip of hard wood may be laid upon each side of the saw, and the whole held tightly in a vice. In filing, the strokes should be made from the operator and not towards him. The file should be grasped firmly in the right hand, while the tip is held lightly between the finger and thumb of the other. A safe rule is to work slowly, and to test the teeth as the work progresses with a try square. As long as the faces are kept at right angles with blade of the saw, the backs must come out right.

Recipes for Black Ink.

The following recipes from an exchange may be of use to some of our readers. The following is for jet-black steel-pen ink: "Bruised galls, 1 lb.; logwood, ½ lb.; cloves, ½ oz.; pomegranate rind, ½ lb.; water, 8 lbs. Boil gently for three hours, stirring now and then; strain off the decoction, and add 2 lbs. more water to the ingredients. Simmer gently for an hour, and strain. Mix the strained liquids, which together should weigh 8 lbs. Allow the dregs to subside, and pour off clear. Dissolve in a portion of it common gum, ½ lb., sugar candy, 1 oz.; and in another portion sulphate of iron, ½ lb. Strain both solutions, and mix the whole together. Then add calcined borax, 1 drm.; creosote, 12 drops; dissolved in ½ oz. of spirit of wine."

For blue-black ink the following is commended by good authority: Alleppo galls, bruised, 9 oz.; bruised cloves, 2 drms.; cold water, 80 oz.; sulphate of iron, 3 oz.; sulphuric acid, 70 minims; indigo paste, 4 drms. Place the galls with the cloves in a gallon bottle, pour upon them the water, and digest, shaking often, for a fortnight. Press and filter again through paper into another gallon bottle. Next put in the sulphate of iron, dissolve it, add the acid, and shake briskly. Lastly, add the indigo, mix well, and filter again through paper. The ink is to be kept in well-corked bottles. The writing is at first pale green, but it soon turns to a deep jet black. It is not a copying ink, but may be rendered such by the addition of sugar or glycerine.

Repairing Loose Watch Covers.—Some of our watchmaking readers may get a hint of value in the following which we quote from *Art-Industry*, a neat journal which has arisen from the ashes of the *Silversmith and Watchmaker:* If the rims of hunting-cases become so worn by the friction of the springs that they will not close tightly, or not stay closed at all, the trouble can often be remedied by undercutting the rim at such an angle that the spring will draw the case tight. It is difficult to do this neatly with a graver or other hand tool, and the ordinary steel ratchet-wheel, taken from the material box and mounted on the lathe as a cutting-burr, will be found more to the purpose. A wheel should be selected with very fine teeth; and, if not hard, it should be hardened the same as any other cutting-tool, and mounted on the live spindle in the most convenient manner. This burr will cut and finish a square hole in a main-spring so narrow as to be difficult to punch, besides saving the risk of breaking small files in finishing the hole; the spring to be cut should be bent backwards, so that the hole will not be cut too long. It will also cut a solder from the grooves in spectacles after mending, and do a hundred other little things that no file will do.

Uses of the Lesser Metals.—Cadmium, occasionally employed for the production of very fusible alloys, is usually obtained along with zinc. Tungsten has been recently proposed by Dr. Versmann as a substitute for nickel in German silver, a highly sonorous alloy being obtained by reducing simultaneously tungstic and copper oxides, and fusing the resulting alloy with zinc or brass. The same metal has been suggested as a hardening and ameliorating ingredient in steel, as have also chromium and titanium. Few, indeed, of the remaining metals of this class are of any large industrial importance even in the state of compounds, potassium, sodium and calcium being the main exceptions. Certain of the compounds of barium, strontium, chromium and cobalt are also of considerable importance for a few special purposes and manufactures. Vanadium compounds have been recently introduced for developing certain colors in calico printing, etc., and cerium salts have been used medicinally, while molybdic oxide is a valuable analytical re-agent.

Button Making.—Porcelain buttons, sometimes called agate buttons, are readily made, on the principle of forming mosaic tesseræ, by a machine invented for that purpose, and in 1737 the first button was made by it. The buttons are made by what is known as the "dry process," *i. e.*, by a pressure sufficiently great to compress the dry porcelain powder into a hard and enduring shape. They are made by women, who often turn out twenty-five buttons in a minute, but the usual rate is from twelve to eighteen a minute the year round. The price paid is one cent per gross, at which rate one woman earns from $3 to $4.50 per week.

Indelible Ink for Marking Linen.—Add caustic alkali to a saturated aqueous solution of cuprous chloride until no further precipitate forms; allow the precipitate to settle, draw off the supernatent liquid with a siphon, and dissolve the hydrated copper oxide in the smallest possible quantity of ammonia. It may be mixed with about six per cent. of dextrine for use. Before washing pass a hot iron over the writing.

Food Adulteration in England.—According to official reports during the last year in London, there were 4,177 samples of food and 110 samples of drugs submitted for analysis. Of the former there were 515, or about one-eighth of the whole number examined, pronounced adulterated; but of the 110 samples of the latter examined, only seven were found to be either more or less adulterated.

Good Health.

To Get the Most Out of Life.

Rev. O. B. Frothingham has an article on this subject in the *Herald of Health*, from which we quote paragraphs of excellent counsel:

Length of days is still one of the criteria of a good life, for it implies temperance, frugality, continence, regard for the conditions of prosperity. Is one desirous of obtaining this blessing? Then must he practice moderation in pleasure, cultivate the virtues of prudence and obedience, cherish simplicity, abstain from enervating vices, avoid unseemly violence, repress anarchical and tempestuous dispositions. He must study peace and good will, and thus substitute economy of force for waste, encouraging the powers that build up. Reason reinforces, passion squanders, vice destroys. To escape wear and tear is wisdom; but to escape wear and tear lays a duty on conscience and soul which the foolish cannot understand. Longevity implies material ease and comfort, admitting reasonable contentment, easy social relations, circumstances that do not rasp or fret, and to create these it is necessary that impulse should be submitted to judgment, and that reflection should be strong enough to subordinate desire.

The next condition on which the most is to be extracted from the world is that our days on earth be not only long, but happy. Freedom from misery, from sickness, perplexity, heartache and corroding care, is a condition of successful life. A miserable life cannot by any stretch of interpretation be called well used life, for misery means waste, dissatisfaction, discord. How does one make himself happy? Not by putting himself out of tune with himself and his circumstances, not by running the risk of misfortune, jeopardizing his chances of felicity. The hero may do this; the philanthropist may do it; the reformer; but these do not seek happiness. They are exceptions to the rule. We must not pitch our doctrine on the heroic key. We may be simple, lowly, wise, and say frankly the aim is to make life happy. Hence it has become a trite saying, that the people who wish to make the most of life, must practice the old childlike virtues of sincerity, veracity, consideration, kindness. They must not think of themselves first, but must be willing to believe that they can learn as well as teach, that the right to be served must be balanced by the zeal to serve.

Yet a third condition for getting the utmost out of life is, that life shall be harmless. I do not contend that it should be noble, great, magnanimous, or even conspicuously useful. But how *not to harm* the world; that is a simple thing. Do not cheat; do not lie; do not betray; do not undermine the physical or moral health; do not make light of social advantages; do not fly in the face of immutable facts; do not impugn the established principles of rectitude; do not make war on insitutions that will yield to the power of reason; throw no stumbling block in the way of your neighbor, but open paths as far as you can; multiply opportunities; increase privileges; make it worth while for people with whom you associate to say and think pleasant things of you. Thus, at least, you do no harm—if you do not directly diminish the bulk of evil, you sustain the mass of good; you are conservative of the best; you belong to the salt of the earth; you are a pillar of strength. The least that can be required of any rational being is that he shall live a harmless, an innocent life, as far as he can.

Weaning the Baby.

Dr. Brochard in a French medical journal lays down four rules to be observed in weaning infants, as follows: (1.) It should never be done suddenly, one regimen being gradually transformed into another, so that the child may be progressively prepared for weaning. The time for it, as Trousseau justly observes, cannot be fixed by the almanac, but it must depend upon dentition. As soon as the teeth appear we should commence our preparations. About the fourth or fifth month we may accustom it to the sucking-bottle, substituting this for one of the sucklings at night, and afterwards for another; and even for a fortnight after weaning the child should have nothing but milk. At a later period farinaceous food and broths may be added. Many women begin to give their infants this kind of food far too soon, and at the time of weaning cannot get them to take the milk which should then form almost their only diet. Solid food should be delayed for some weeks, and given only as the teeth appear. (2.) The child should never be weaned until it has teeth. (3.) It should never be weaned during very hot weather when diarrhœa is apt to occur. (4.) It should not be weaned while in the act of cutting its teeth, the intervals which occur between the cutting of the different groups of teeth being selected.

Preparation of Eucalyptus.

We have given before a number of preparations of the medicinal principles in the eucalyptus. As the material is so abundant in this State, its use must be an object of interest. The *Journal of Chemistry* translates from a French source the following formulæ:

Tincture of Eucalyptus.—Take of dried leaves of eucalyptus (cut up) 1 part; alcohol, at 80°, 5 parts; allow to macerate for ten days, then filter.

Wine of Eucalyptus.—Take of dried leaves of eucalyptus, 30 parts; alcohol at 60°, 60 parts; good white wine, 1,000 parts; allow to macerate in the alcohol for 24 hours, then add the wine; after ten days, filter.

Hydro-Alcoholic Extract of Eucalyptus.—Take of dried eucalyptus leaves (cut up) 1,000 parts; water, 3,000 parts; distil to obtain the essential oil; make an aqueous extract of the material remaining in the apparatus, and to it add alcohol at 60°, 1,000 parts. Filter the alcoholic solution and evaporate it to the consistency of an extract; when nearly cold, mix the volatile oil thoroughly with it.

Lime Juice for Rheumatism.—In the *Canada Lancet*, Dr. A. H. Chandler calls attention anew to the use of an old remedy, and reports several severe cases in which good results followed its use. Without regard to the condition of the bowels—unless previously much constipated—he begins with at least ten ounces of lime juice, increasing rapidly to eighteen or twenty-four per diem—from half an ounce to one ounce or more every hour, with not less than double or treble the quantity of cold water, usually diluted and sweetened to the patient's taste. He finds that even on the second day the amendment is decided, and the disease, in acute cases, more particularly sthenic or asthenic, generally subsides on the fourth or fifth day of treatment. He usually prescribes one grain of opium, with or without lead and tannin, night and morning, in order to restrain the bowels which the juice has a tendency to relax. The effects of this treatment are, he says, rapid diminution of joint swelling, diminished perspiration, steady fall of pulse, which often becomes quite slow, with a slight tendency to syncope, the majority of cases requiring quinine and supporting food about the sixth day. Such vigorous treatment should evidently be undertaken only under the supervision of a competent physician.

The Chinese Government Denouncing Opium.—An important and very stringent edict regarding the cultivation of the poppy appears in the Pekin *Gazette* of March 9th last. It is worthy of note that the largest number of victims and the earliest victims to the famine have been the opium smokers. The edict now issued speaks of the people as foolish, coveting wealth, and forgetful of the injury that is being done by the cultivation of the poppy instead of cereals, and it enacts that for the future the cultivation of the noxious drug must cease; disobedience thereto to be visited with severe punishment. This edict applies to the whole of China. The district magistrate of Tientsin has personally visited the opium-smoking resorts, and closed them all. Soldiers and officials are strictly prohibited from smoking, under heavy penalties.

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The Week.

No doubt the distracted mind of some poor bankrupt of this week has seen in the dark reports of war in Asia, of financial fears in England, of volcanic outhursts and earthqnakes on our own side of the Atlantic, emhlems too suggestive of the ruin that has fallen upon numherless victims. For the last day or so the popular imagination has heen inflamed. Men seeing their fortunes melting, have hurried to snatch at any rumor which could give them hope of revenge upon that invisihle oppressor who, they believe, had caused all their woe. Riots in Virginia City, the mine buildings on fire, bonanza kiugs bang'ng to the beams in the mills—these are pictures, which, absurd as they are this week, have heen gloated over in the minds of many men. Some will he taught wholesome lessons hy this fearful crash. Yet the stock of gulls is not exhausted, and in less than a year, nay, perhaps within a month, inflation will again be preparing for a feast of the barpies. Few realize the full extent of the evils of stock gamhling. A crisis like the present involves a whole community. The innocent suffer with the guilty. The fever pervades all classes. Bank accounts are overdrawn hy men supposed to be "good," "men who never speculate, who are slow but sure." They have been trusted often; they are trusted now. But suddenly a note comes due and is not paid. The hanker is surprised. His surprise yields place to distrust of all human nature when he finds that the why and wherefore of that numet note is "stocks." This is hut one example among millious even, of the hidden, insidious demoralization that creeps ahout society in the shape of paper certificates signed hy the Presideut and Secretary of a mining company.

THE National Yellow Fever Commission recommend a system of national quarantine, under the direction of the United States Government.

Defects of the Mining Law.

If editors and correspondents are voicing truely the opinions existing in the commnnities which they represent, there is growing dissatisfaction among miners regarding the present mining law. Some regard it as incomplete. A writer to the PRESS a short time ago suggested that if the owner of an unpatented claim has in ons year spent, say ten times as much in working the claim as the law requires he shall do in order to hold it, the law should provide that this amount be credited to him so that he need do no work for the next nine years. Others consider some of the workiugs of the law as too slow and costly. The Land Office, in its granting of mining patents, has becn designated as specially deserving of the name of Circumlocution Office. The cost of ohtainiug a mining patent compared with that for securing a title to agricultural land has heen objected to. A correspondent of the *Mining Record* lately figured up the cost at $1,250 odd. A farmer may obtain a homestead title to 160 acres by an expenditure not necessarily exceeding $100. The present law has heen considered unjust. The writer to the PRESS, ahove referred to, dwells upon the injustice and nselessness of refusing a patent to an alien who holds his claim hy right of lawful purchase from a legitimate locator. The presnt law is held to he, in some particulars, wanting in clearness. An M. E., writing to the *Mining and Engineering Journal*, says: "The law of 1872 gave definite surface lines, hut was chaotic and crude as to the right to the vein, so that it is a question of implication whether a vein may he followed along its strike to the full length of the claim, if it so far departs from its course as to cross the side lines of the claim." Among some minere there is said to he a seemingly ridiculous idea that the preseut law regarding the expenditure of $100 per year on an uupatented claim, requires that the lahor representing that expenditure he performed at the very beginning of the year; this latter heing construed so nicely as to mean 12 M. on New Year's eve. That would be a defect indeed—one which should be immediately remedied. All of this fault-fiuding looks for remedies which would teud to the improvements of the present law. But some have even glanced hackward and longed for the reinstatement of the old law of 1866, if not of the still older order of things when each company of miners made its own district regulations.

When we reflect that the first United States law relating to mineral lands was passed so recently as 1866, it appears that if the present law should have proved faultless it would have presented a pheuomenon unprecedented in the annals of legislative enactment. The history of mining law shows the same evolution that is discernible in the records of law relating to all subjects. First the miners made their own laws. These were thoroughly practical, as might be expected of all productions of that fearless, go-ahead class called pioneers aud prospectors. It has heen said hy a Congressman that the laws of the different mining districts, codified, might themselves have formed a good general law. In fact, the hill of 1866, while introducing the new feature of the United States granting mineral lands to her citizens, consisted in great part of a digest of those same mining district laws. Evolution marched on. Soon the law was found incomplete. The bill of 1866 referred to leads and veins. Meanwhile, placer mining had sprung into a great industry. The law had to be altered in 1870 to suit this increase in the mining field. The importance of having definite United States laws on mining was heginning to be noticeable. The increased security given to mining titles invited more and more to embark in the industry.

Evolution took another step forward. In 1872 a new hill was introduced in Congress. As Sargent said, when explaiuing the new move, "it was nothing new, it was only oiling the machinery of the old." It showed undoubted advancement compared with the previous laws. It reached in the direction of economy. The time for advertising before patenting a claim was redneed some 30 days. Disputes might he settled nearer the claim thau theretofore, thus saving mileage.

That was in 1872. The Senate Committee on Mines and Mining that year was a rather qneer one, considering the States from which the members came. There were Mississippi, Texas, Nehraska, Arkansas and Michigan represented. Altogether there were only seven, we believe. The gentleman who finally presented the hill to the Senate was the member from Mississippi. He called attention to the fact that he was from the only State in the Union which hoasted no share in the mining industry. He thought that his appointment to the duty of presenting the hill might have been a hint that it was about time that he should learn something about these things. The hill passed.

That was six years ago. During those six years the advancement in the mining industry has been almost incredihle. Different ores are worked, different formations have been encountered, the country is growing in population; and the wonder is, not that fault is to be found with the law of 1872, hut that the law of 1872 was not slashed up and amended four years ago, and again two yeare ago.

The miners themselves are the only ones who can discover defects. When thsy do so, they should make known their discoveries. Write to some neighboring publication. Let the defect go the rounds of the country. That is the shortest way to lead to their collection into tangible form. It is cheaper to do this than to leave it to expensive law-suits to call attention to the wants of the miner.

A Section of Geology and Mining.

On Monday evening, a regular meeting of the California Academy of Sciences was held, Vice-President Dr. H. W. Harkness, in the chair.

A specimen of the rock cod was presented by Mr. Harford, of the California Market. Several sections of trees from the Sierra Nevada, intended to illustrate the destroying agency or fungi, were presented hy Mr. Harkness, aud referred to hy him in his lecture on the subject.

Among the donations to the library was the first number of the first volume of the *American Quarterly Microscopical Journal*, edited hy Romyn Hitchcock, of New York, containing the transactions of the New York Microscopical Society. Also, the second number of the sixth volume of the Annals of the Scientific Society at Buenos Ayres—the first exchange from that Society.

It was announced that B. B. Redding had been elected to fill the vacancy in the Board of Trustees, occasioned by the death of D. D. Colton.

Alouzo Phelps and Ed. Parker were elected members of the Society.

W. N. Lockington read a paper on the fish to he found for sale in the markets of the city, giving particular attention to the rock cod, describing the numerous species and quality. Reference was also made to the king fish, now very rarely taken in the waters of the hay, and to the Jew and camel fish, found but seldom north of Point Concepcion.

Dr. H. W. Harkness read a paper on the "Fungi disease in the trees of the Sierra Nevada."

This paper will be published in full in the PRESS.

A Section of Geology, Mineralogy and Mining has heen formed in the Academy, and its organization was announced hy Prof. Le Conte.

Prof. Joseph Le Conte's Remarks.

I have heen requested to announce that, in accordance with au ordinance of the Constitution creating special Sections of the General Academy of Sciences, a few of us on Saturday a week ago organized into a Section of "*Geology, Mineralogy and Mining.*" We make this public announcement, because we do not wish any one to suppose that this thing is done in a corner, or that we wish to be in any sense exclusive. We wish, in fact, to attract ahout us, as a nucleus, all the really good scientific material in this department in the country.

The principle of creating such sections is ohvious and well known to you all. Many subjects are so special in their nature that they cannot be interesting to all scientific men alike, and they cannot be interesting in a general session of the Academy. And yet these very points are frequently the most important, and the most interesting to specialists. Of course, a special Section is the place for such. If there should come up in the Section any topic of general interest, of course it will be brought hefore the Academy as well as before the Section.

In the second place, the closer and more familiar association of kindred spirits in the Section, with the certainty of sympathetic interest even in the nicest special points, kindles a scientific enthusiasm, and stimulates the scientific activity of all. We are all dependent upon the sympathy of other persons for our scientific activity. For this reason, therefore, in all like societies it is necessary to have such Sections.

Now we hope, also, that the scientific activity which is thus etimulated within the various Sections, of which we have already two, will react in various directions npon the Academy at large, and inject new life and vigor in the whole body.

I said we wished to attract ahout us, as a nucleus, all the really good material in that special departmeut in the Academy. By this I mean not only pure scientists, hut also practical scientists. I am perfectly sure that the association of pure and practical science will he of the very highest benefit to hoth; for evidently the pure or ahstract ecientist finds on the other eide the materials upon which he works, and of course the presence and association with practical ecientific men gives purpose and hody and energy to his work. On the other hand there cannot he the slighest doubt that the association with pure or ahstract scientists will imhue practical men with the liheral spirit of pure science. Only lst them be endowed with the true epirit of science.

There is a common deeply-rooted prejudice in the popular mind, and it seems to be affecting even scientific men, on the one side, as well as practical men on the other, that there is a kind of antagonism hetween theory and practice.

Now so far from this heing the case, a true theory is indissoluhly connected with a true practice. There is an indissoluhle marriage hond hetween them. It is even closer than this: it has the relation of spirit and hody. Science is a complex web, woven warp and woof; the *warp* is ecientific theory, the *woof* is the material derived from nature. It is impossihle that one should exist apart from the other. Every intelligent human action, particularly of the complex kind, is uecessarily guided hy theory. And this is the true difference, in fact, hetween human activity and ordinary animal action. Hnman action is the most complex, and it is always guided hy theory. Ths only difference hetween good practice and bad practice is that one is guided hy good theory, and the other is guided hy false or bad theory. But all human action which pretends to hs intelligent or rational, is guided hy some theory, good or bad.

There is, I admit, a kind of theorizing, a spirit of theorizing, and a theoretical hahit of mind, which is destructive of good practical work. But it is equally destructive of true science also. I refer to that theorizing upon an nnsubstantial hasis, that theorizing merely for the sake of theorizing, and merely for the pleasure of the intellectual activity of theorizing—merely for the self-complacent contemplation of the heauty of the theories that we create out of our minds. In this case the whole web, woof and warp, is woven out of the human mind, without the material being furnished to it hy nature. It is like castle building in the air, nnsubstantial and resting upon a cloud; heautiful it may he to contemplate, hut rapidly disappearing hefore the sun. It is like spider's wehs, woven out of its own howels, hoth warp and woof; beautiful and intricats in its structure, and glittering with the dew in the early morning, hut quickly hrushed away from the path of progress. But as I have said, this kind of theorizing is equally as fatal to true science as it is to practical work.

This kind of theorizing is what we would call speculation. Now, speculation bears the same relation to true theorizing in the world of science, which speculatiou hears to legitimate enterprise in business. As speculation in the field of business is prostrating to true enterprise, and through it prostrating to the true prosperity of the community, even so speculation in the realm of science is destructive to true theorizing, and therefore destructive to real practical work.

But as enterprise is the basis upon which all legitimate industry rests, and must inevitahly rest, and the whole prosperity of society must also rest with it, even so it is upon sound cautious inductive theorizing that the whole progress of science and also of sound practical work is hased. Science is the open foe of speculation in hoth fields. Science is the fast friend of legitimate enterprise and legitimate industry, also in hoth fields.

I repeat then that we announce thie fact of the organization of the Geological Section, hoping to attract ahout us as a nucleus, and hy a process of rational scientific selection, all the good scientific material in that department in the Academy, and we hope for the hest results, not only to the Geological Section, but also for the Academy of Sciences, and finally for the oommunity itself.

The conclusion of Prof. Le Conte's remarks were greeted with hearty applause.

J. S. Phillips' Theory for Mountain Formations.

In the 1871 and 1873 editions of the "Explorers', Miners', and Metallurgists' Companion," Mr. Phillips favors a gradual cooling of the earth, and reasons thus:

1. The surface is colder than the interior.

2. The hotter interior is cooling and contracting faster than the surface shell.

3. Gravitation aids contraction.

4. The solid surface crust cannot follow the faster contracting interior without lessening the length of its circumferential lines, or area, hy lateral crushing and thickening, at places.

5. The valleys, plains, and ocean beds have thus settled or sunk faster than the mountainous parts, which hy loitering only appear to he thus elevated. Volcanic action is excepted.

6. This astonnding side pressure has produced sufficient heat for local plasticity and metamorphism of the rocks, and for aiding and sustaining volcanic action.

7. Unequal speed of shrinkage of spherical sections in contact must, under great compressions, produce violent jarring with much friction and local heat, which sometimes accounts for earthqnakes hy the lateral ruhhing of the interior heneath the outer shell when crushing and thickeuing subterranean mountains, etc.

8. The settling of the outlying plaine by gravitation and earthquakes has heen the chief cause for the fracture of veine.

In his third edition, which is now passing through the press, he has added several other ideas on this subject which will ehortly appear.

A great similarity of ideas will be observed hy comparing the above with those of Prof. Le Conte, given in our last week's issue, as taken from his recent work on geology, published in 1878.

SECRETARY SCHURZ will call for an explanation from General Sheridan in regard to his charges against the management of the Indian Bureau.

THE Commercial Convention meets at New Orleans Decemher 3d, for which complete preparations have heen made.

RAILROAD collision in South Wales. Killed, 12; injured, 50.

Artesian Wells.—No. 7.

Drilling Tools

Fig. 2 represents a wedge-bit. This bit weighs 100 pounds, and contains 40 pounds of English cast-steel. When it is used, a reamer (Fig. 3) must be employed to keep the hole round and straight. A Z-bit serves the purpose of both drill and reamer. Fig. 4 shows a sand-pump.

Fig. 5 represents at work an improved well-drilling and prospecting machine. The derrick ordinarily used is supplanted by a mast and frame, as shown. The drill is attached to a rope. A 1¼-inch hawser-laid rope is used in boring to a depth of about 200 feet. Wire cable, ⅝-inch or ¾-inch, may be used for greater depths. The sand-pump requires only ½-inch rope. The rope passes up from the hole over a pulley at the top of the mast, reaches down to and passes under the sheave on the inclined lever, shown as a diagonal of frame. From the sheave, the rope passes under a roller at the foot of the mast, and then up over the large drum or rope-spool. The revolution of this spool controls the lowering and raising of the drill. When the latter is to be lowered, the operator jerks the rope, which, in the figure, is shown as held in the right hand. The jerk pulls away the pall from the ratchet-wheel, and allows the latter to revolve as many notches as the operator wishes. This wheel in turn controls the spool, which unwinds the rope when the ratchet is free. The churning motion of the drill is given by the raising and lowering of the inclined lever. The lever acts exactly as a big treadle, on a grindstone for instance, the revolving arm taking the place of the foot of the grinder. To draw the drill up, remove the rope-clamp the left hand is shown as holding, move a slide on the left side of the machine (not shown in the cut) with the foot, and the lever latch will hold the lever down. Then, with the left hand, placed on the small lever (just below the elbow of the left arm); throw the clutch in gear, thus connecting the rope-spool by cog-wheels with the axle on which the revolving arm on the right turns. This axle, continuing to turn the spool or drum, winds up the rope. The sand-pump rope is shown at the small pulley, half way up the mast. It passes down and is wound upon a reel, shown near the center of the frame. This reel is revolved by a friction belt, which is controlled by the treadle lever, shown near the left foot of the operator.

The power to run the whole machine is furnished by one or two horses. The horse-power is connected with the machine by means of a tumbling-rod, as shown. It is said that two horses and one man are all that are needed to do all the work; and the operator need not leave his seat, except to empty the sand-pump, and to unscrew or to remove the drill-bit, etc. These changes can be made without stopping the horses.

The portability of the machine is greatly added to by the hinge, shown about five feet up the mast, which allows of the latter's being folded down upon the frame.

Directions for Starting the Drill.

The following directions for using this machine contain much practical information applicable to boring with any apparatus. Start the drill slowly and carefully. A man or boy must stand at the drill to turn it around a little each time it is raised, so the drill will not strike twice in the same position. Before starting, be sure that the bit and rods are tightly screwed together by means of a wooden lever inserted between the handles of the wrenches. This is a very important point and should not be neglected. Drill with a tight rope; do not let out too fast, but drill on what is called "the spring of the rope;" otherwise, the hole will not be straight. Keep three feet of water in the hole, all the time, while drilling. In many cases it is not necessary to pour water in the hole after sinking 20 or 30 feet, as some water is often found at that depth. As soon as the drill has worked down 20 or 24 inches, let the lever latch slip, which will stop and hold the main lever down, which stops the churning motion of the drill; then throw the clutch in gear and draw the drill out; then put in the sand-pump and churn it up and down by hand four or six inches about 25 times, when it will be filled with the chippings of rocks, bear down on the friction belt lever and raise the sand-pump out, empty it (see, each time, that the leather valve at bottom of sand-pump is clear of all small pieces of rock or mud), repeat this operation five or six times or until all the hole is cleared of the chippings or other sediment, then lower the drill down to within 18 inches of the bottom of the hole. Push the lever latch back and drill down 20 inches farther as before. Don't stop until 10, 20 or 30 feet of water is found, or until it flows above the surface, if you want a flowing well. The drilling can be continued just as well, if there is 100 or 200 feet of water in the well.

FIG. 1. MACHINE FOR BORING TEST HOLES.

Fig. 2. Drill.

Fig. 3. Reamer.

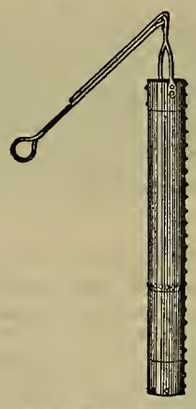

Fig. 4. Sand Pump.

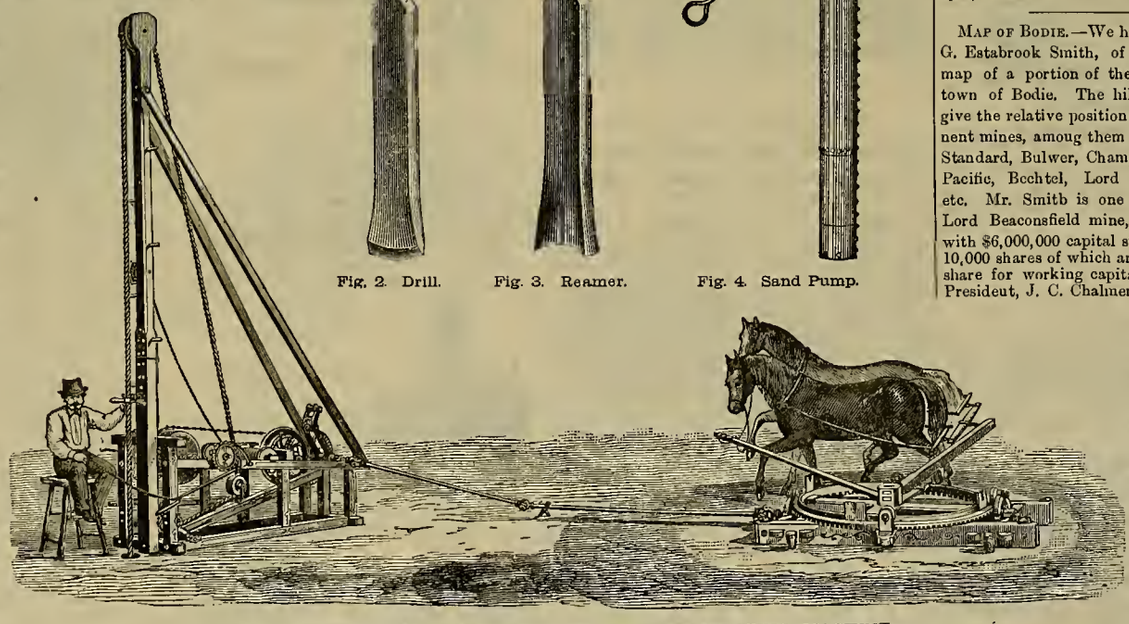

FIG. 5. IMPROVED WELL DRILLING AND PROSPECTING MACHINE.

Fig. 1 represents a drilling machine as used for sinking test holes for minerals, or for boring wells. As the large disk or wheel is rotated, the steel arm connecting it with the drill-rod is carried upward. The arm in being raised, clamps the drill-rod, and carries the latter up with it. As the arm passes over the center of the disk it turns the drill-rod one-fifth of a revolution. When the arm is directly over the shaft on which the large disk revolves, the arm is released, and the drill-rod and arm fall together. In falling, the arm ceases to clamp the rod which falls freely, allowing the drill to strike a full blow. The drill can be made to strike 50 or 60 times per minute. The disk or wheel represented in the figure is 28 inches in diameter, and the slot made so that the drill is raised 14 inches every revolution. The drill is raised from a deep hole by placing the ring or arm H, at the dotted line, to catch and hold the drill as it is being raised, by the same motion that is used in drilling. The poles of tripod should be 25 feet long, of common rough poles. They are used to rest the drill-rods against after they are drawn up and unscrewed. This saves the trouble of laying them down on the ground and raising them up again. J is two gas-pipe drill-rods 15 feet long, screwed together in the middle. The screw couplings welded in each end are steel. I is a sand-pump.

The tools represented by the foregoing cuts have been patented, and the cuts are copyrighted, by Charles D. Pierce, manager of the Pierce Well-Excavator Company, 4206 Elm Avenue, Philadelphia, Pa.

It is expected that an agent will soon be on this coast, introducing the machinery illustrated in the last two articles.

Rate of Boring.

Under this head nothing can be better than to quote an extract made by Spon* from Andre:

"There are probably no engineering operations in which the rate of progress is so variable as it is in that of boring. That such must necessarily be the case, will be obvious when we bear in mind that the strata composing the earth's crust consist of very different materials; that these materials are mingled in very different proportions, and that they have in different parts been subjected to the action of very different agencies, operating with very different degrees of intensity. Hence it arises, not only that some kinds of rock require a much longer time to bore through than others, but also that the length of time may change within a short horizontal distance. Thus it is utterly impossible to predicate concerning the length of time which a boring in an unknown district may occupy, and only a rough approximation can be arrived at in the case of localities whose geological constitution has been generally determined. Such an approximation may, however, be attained to, and it is useful in estimating the probable cost; and to attain the same end, for unknown localities, an average may be taken of the time required in districts of a similar geological character. The following, which are given for this purpose, are the averages of a great number of borings, executed under various conditions by the ordinary methods. The progress indicated represents that made in one day of 11 hours:

"1. Tertiary and cretaceous strata, to a depth of 100 yards, average progress 1 ft. 8 in.

"2. Cretaceous strata, without flints, to a depth of 250 yards—2 ft. 1 in.

"3. Cretaceous strata with flints, 250 yards—1 ft. 4 in.

"4. New red sandstone, 250 yards—1 ft. 10 in.

"5. New red sandstone, 500 yards—1 ft. 5 in.

"6. Permian strata, 250 yards—2 ft.

"7. Coal measures, 200 yards—2 ft. 3 in.

"8. Coal measures, 400 yards—1 ft. 8 in.

"General average, 275 yards; progress, 1 ft. 9 in.

"Should hard limestone or igneous rock be met with, the rate of progress may be less than half the above general average."

These calculations may be of little service in an entirely new country, but they may serve to impress upon the minds of those engaged in boring, the importance of keeping accurate accounts of the wells bored. The data so gathered may prove of inestimable value to practical well borers, as well as to geologists.

We have made inquiries as to the charges for boring, made by contractors. Their charges are so irregular, that any attempt at general calculation would be utterly futile.

We call special attention to the most complete article on "Artesian Wells in Stanislaus County," published in another column."

*The Practice of Sinking and Boring Wells. Ernest Spon, London.

MAP OF BODIE.—We have received from Mr. G. Estabrook Smith, of Bodie, a litbographic map of a portion of the Bodie mines and the town of Bodie. The hills are shown so as to give the relative position of the various prominent mines, among them the Bodie, Belvidere, Standard, Bulwer, Champion, Enterprise, Con. Pacific, Bechtel, Lord Beaconsfield, Croesus, etc. Mr. Smith is one of the owners of the Lord Beaconsfield mine, recently incorporated with $6,000,000 capital stock, in 60,000 shares, 10,000 shares of which are being sold at $1 per share for working capital. John D. Barry is President, J. C. Chalmers Vice-President, and F. E. Leety Secretary. They are down on the mine, Mr. Smith informs us, about 100 feet, with good prospects in the drift. Some of those interested were formerly in the Standard and Belvidere. This company sunk the shaft themselves. The mine is on the south side of Bodie bluff, 300 feet below the Bechtel, on the opposite side from the Bodie. The ledge has been struck in the bottom of the shaft, and Mr. Smith feels certain now of developing a first-class mine.

THE Tuscarora *Times-Review* says that bullion valued at more than $975,000, has been shipped from Tuscarora this year, up to the first of November.

AN average of 500 cords of wood is consumed each month at the Silver Hill mine. The wood costs $9 per cord.

Mining and Scientific Press Patent Agency.

Our U. S. and Foreign Patent Agency presents many and important advantages as a Home Agency over all others, by reason of long establishment, great experience, thorough system and intimate acquaintance with the subjects of inventions in our new community. All worthy inventions patented through our Agency will have the benefit of a description or an illustration and explanation in the MINING AND SCIENTIFIC PRESS or the PACIFIC RURAL PRESS. We transact every branch of Patent business, and obtain Patents in all civilized countries. The large majority of U. S. and Foreign Patents granted to inventors on the Pacific Coast have been obained through our Agency. The files of cases and official records in our office, our patent law and scientific library (already the lar gest west of the Mississippi), are constantly increasing. These facilities, with the accumulation of information of special importance to our home inventors, by the experience of its proprietors in an extensive and long continued personal practice, gives them combined advantages greater than any other agents can possibly offer to Pacific Coast inventors. Circulars of advice, free.

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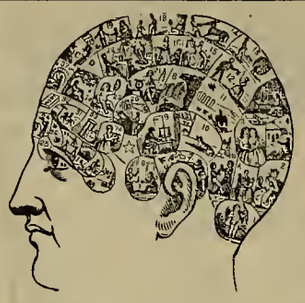
Mineral Land Laws, Revised Statutes,
AND INSTRUCTIONS AND FORMS UNDER THE SAME.

We have just issued a pamphlet containing the General Mineral Land Laws of the United States, with instructions of the Commissioner of the Land Office. The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions by the Commissioner of the Land Office; Mining Statute of July 26th, 1866; Mining Statute of July 9th, 1870. Forms required under Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Surveys; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Registers' Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or absence of Mining Records; Affidavit of Citizenship; Certificate that no Suits is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold, postfree, for 50 cents. It should be in the hands of every one having any mining interests. DEWEY & CO.,
Publishers of the MINING AND SCIENTIFIC PRESS, S.

Pocket Map of California and Nevada.

Compiled from the latest authentic sources, by Chas. Drayton Gibbs, C. E. This map comprises information obtained from the U. S. Coast and Land, Whitney's State Geological, and Railroad Surveys; and from the results of explorations made by R. S. Williamson, U. S. A., Henry Degroot, C. D. Gibbs and others. The scale is 18 miles to 1 inch. It gives the Judicial and U. S. Land Districts. It distinguishes the Townships and their subdivisions; the County Seats; The Military Posts; the Railroads built and proposed, and the limits of some of them; the occurrence of gold, silver, copper, quicksilver, tin, coal and oil. It has a section showing the lights of the principal mountains. The boundaries are clear and unmistakable, and the print good. 1878. Sold by DEWEY & CO. Price, postpaid, $2; to subscribers of this journal, until further notice, $1.



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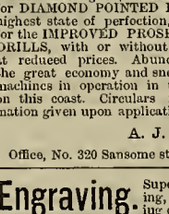

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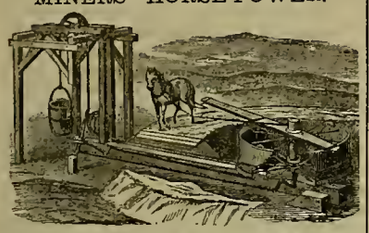

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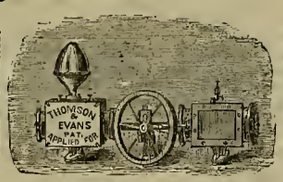

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Continued from page 325.

ths other in a southerly courss. The south drift has been gradually curved to ths westward until at a distance of 25 feet west of ths station it has cut into tbe ore vein at very nearly right angles to its course. Up to this morning at 6 o'clock the bottom of the drift had penetrated the ore vein a distance of seven and a half feet, the whole face heing in ore. The ors at ths top of the face of the drift next to ths cap rock assays $15 to $25 per ton, and then gradually increases in richness until the last three feet at the hottom averages from $100 to $500 and $600 per ton, and will probahly mill $150 to $200 per ton. What lies heyond that no one can tell, hut this much cannot only he attested by the writer of this articls, hut hy dozens of the best experts and judgss of ore on the Comstock, who have visited the mines since yesterday morning. At the 2100 level west crosscut has penetrated the cap-rock and is just entering the ore vein with every prospect of encountering tbe same rich vein of ore in the next thres to five feet. The ore in the face of this drift this morning assayed from $20 to $140 per ton. The ore prospects of the mine eo far as a fair and unhiased, honest expression of the judgment of the hest mining judges of Comstock can he ohtained is all that it has been represented herctoforc, and there hardly remains a douht of the development of a large hody of rich paying ore when the crosscut shall have been advanced. Sinking the perpendicular winze helow the 1700 level is making the usual fair rate of progress.

Leviathan.—Ou the 750 level the north drift is still driviug ahead in the foot wall of the ore vein, and passing through occasional feeders of low grade ore. Nothing new in the south drift, same level.

California.—Daily yield of ore, 315 tons. There is no change of interest in any of the ore-producing sections of the mine. The north drift on the ore streak on the 1950 level still continues in good ore, although the vein is very narrow and so far does not show much of a disposition to widen.

Con. Virginia.—The main south drift on the 1950 level is making good progress, the face in veiu matter of a fine, favorahle character. There are no changes of interest to report of either of the crosscuts on this level. Crosscut No. 2 and the maiu southwest drift ou the 1500 level are being steadily advauced without change of value to note. The east drift on the 1400 level is making good progress, and is now in 277 feet.

Ophir.—The main incline has now reached the 2200 level, at which point a station is heing opened. The north drift on the 2000 level is steadily advancing, the face in the eame favorahle character of ore.

Bullion.—Sinking the main incline helow the 2050 level is making good progress, the hottom still in a fiue character of quartz and vein matter. An east drift has been started on the 2050 level to cut and prospect the vein at tbat point.

North Bonanza and Flowery.—The development in the crosscut east from the upper tunnel is still improving with every foot advanced towards the hanging wall of the ledge. The last hlast put in threw out richer ore than ever, aud the east clay is still a hundred feet or more away.

Utah.—Sinking the main incline helow the 1350 level is going steadily forward, the hottom in good hlasting ground.

Solid Siver.—Drifting west from the winze sunk helow the tunnel level is being actively prosccuted. It is expected to reach the great west ore vein in 30 or 40 feet further.

Gould & Curry.—In a day or two more it is the inteution to start up crosscut No. 3 on this level on tbe Beet & Belcher south line.

North Con. Virginia.—Sinking the main shaft is heing pushed ahead with all the speed possible, the bottom in good blasting rock and the flow of water light.

Belcher.—Sinking the north incline shaft is making good progress. The main south drift on the 2360 level is being pushed vigorously forward, the face still following the weet wall of the ore vein. Two prospecting drifts, one on the 900 and the other on the 1500 level, are now being run to prove some unexplored ground to the eastward.

Julia Con.—The completion of the drain in the south drift on the 2000 level is heing forwarded with all the dispatch possihle. The heat is already greatly reduced through this means. This will permit of much greater speed in the progress of the drift.

Union Con.—The north drift on the 1600 level will soon he advanced to prospect what appears to be a veritable quartz vein lying across its course.

Mexican.—Sinking the joint Union Con. winze is making steady progress, the bottom in hard hlasting ground.

Justice.—The ore stopes on the 1225 and 1300 levels are looking well and yielding good ore. There are now about 1200 tons of ore in the dump ready to haul to the mill. The Papoose mill is running on ore from the mine and is crushing at the rate of 600 tons per month. The prospecting drifts and winzes are all making good headway without auy change of value to note.

Ward.—The east drift on the 800 level is steadily advancing, the face in ground of favorable character.

Savage.—There is no material change in any of the prospecting drifts or crosscuts on the 2000 level.

Sutro Tunnel.—Ths south lateral branch, toward ths Julia shaft, is steadily advancing.

Trojan.—Ths ors stopes on the second station level are looking well and yielding good ore. The northeast drift on the third station level is in 358 feet, the face in ore that assays an average of $15 per ton.

Succor.—Ths prospecting drifts on the 1050 level are making good progress, with vary favorahle ore prospects.

Morning Star.—Ths face of the ore-vein has been reached, and preparations ars heing made to sink a winze on the ore in the tunnel.

Crown Point.—No change of valus to record.

Alta.—Sinking the winzs helow the 1450 level is making steady progress, the hottom in ore of a fine quality. The ore in the north drift on the 1550 level continues to show a steady and favorahle improvement.

Golden Standard.—Good progress is being made in sinking ths east shaft. The surface grading is completsd, and the construction of a temporary huilding, for winter, will he next in order.

Exchequer.—Work was resumed in tbe face of the Exchequer ground this morning.

Chollar-Combination Shaft.—Everything will he in readinese to begin the pumping of water at no very distant day.

Benton Con.—On the 1250 level a fine hody of quartz carrying some good ore, has been developed.

New York.—No change of value to record.

Con. Superior.—The main tunnel is heiug steadily advanced.

Atlantic Con.—The shaft must soon reach the main ore vein.

Con. Imperial.—Sinking the south winze helow the 2400 level makes good headway, the hottom still in favorahle quartz carrying streaks of low-grade ore.

Caledonia.—The east crosscut on the 1600 level has heen steadily advanced during the week, the face in hard, shelly rock, the eeams of which are highly charged with bad air, whicb has created some trouhle. The north crosscut is being gradually driven ahead, the face in quartz and porphyry.

Hale & Norcross.—The east drift on the 2000 level is heing advanced rapidly.

Yellow Jacket.—The south drift on the 2400 level is heing pushed ahead, face in ledge porphyry with streaks of quartz.

Kentuck.—A considerable quantity of ore which will mill from $20 to $25 per ton is heing taken out of the drifts and workings of the old upper levels. A good streak or two of ore has heen encountered on the 800 level and an upraise started to prove their value.

Silver Hill.—Cutting out for the 1100 station is making good progress. The south drift on the 900 level is steadily advancing, the face in favorahle vein material.

ARIZONA.

Globe District.—*Silver Belt*, Nov. 7: The outlook for the McMillen lode at the present time is certainly hrilliant. The Stonewall Jackson, in their main shaft, at a depth of 170 feet, have struck a four-foot vein of $2,000 ore. The ore is chloride, silver glance, native eilver and sulphuret. The Julius and Chloride mines are included in the purchase made hy A. C. Hesing, of Hayes & Buck. Mr. H. has gone to Chicago to make arrangements for developing the property. Mr. P. McGorrish reports some good miues in tbe Dragoon and Chiricahui mountains, hut the country is not thoroughly prospected. The main working shaft of the Hannihal is down 160 feet. The crosscut from that level to the foot-wall, at which all the rich ore of the McMillen is found, is expected to show up well. We learn that a good hody of ore has been struck in the Gorman shaft, on the north end of the Hannihal mine, at a depth of 100 feet. Its extent has not yet been determined, but so far as prospected it looks most eucouraging. The ore is a silver glance and assays $1,000 per ton. The Stonewall S. M. Co. have, at the depth of 30 fect, struck a vein in the Florence mine of one foot in width. The mine wae regarded as valueless and no attention paid to it until now. It is a distinct lode from the Stonewall. The supposition is that the company will now develop it. We understand that A. C. Hesing, of Chicago, intends to introduce the lixiviation process, now so generally adopted in Europe and elsewhere, for the reduction of oree.

Items.—The Golden Star mill, Cave creek, has started up with good prospects. Hon. C. C. Bean has gone to San Francisco to procure a roaster for the Aztlan mill, and a mill for the Davis mine. Three feet of solid, rich chloride ore has been struck in the 300 level, main incline of the Tiptop. Ahout seven mines of the Oro Blanco district have recently heen sold to Eastern capitalists. The pulp assay from the Tiptop battery has heen averaging for tho past three months from $200 to $220 per ton. Prospects in Humhug district are described as "flattering heyond description." Great activity prevails at the Arivaca. The Oro Bonito will have a quartz mill running within 40 daye. The Tiger, Oro Bonito, California, Benton, Cougar and Loreno, of Bradshaw, have heen heard from, and the newe is cheerful.

COLORADO.

Items.—It is estimated that through the entire length of 500 feet of levels and crosscuts of the Little Chief mine, Leadville, the ore hody averages 10 feet in thickness; 150 ounces silver to the ton. The output is regularly ahout 25 tons every 24 hours; has run as high as 40 tons. In the lower workings of the Adelaide, a vein has bsen uncovered which yields 560 ounces silver, nine ounces gold and 40% in lead per ton. The last run of ore from the drift on the 60 level of the Vulcan mine, Clear Creek county, yielded 341 ounces for first-class and 162 ounces for second-class. The ore hody is large. The last run on Hurst & Albright's ore, from Frosthurg lode, gave 213 ounces silver per ton. The latest important Leadville discovery, the Chrysolite, shows 26 fest of high-grade ore. Tooker has honded his intsrest in the Duncan lode, Lsadville, to G. W. France, in the sum of $4,000. A recent shipment from the Ready Cash mine, Leadvills, owned hy Tucker & Honx, gave a mill return of over 300 ounces in silver and 11 ounces of gold per ton, ths quantity hrought down heing 5,111 pounds. This ore was taken from the mine while sinking a shaft 12 feet on the vein upon which ths mine is located. The Devlin mine, Leadville, owned hy John Devlin, McMillen Bros. and Frank McGuire, has bssn bonded for the sum of $65,000.

IDAHO.

Atlanta. — *Statesman*, Nov. 14: Mining prospects are reported as decidedly brightening. The Monarch company are taking out first-rate ore from their main level. The Buffalo mill has an engagement to crush 500 tons of this the coming winter. The ore is now heing hauled to the mill. The Buffalo company's hoisting works are a splendid euccess. The main shaft will soon be down 300 feet below the level where the hoisting works are erected. When this point is reached a crosscut will he run to strike the ore-hody. Mr. R. B. Brown has purchased an interest in the principal mine in the Queen's river district, 10 miles north of Atlanta, for which he has paid $10,000, and he has now a force of 10 men at work on the mine.

A Curious Mine.—*World*, Nov. 12: The Toronto mine, near Bonauza City, is a curiosity worth seeing. There is a ledge of yellow porphyry two and a half or three feet wide, but it does not contain a particle of quartz except in one place. The discoverere noticed on the ledge a round hatch of quartz about the size of the crown of a man's hat, and on examination found that it was exceedingly rich in gold. Work was immediately commenced to develop the mine. It has the appearance of a badger hole being filled with quartz, which some supposed it to he when first discovered. The owners have followed down on this hole a depth of 40 feet and the rock contiuues rich. It goes down with the dip of the porphyry vein, but does not dip towards either end of the vein. At the lowest depth attained it has widened to a foot and a half in diameter. One run of 2,800 pounds of ore yielded $2,800. The most astonishing feature is that in the porphyry vein there is not a color of either gold or eilver. The quartz is decomposed aud filled with fine pebbles. The opening is lined with a sheet of quartz about one-eighth of an inch in thickness, the inner surface of whicb ie yellow with gold ; with tbe exception of this tbe lining does not contain a color.

UTAH.

Bingham's Pyrites Belt.—Salt Lake *Tribune:* The shaft on the Mayflower mine, at Bingham, is now down helow any of the gulches in the vicinity, yet no water has heen encountered. This is remarkable, as the shaft is quite a depth in pyritee of iron of the rankest kiud, and up to this, wherever in West Mountain district, water was struck, pyrites invariahly made its appearance. This was the case in the Winnamuck mine, for while einking the new working shaft, the workmen were driven out hy water. The company, for some reason, sold the hoisting machinery to the Ontario, and abandoned the project of sinking after expending thousands of dollars in erecting huildings, pumps, etc. The Utah mine, Last Chance, Grecian Bend and the Old Telegraph group, the Ashland, Neptune and Kempton—in fact, every mine in Bingham shows that water and pyrites go together. That the Mayflower miners will succeed in einking through the iron helt without encountering water, is douhtful.

Tuscarora Ore.—*Tribune*, Nov. 17: Ore from the Revenue mine sampled in Salt Lake city as follows: First-class, $1,266; second, $611. There is a vein of two feet of the former and four and a half feet of tbe second-class, while there ie a third vein 20 feet wide assaying $200 to the ton. He finds an excellent market in Salt Lake for hie ores, and will ship the product of the Revenue here. Tuscarora, which met with some reverses last spring is again on the road to prosperity.

Stewart Mine Started.—*Tribune*, Nov. 12: Operations at the Stewart mine and mill in Bingham have commenced in earnest. The mill was started up with ten stamps on Friday on gold ore, and is now working most heautifully. The other ten etamps will he started in a few daye. The expense of mining and milling the ore is ahout $5.50 per ton while only ten stamps are being run, hut when the full battery is started the expense will not exceed $3.50, and the ore will average about $15. The owners of this mine are Gilmore & Salisbury.

Items.—It is underetood that Alex. Majors holds a six months' hond on the Big Bonanza mine of Beaver county, for $5,000,000, which amount has heen deposited. The Ely mill—formerly the Shoehridge—in Tintic, has etarted up with 10 stamps on custom ores. The *Tribune* says that if the sale of the Horn Silver mine takes place, it will be the most important mining sale which has occurred on the Pacific coast since the days of the negotiation of the Emma.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[Faom Official Rsports for tha Mining and Scientific Press, DEWEY & CO., Publishsrs and U. S. and Foreign Patent Agents.]

By Special Dispatch from Washington. D. C.

For the Wsek Ending Novsmbsr 5th, 1878.

Car Axls Boxss—Robert C. Brown, Portland, Ogn.
Pruning Implsments—Wm. R. Rose, Olennville, Cal.
Couplings for Hydrant Suctions—James Stoddard, S. F.
Bullet Machinss—Samuel L. Loomis, San Jose, Cal.
Rotary Ors-Stamps—Dock E. W. Taylor, San Bernardino, Cal.
Hydraulic Mining Apparatus—George W. Cranston, S. F.
Liquid Freezsrs—William H. Mansfield, S F.
Rolls for Reducing old Iron Railway-Rails—Burroughs P. Brunner, S. F.

Notices of Recent Patents.

Among the patents rscently obtained through Dewey & Co.'s Scientific Press American and Foreign Patent Agency, the following are worthy of special mention:

Rotary Stamp Mill.—Dock E. W. Taylor, San Bernardino.—Dated, Oct. 5th. We described and illustrated this invention in our issue of March 30th, 1878. In hricf, it consists in the employment of a series of stamps of peculiar construction, fitted so as to project radially from the perimeter of a drum or pulley of snitahle size, which is mounted on an axis so as to he rotated hy any power. Below this drum is placed the mortar into which the stamps are allowed to drop. The stamp-stems are provided at tbeir inner ends with tappets which move upon and are supported hy a curved flange adjustably fixed to the frame, so that the stamps will he held up until the point is reached, when they are required to drop. After tbe hlow has heen given tho tappets are secured on a curved incline, in the shape of a cam, and as the drum revolves, this incline brings the stampe gradually towards the center again, eo that when they have reached the top, the tappet is ready to be transformed to the other flange without jar or noise. The invention also contemplates an improved method of guiding and steadying the stamp-etems, for adjusting the guides and boxes, and a means for regulating the parts to accomodate the wear of the stamps. It also relates to an improved method of securing tho screene and otber details.

Hydraulic Mining Apparatus.—Geo. W. Cranston, S. F.—Dated, Oct. 5th. Tbis invention relates to certain improvements in the hydraulic mining apparatus patented hy the same inventor Dec. 12th, 1876, and which we described in the Press of Jan. 13th, 1877. In the former patent we described the pipe conductor, through which the earthy matter was forced hy the hydraulic stream, as having an enlarged chamher formed in it directly in front of the hydraulic nozzle. It is found by experience that this chamber must be larger or smaller according to the nozzle employed and the quantity of water delivered to it. When a sufficient head of water can he ohtained in the winter season, a large nozzle is used and the machine run to its full capacity; hut when the supply of water decreases in the summer a smaller nozzle must he used and the chamher in the conducting pipe decreased accordingly. To avoid the necessity of removing the nozzle section of the conducting pipe and eubstituting one with a smaller chamber, when this contingency does occur, Mr. Cranston has devised a simple arrangement for filling a section of the chamher space. In connection with thie improved hydraulic current elevator and mining sluice, he has also arranged a waste way hy means of which he oan draw off from the flnme or sluice a portion of the water after it has been utilized for raieing the tailings or earthy matter, and conduct it back into the tail of the machine where it can he re-used as a diluent for the new matter which enters the conductor pipe. In operating this machine it is also employed ae an amalgamator, hy introducing quicksilver into the auriferous material at the tail of the machine, eo that the action of the current as it forces the material up through the elevator pipe or conductor with the free metallic particles, and amalgamation will result. In connection with this amalgamating process, an open grating or undercurrent is conetructed in the hottom of the flume at the upper end of the elevator, so as to withdraw the heavier portions of the material and quicksilver after it has once passed through the elevator, and hy means of a side sluice conduct it hack into the tail of the machine so it will he subjected repeatedly to the amalgamating powers. Mr. Cranston's device is intended for use in mines where there is not fall enough to carry off the dehrie hy natural grade.

Pruning Implement.—Wm. R. Rose, Glenville, Kern county, Cal.—Dated, Oct. 5th. The invention relates to that class of pruners in which several devices are combined in one implement. It consists in joining together two curved and peculiarly shaped handles so as to form a pair of ebears with a curved edge, also for chopping or pruning; a serrated edge to form a saw, and a projection which answers as a chisel for grafting purposes, all combined in one implement.

News in Brief.

A CASE of small pox at San Francisco.

A RIOT in Mount Sterling, Ky., Nov. 18th.

THE Macedonian insurrection is spreading.

LUMBER sells at $75 per thonsand in Bodie.

A HEAVY earthquake in Columbia, is reported.

THE innndation has closed many shops of Rome.

MORE of the Moilie Maguires are to be executed.

THE Britishers don't like Beaconfield's mystorious policy.

OREGON exports avorago about $100 for each inhsbitant.

Two Central Amorican volcanoes aro in tremendous activity.

THE depression in the cotten trade is stopping many English mills.

A GOLD mine has beon discovered about six leagues from Lima.

DR. F. A. MCDOUGALL, Mayor of Los Angeles, died Nov. 16th.

THE Colombian government has estahlished a department of agriculture.

GRASSHOPPERS have done most fearful work in the crops of a valley of New Granada.

GEN. FREMONT thinks that the Arizona Indians should be controlled by the military.

DEPRESSION in the iron trade is throwing many English lahorers out of employment.

NEARLY the whole valley along the Northern Pacific railroad is a continuous wheat-field.

THE Uuited States Governmeut has hought £1,100,000 sterling exchange to pay the Halifax award.

GENERAL reports of the Hayden-Powell survey give the results of the work as very satisfactory.

ON Nov. 17th a cook attempted with a poniard to assassinate the King of Italy as he entered Naples.

FRESH attractions aro constantly added to Woodward's Gardens, among which is Prof. Gruber's great educator, the Zoographicon. Each department increases daily, and the Pavilion performances are more popular than ever. All new novelties find a place at this wouderful resort. Prices remain as usual.

EXAMINE the accelerative enlowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.04. Lewis C. Grover, President; L Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

F. W. FULLER has had over 10 years experience in fine mechanical work. Inventors will find him able to make the finest models and experimental machinery on the coast. Electrical work a specialty at his shop, No. 415 Market street. His advertisement appears in this paper.

MODEL MAKER AND MACHINIST.—I. A. Heald, No 514 Commercial St., San Francisco, (fourth floor).

GENERAL MERCHANDISE.

[WHOLESALE.]

WEDNESDAY M., November 20, 1878.

BAGS—Jobbing.

Eng Standard Wheat..14½(@14½
Cal. Manufacture.
Hand Sewed, 22x36.. —@—
24x36..... —@—
23x40..... 15½@—
Machine Swd, 22x36.14½@—
Flour Sacks, halves.... 9 @10½
Quarters..... 5½@ 7
Eighths..... 4½@ 4½
Hessian, 60 inch..... —@—
45 inch..... —@—
40 inch..... —@—
Wool Sacks,
Hand Sewed, 3½ lb..47½@50
4 lb do..... 52½@—
Machine Sewed..... 50 @—
Standard Gunnies....13½@14
Bean Bags..... 8 @ 9

CANDLES.

Crystal Wax..... 17 @—
Eagle..... 12 @—
Patent Sperm..... 30@—

CANNED GOODS.

Assorted Pie Fruits,
2½ lb cans..... 2 25 @2 50
Table do..... 3 00 @3 25
Jams and Jellies..3 50 @3 75
Pickles, hf gal.....3 25 @ —
Sarkin, or box..1 67½@1 90
Hf Boxes.....2 50 @2 75
Preserved Beef,
2 lb. doz..... 4 00 @ —
do Beef, 4 lb.doz.6 50 @ —
Preserved Mutton,
2 lb. doz..... 4 50 @ —
Beef Tongue.....6 50 @ —
Preserved Ham,
2 lb. doz..... 6 50 @ —
Deviled Ham, 1 lb,
doz..... 5 50 @ —
do Ham, ½lb doz.3 00 @ —

COAL—Jobbing.

Australian, ton.. 8 00 @— —
Coos Bay..... 6 50 @ 7 00
Bellingham Bay. 6 50 @— —
Seattle..... 6 00 @ 6 50
Cumberland.....14 00 @— —
Mt Diablo..... 4 75 @ 6 00
Lehigh.....13 50 @— —
Liverpool..... 7 50 @ 8 00
West Hartley.. 10 50 @— —
Scotch.....10 50 @— —
Scranton.....11 50 @— —
Vancouver Id... 7 00 @— —
Charcoal, sack.. 75 @— —
Coke, hbl... .... 60 @— —

COFFEE.

Sandwich Id, lb. — @— —
Costa Rica..... 17½@ 17½
Guatemala..... 17 @ 17½
Java..... 23 @— 26
Manila..... 17 @— —
Greund, in cs... 25 @— —

FISH.

Sac'to Dry Cod.. 5 @ 5½
do in cases.. 6 @ 6½
Eastern Cod.... 7 @— 7½
Salmon, bbls.... 8 00 @ 9 00
Hf bbls..... 5 00 @ 5 50
1 lb cans..... 1 45 @ 1 50
Pkld Cod, bbls..22 00 @— —
Hf bbls.....11 00 @— —
Mackerel, No. 1.
Hf Bbls.....10 00 @10 50
In Kits..... 1 80 @ 1 90
Ex Mess..... 3 25 @— —
Pkld Herring, hx 3 00 @ 3 50
Boston Smkd H'g 70 @— —

LIME, Etc.

Lime, Sta Cruz, bbl..... 1 25 @ 1 50
Cement, Rosendale..... 2 00 @ 2 25
Portland..... 4 00 @— —
Plaster, Golden Gate Mills.... 3 00 @ 3 25
Land Plaster, tn 10 00 @12 50

NAILS.

Ass'ted sizes, keg 2 90 @ 3 00

OILS.

Pacific Glne Co's
Neatsfoot, No 1..1 00 @ 90
Castor, No 1.....1 10 @ —
do, No. 2.....1 05 @ —
Baker's A A.....1 25 @1 30
Olivo, Plagniol....5 25 @5 75
Fossel..... 4 75 @5 25
Palm, lb..... 9 @ —
Linseed, Raw, hhl. 72 @ —
Boiled..... 75 @ —
Cocoanut..... 55 @ —
China nut, cs..... 70 @ 72½
Sperm.....1 40 @ —
Coast Whales..... 40 @ —
Polar..... 45 @ —
Lard..... 90 @1 00
Oleophine..... 22 @ 22½
Deroe's Brit's.... 22 @ 23½
Photolite..... — @ —
Nonpariel..... 31 @ 32½
Eureka..... 18 @ 42½
Barrel kerosene... 20 @ —
Downer Ker..... 37½@ —
Elaine..... 37½@ —

PAINTS.

Pure White Lead. 8 @ 8½
Whiting..... 1½@ 2
Putty..... 4 @ 5
Chalk..... 1½@ —
Paris White..... 2½@ —
Ochre..... 3½@ —
Venetian Red..... 3½@ —
Avcrill Mixed
Paint, gal.
White & tints...2 00 @2 40
Green, Blue & Ch Yellow...3 00 @3 50
Light Red.....3 00 @3 50
Metallic Roof...1 30 @1 60

RICE.

China, Mixed, lb.. 5½@ —
Hawaiian..... 7 @ 7½

SALT.

Cal. Bay, ton....15 00 @22 50
Common.....10 00 @12 00
Carmen Id.....12 00 @14 00
Liverpool fine...19 00 @— —

SOAP.

Castile, lb..... 10 @ 10½
Common brands.. 4½@ 6
Fancy brands..... 7 @ 8

SPICES.

Cloves, lb..... 45 @ 50
Cassia..... 22½@ 25
Nutmegs..... 85 @ 90
Pepper Grain..... 15 @ 17
Pimento..... 15 @ 16
Mustard, Cal., ½ lb glass.....1 60 @ —

SUGAR, ETC.

Cal. Cube, lb..... 11½@ —
Powdered..... 11½@ —
Fine crushed..... 11½@ —
Granulated..... 11 @ —
Golden O..... 9½@ —
Cal. Syrup, kgs... 70 @ —
Hawaiian Molasses 26 @ 30

TEA.

Young Hyson, Moyune, etc.... 27 @ 30
Country packed Gunpowder & Imperial..... 50 @ 60
Hyson..... 30 @ 35
Fooo-Chow O..... 35 @ —
Japan, 1st quality 40 @ —
2d quality..... 20 @ 25

METALS.

[WHOLESALE.

WEDNESDAY M., November 20, 1878.

IRON.—
American Pig, soft, ton... .....23 00 @24 00
Scotch Pig, ton.....25 50 @26 50
American White Pig, ton.....24 00 @25 00
Oregon Pig, ton.....26 50 @— —
Refined Bar..... 2½@ 3
Horse Shoes, keg..... 5 00 @— —
Nail Rod..... —@ 7½
Norway, according to thickness..... 6½@ 7

COPPER.—
Sheathing, lb..... 34 @ 35
Sheathing, Yellow..... 19 @ 20
Sheathing, Old Yellow..... — @ —

STEEL.—
English Cast, lb..... 16 @ 17
Black Diamond, ordinary sizes..... 16 @— —
Drill..... 16 @ 17
Flat Bar..... 16 @ 19
Plow Steel..... 8 @ 12½

TIN PLATES.—
10x14 I C Charcoal..... 8½@ 9
10x14 I C Coke..... 7 @ 7½
Banca Tin..... 18 @— 20
Australian..... 15½@ 17

ZINC.—
By the Cask..... 9 @— —
Zinc, Sheet 7x3 ft. 7 to 10, lb, less than cask.. 9½@— 10

NAILS.—
Assorted sizes..... 2 80@3 00

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by SUTRO & Co.]

SAN FRANCISCO, November 20, 3 P. M.

LEGAL TENDERS in S. F., 11 a. m., 99½@99.95. SILVER, 2 @1½. GOLD in New York, 100.

GOLD BARS, 890@910. SILVER BARS, 8@22 ₩ cent. discount.

EXCHANGE on New York, ½%, on London bankers, 494@ 49¾. Commercial, 50; Paris, five francs ₩ dollar; Mexican dollars, 89½@90.

LONDON Consols, 95 9-16; Bonds, 103.

QUICKSILVER in S. F., by the flask, ₩ lb. 40@41c.

Signal Service Meteorological Report.

SAN FRANCISCO.—Week ending November 10, 1878.

HIGHEST AND LOWEST BAROMETER.

Nov 13	Nov 14	Nov 15	Nov 16	Nov 17	Nov 18	Nov 19
30.22	30.04	30.28	30.36	30.31	30.30	30.29
30.12	29.80	30.09	30.27	30.25	30.26	30.18

MAXIMUM AND MINIMUM THERMOMETER.

58.5	65.5	61.5	63	65	58	62
52.5	54.5	54	52	51.5	53	52

MEAN DAILY UUMIDITY.

87	86	75	67	87	89	82

PREVAILING WIND.

N	S	W	SE	W	N	N

WIND—MILES TRAVELED.

119	95	254	165	130	80	106

STATE OF WEATHER.

Cloudy	Rain.	Fair.	Clear.	Fair.	Fair.	Fair.

RAINFALL IN TWENTY-FOUR HOURS.

	.45					

Total rain during the season, from July 1, 1878, 2.40 in.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

General Robert Allen Silver Mining Company.

—Location of principal place of business, San Francisco, California. Location of works, Pinal County, Arizona.

Notice is hereby given that at a meeting of the Board of Directors, held on the 29th day of October, 1878, an assessment of twenty-five (25) cents per share was levied upon the capital stock of the corporatiou, payable immediately in United States gold and silver coin to the Secretary of the Company.

Any stock upon which this assessment shall remain unpaid on the second day of December, A. D., 1878, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the second day of January, 1879, to pay the delinquent assessmeut, together with costs of advertising and expenses of sale. By order of the Board of Directors.

M. C. SOUTHARD, Sec'y.

Office, No. 411½ California street, Room 11, San Fraucisco, California.

POSTPONEMENT.—The delinquent day of the above named assesament has been postponed until the seventh (7th) day of December, 1878. By order of the Soard of Directors. M. C. SOUTHARD, Sec'y.

Land Purchasers' Association.—Location

of principal place of business, San Francisco, California.

Notice is hereby given that at a meeting of the Board of Directors, held on the 5th day of November, 1878, an assessment of four (4) dollars per share (being a part of the 43d installment on the subscription to the stock) was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at No. 641 Sacramento street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 9th day of December, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before will be sold on Saturday, the fourth (4th) day of January, 1879, to pay the delinquent assessment, together with cost of advertising and expeases of sale. By order of the Board of Directors. O. S. WRIGHT, Sec'y.

No. 641 Sacramento St., San Francisco, Cal.

Mineral Fork Mining and Smelting Com

pany.—Location of principal place of business, San Francisco, California. Location of works: Big Cottonwood District, Salt Lake County, Utah Territory.

Notice is hereby given, that at a meeting of the Directors held on the 31st day of October, 1878, an assessment (No. 1) of two (2) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, Room 20, Safe Deposit Building, No. 322 Montgomery street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the seventh day of December, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Monday, the 3 th day of December, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

OTTO METCHKE, Sec'y.

Office, Room 20, Safe Deposit Building, No. 328 Montgomery street, San Francisco, Cal.

Mount Jefferson Milling and Mining Co —

Location of principal place of business, San Francisco, California. Location of works, Garrote Mining District, Tuolumne County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the seventeenth day of October, 1878, an assessment (No. 5) of five (5c.) cents per share was levied upon capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, Room 6, 316 Pine St., San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the twenty-fifth (25th) day of November, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Tuesday, the seventeenth (17th) day of December, A. D., 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK, Sec'y.

Office, Room 6, No. 318 Pine St., San Francisco Cal.

New Basel Con. Gravel Mining Company.

—Location of principal place of business, San Francisco, California. Location of works: Placer County, Cal.

NOTICE.—There are delinquent upon the following described stock on account of assessment (No. 4) levied on the 24th day of September 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Name.	No. Certificate.	No. Shares.	Amount.
G Mahe.....	6061	1500	$75 00

And in accordance with law and an order of the Board of Directors made on the 24th day of September, 1878, so many shares as may be necessary of each parcel of such stock will be sold at public auction at my office, rooms 5 and 6, No. 434 California street, San Francisco, California on the Eighteenth (18th) day of November, 1878, at the hour of twelve o'clock, noon, of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

D. F. LEGAYE, Sec'y.

Office, 434 California St., San Francisco, California.

Summit Mining Company —Location of

Principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 5,) levied on the 10th day of September, A. D., 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
C Lehmanu, Trustee.....	200	5	$ 25
C Lehmann, Trustee.....	201	5	25
C Lehmann, Trustee.....	202	5	25
C Lehmann, Trustee.....	203	5	25
C Lehmann, Trustee.....	204	5	25
T Scotland.....	13	6,250	$12 50
F B Whiting.....	28	200	10 00

And in accordance with law, and an order of the Board of Directors, made on the tenth day of September, A. D., 1878, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, on Tuesday, the nineteenth day of November, A. D., 1878, at the hour of two o'clock P. M., of said day, to pay said delinquent assessment thereon, together with coste of advertising and exponses of the sale.

J. W. CLARK, Sec'y.

Office, Room 6, No. 318 Pine Street, San Francisco, Cal.

The California Fruit Growing Association.

—Location of principal place of business, San Francisco, California. Location of property, El Dorado County, California.

Notice is hereby given, that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 9) of three (83) dollars per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, No. 641 Sacramento street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 30th day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold ou Monday, the 21st day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street. San Francisco, Cal.

POSTPONEMENT.—At a meeting of the Board of Directors of the California Fruit Growing Association, held September 23d, 1878, it was resolved that the day of above assessment becoming delinquent he postponed till Saturday, the 26th day of October, 1878, and the day of sale of deliuquent stock is hereby postponed to Friday, the 22d day of November, 1878. D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco.

POSTPONEMENT.—At a meeting of the Board of Directors held on the Nineteenth day of October, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till November 30th, 1878, and the day of sale of delinquent stock is hereby postponed to December 21st, 1878.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento Street, San Francisco, Cal.

Vigorit Powder Company.—Location of

principal place of business, City and County of San Francisco, California Location of works, California City, Marin County, State of California.

Notice.—There are delinquent upon the following described stock, on account of assessment (No 1) levied on the first day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. of Cert.	No. Shares	Amount
Louis McLane, Trustee....30		437½	$218 75
Louis McLane, Trustee....32		½ of 875	218 75
G W Grayson, Trustee....62		1312½	656 25
H H Shinn, Trustee..... 91		400	200 00
H H Shinn, Trustee..... 92		400	200 00
H H Shinn, Trustee..... 93		400	200 00
H H Shinn, Trustee..... 94		112½	56 25

And in accordance with law, and an order of the Board of Directors, made on the First day of August, 1878, so many shares of each parcel of stock as may be necessary will be sold at public auction, at the office of the Company, Room No. 1, 109 California street, on Wednesday, the second day of October, 1878, at the hour of 2 o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale. JAS. W. SAKER, Sec'y.

Office, No. 100 California street, Room 1, San Francisco, California.

POSTPONEMENT.—By an order of the Board of Directors made on the First day of October, 1878, the above sale is postponed until Monday, October 21st, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

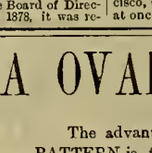
POSTPONEMENT.—By an order of the Board of Directors made on the Eighteenth day of October, 1878, the above sale is postponed until Friday, November 1st, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

POSTPONEMENT.—By an order of the Board of Directors made on the first day of November, 1878 the above sale is postponed un il Monday, November 18th, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

POSTPONEMENT —By an order of the Board of Directors made on the eighteenth day of November, 1878, the above sale is postponed until Monday, December 2d, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

Iron, Steel, Blacksmith & Mining Tools, Etc.

Verv Lowest Market Prices.

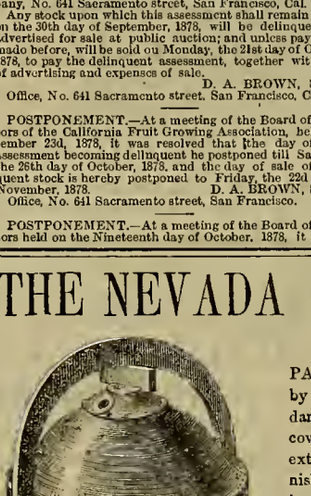


I. S. VAN WINKLE & CO., 413 and 415 Market Street, San Francisco. Importers and dealers in all kinds of Blacksmith and Mining Tools, Shatting, Cumberland Coal, Carriage Bolts, Springs, Drills, Horse Shoes, Borax, Norway Iron, both Boston rolled and our own forcign importation direct, Horse Shoe Nails, Etc. All at the very lowest market prices. Good treatment assured. Give us a call.

ANNUAL MEETING.

THE ANNUAL MEETING of the stockholders of the Gold Bar Gravel Mining Company, for the election of Trustees for the ensuing year, will be held at the office of the Company, Room 28, Stevenson's Building, San Francisco, California, on Saturday, December 7th, A. D., 1878, at one o'clock P. M. O. D. SQUIRE, Sec'y.

THE NEVADA OVAL TOP RETORT.

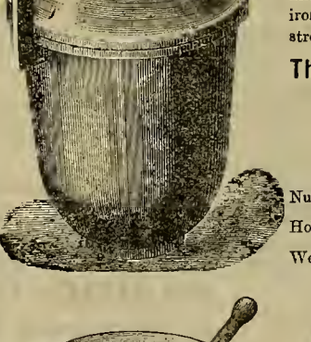


The advantage of this Retort over the OLD FLAT PATTERN is, that it can be filled full of Amalgam, thereby holding more than the old style, besides avoiding all danger of an explosion owing to the crown space in the cover which allows for the expansion. They are made extra heavy, WELL GROUND in the joints, and are furnished with a strong Norway clamp, having a wrought iron key which can he driven iu or out of place by a single stroke of a hammer.

The Annoying Thumb-Screws are Entirely Done Away With.

We Make Seven Sizes, as follows:

Number or Pints.....	1	2	3	4	5	6	10
Holds Pounds Quicksilver..	12½	25	38	50	63	75	125
Weight each.....lbs	10	15	18	25	31	44	65



Mortars and Pestles,

GROUND INSIDE.

Size—Quarts.....	½	1	2	4	6	8	12	16
Hight—Inches ...	3½	5	6	7½	8½	9	11	12
Weight—Pounds .	6½	9	16	22	37	43	72	86

Bullion Ladle.

Forged from oue piece of Charcoal Iron, eight inches in diameter hy four inches deep.

Send for Circular and Prices.

DUNHAM, CARRIGAN & CO., Agents, San Francisco.

Iron and Machine Works.

THOS. PENDERGAST. HENRY S. SMITH.

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MANUFACTURERS OF

IRON CASTINGS

and MACHINERY

OF ALL KINDS.

Fremont Street, Bet. Howard and Folsom,

SAN FRANCISCO.

SACRAMENTO BOILER WORKS,

214 & 216 BEALE St., (rear of Ætna Foundry)

J. V. HALL,

PRACTICAL BOILER MAKER,

Marine, Stationary and Portable Boilers, Smoke Stacks, Hydraulic Pipe, Oil or Water Tanks, Ore and Water Buckets, Gasometers, Girders, Bridges and Iron Ship Building.

ALL KINDS OF SHEET IRON WORK.

Repairing promptly attended to at the lowest possible terms.

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ROOT, NEILSON & CO.,

MANUFACTURERS OF

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Kinds of Machinery for Mining Purposes.

Flouring Mills', Saw Mills' and Quartz Mills' Machinery constructed, fitted up and repaired.

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SACRAMENTO, CAL.

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MANUFACTURING COMPANY,

Manufacturers of all kinds of

Wharf and Bridge Bolts, Railroad Trestle Work, Car Frames and Bolts, Machine Bolts, Set Screws and Tap Bolts, Lag or Coach Screws.

ALL STYLES OF FANCY HEAD BOLTS.

HOT AND COLD PRESSED HEXAGONAL AND SQUARE NUTS, WASHERS, BOLT ENDS, TURNBUCKLES, ETC., ETC.

13, 15 & 17 Drumm St., near California,

SAN FRANCISCO, CAL.

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Manufacture Iron Castings and Machinery of all Kinds at Greatly Reduced Rates.

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Mold-Board AMALGAMATORS,

Golden State Pressure Blowers.

First St., between Howard & Folsom, S. F.

WM. H. BIRCH. JOHN ARGALL.

California Machine Works,

BIRCH, ARGALL & CO.,

119 Beale Street, San Francisco.

☞General Mechanical Engineers and Machinists. Steam Engines, Flour, Quartz and Mining Machinery. Sole manufacturers of Brodie's Patent Rock Crushers and Steel-Faced Tappits. Steam, Hydraulic and Sidewalk Elevators. Repairing promptly attended to.

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No. 125 First Street, Opposite Minna.

SAN FRANCISCO, CAL.

All kinds of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Bells and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch. ☞PRICES MODERATE.☜

J. H. WEED. V. KINGWELL.

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Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

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THOMPSON BROTHERS,

EUREKA FOUNDRY,

129 and 131 Beale St., between Mission and Howard, S. F

MANUFACTURERS OF CASTINGS OF EVERY DESCRIPTION.

WIND MILL. One of the best made in this State for sale cheap on easy terms. Address, W. T., care of Dewey & Co., S. F.

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Home Industry.—All Work Tested and Guaranteed.

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HORIZONTAL ENGINES,	VENTILATING FANS,	PANS,
AUTOMATIC CUT-OFF ENGINES,	ROCK BREAKERS,	SETTLERS,
COMPOUND CONDENSING ENGINES,	SELF-FEEDERS,	RETORTS,
SHAFTING,	PULLEYS,	ETC., ETC.

TRY OUR MAKE, CHEAPEST AND BEST IN USE.

Send for Late Circulars. PRESCOTT, SCOTT & CO.

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IMPROVED PORTABLE

Hoisting Engines,

For Mining and Other Purposes.

Steam Engines and all Kinds of Mill and Mining Machinery

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MANUFACTURERS OF

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ROLLED BEAMS, ANGLE, CHANNEL AND T IRON, BRIDGE AND MACHINE BOLTS, LAG SCREWS, NUTS WASHERS, ETC., STEAMBOAT SHAFTS, CRANKS, PISTONS, CONNECTING RODS, ETC., ETC.

Car and Locomotive Axles and Frames, and Hammered Iron of Every Description.

HIGHEST PRICE PAID FOR SCRAP IRON.

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Hinckley, Spiers & Hayes.

(ESTABLISHED IN 1855.)

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MANUFACTURERS OF

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Propeller Engines either High Pressure or Compound Stern or Side Wheel Engines.

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Hoisting Engines and Works, Cages, Ore Buckets, Ore Cars, Pumping Engines and Pumps, Water Buckets, Pump Columns, Air Compressors, Air Receivers, Air Pipes.

Mill Machinery.

Batteries for Dry or Wet Crushing, Amalgamating Pans, Settlers, Furnaces, Retorts, Concentrators, Ore Feeders, Rock Breakers, Furnaces for Reducing Ores Water Jackets, Etc.

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Crushing Rolls, Clarifiers, Vacuum Pans, Air Pumps, Concentrators, Bag Filters, Charcoal Filters, Blow-up Tanks, Coolers and Receiving Tanks.

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Flour Mill Machinery, Saw Mill Engines and Boilers, Dredging Machinery, Oil Well Retorts, Powder Mill Machinery, Water Wheels.

Engines and Boilers of all kinds, either for use on Steamboats and made in accordance with the Act of Congress regulating the same, or for use on land. Water Pipe, Pump or Air Column, Fish Tanks for Salmon Canneries of every description.

Boiler repairs promptly attended to and at very moderate rates.

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Shafting, Pulleys, and General Machine Work. Jobbing and repairing done Promptly and at Lowest Rates. Screw Propellors, Propellor and Steamboat Engines.

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We would call the special attention of Assayers, Chemists, Mining Companies, Milling Companies, Prospectors, etc., to our stock of Clay Crucibles, Muffles, Dry Cups, etc., manufactured by the Patent Plumbago Crucible Co., of London, England, for which we have been made *Sole Agents for the Pacific Coast.* Circulars with prices will be sent upon application.

Also, to our large and well adapted stock of

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Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.

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ORES SAMPLED, TESTED, ASSAYED.

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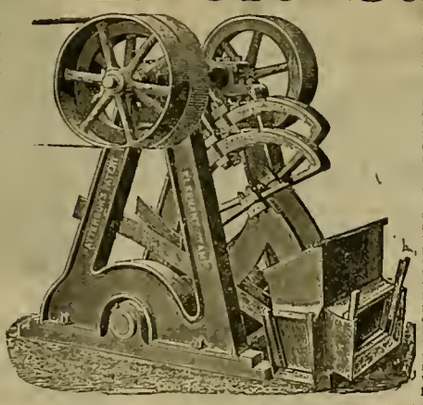
MINING ENGINEER and METALLURGIST.

P. O Address: ALAMEDA, CAL

Elephant Ore Stamp.



We beg to call your attention to this engraving representing the Elephant Ore Stamp. The advantages claimed for this Stamp are as follows:

CAPABILITIES.—The "Elephant" is capable of crushing as much stuff as a 12-Stamp Battery of the present system, having crushed as high as 14 tons of tough copper ore in one hour, through a No. 4 punched screen. The undersigned, however, will guarantee 20 tons per day of ordinary quartz through the same size screen.

WEAR.—The "Elephant" having only two pairs, Shoe and Die, the wear in this instance is equal to one-sixth of a 12-Stamp Battery. There being no Cam Tappets, Cam Shafts or Guides, the consequent wear on these parts is done away with; the leather thorough-brace, uniting the lever with the spring, would only require replacing at most, once a year.

POWER.—The "Elephant" only requires a seven horse-power engine to drive it, where a 12-Stamp Battery would require from 18 to 20 horse-power.

PORTABILITY.—The entire Battery, including Mortar, will weigh about six tons, thereby causing an immense saving in the way of freight to such places as Arizona, Mexico, Cariboo and Bodie. As no part of the machine weighs more than 1,800 lbs., the handling of the machine is comparatively easy, and in places where it would be necessary to pack the machine on mules, it could be easily made in pieces not to weigh over three hundred pounds.

The above engraving shows the Machine in exactly the position it would be placed in a mine; the reader will therefore see that all wood work is done away with, and that once the Machine is on the ground it will take but a few days to set it up and have it in full working order.

The "Elephant" can be seen working every day from 2 to 4 P. M. at No. 342 Main St, near Harrison, San Francisco For particulars, apply to

EDMUND WHITE, Care of A. B. Grogan, 705 Sansome St.

GOLD, SILVER AND COPPER MINING, Reducing and Concentration Machinery.

Hoisting Engines, Diamond Pointed Rock Drills, Manufactured by M. C. BULLOCK.

Address, FRASER, CHALMERS & CO., Chicago, Ill.

SANDERSON BROS. & CO.'S

Best Refined Cast-Steel.

Warranted Most Superior for Drills, Hammers, Etc.

A full and complete stock of this reliable and well-known brand of Steel, for mining and other uses, now in stock and for sale

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North Side, Above Battery, *San Francisco.*

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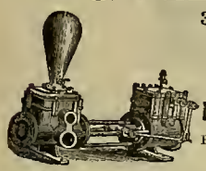
"OLD RELIABLE"

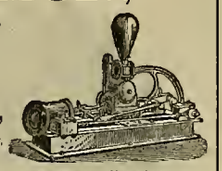
Direct Action Steam Pumps,

For use in Coal Collieries, Iron Mines, and Copper, Zinc, Lead and Salt Works.



The Direct Acting Pump.

The Most Durable Steam Pump Made.



The Balance Wheel Pump.

☞ Send for new PRICE LIST and TESTIMONIALS. ☜

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Established 1856.

We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes: Tarred Manila Rope; Hay Rope; Whale Line, etc , etc

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Steel Castings.

From ¼ to 10,000 lbs. weight, true to pattern, sound and solid, of unequaled strength, toughness and durability. An invaluable substitute for forgings or cast-iron requiring three-fold strength. Send for circular and price list to

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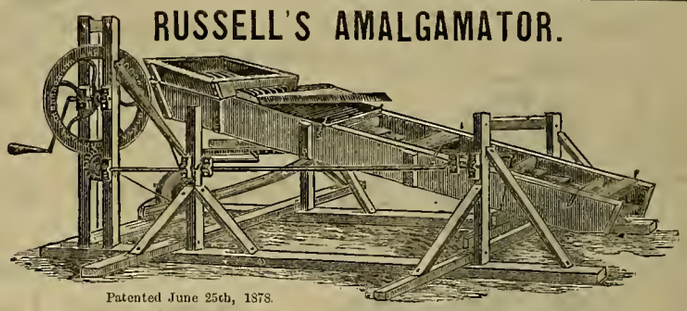
RUSSELL'S AMALGAMATOR.



Patented June 25th, 1878.

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And Also SAVE YOUR QUICKSILVER.

The above Washer and Amalgamator with new patent Wire Bridge Quicksilver Boxes attached, can be worked wet or dry, either by hand, steam, horse or water power, and is easily taken apart and packed. For washing Pulp, Earth, Gravel, Mill Tailings or Black Sand, it is without a rival.

Has been Thoroughly Tested and given Complete Satisfaction.

The entire Lining, Hanging Plates, Riffles and Boxes Amalgamated

IS GUARANTEED TO SAVE THE FINER OR FLOUR GOLD.

Capacity, 30 to 60 tons per day, according to size. For further particulars apply to

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Room 24, Safe Deposit Building, Corner Montgomery and California Streets, SAN FRANCISCO.

In consequence of spurious imitations of

LEA AND PERRINS' SAUCE,

which are calculated to deceive the Public, Lea and Perrins have adopted A NEW LABEL, bearing their Signature, thus,

Lea & Perrins

which is placed on every bottle of WORCESTERSHIRE SAUCE, and without which none is genuine.

Ask for LEA & PERRINS' Sauce, and see Name on Wrapper, Label, Bottle and Stopper. Wholesale and for Export by the Proprietors, Worcester; Crosse and Blackwell, London, &c., &c.; and by Grocers and Oilmen throughout the World.

To be obtained of CROSS & CO., San Francisco.

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GRAND HEADQUARTERS.

For Holiday, Birthday and Wedding Presents.

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Does more work at Leee Cost
THAN ANY OTHER ROCK DRILL

FIRE ENGINES,
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Hook and Ladder Trucks, and Fire Extinguishers.

Air Compressors,

Bucket Plunger Pump.

Rock Drills.

HOISTING ENGINES,
ALL SIZES,
Double and Single,
With Single and Double Reels.

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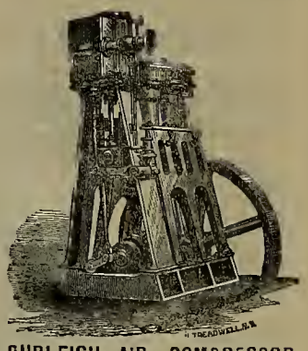
Vertical and Horizontal.

Steam Plunger Pumps.

BUCKET PLUNGER PUMPS.



BURLEIGH AIR COMPRESSOR,
Givee Better Resulte than any Compressor Known.

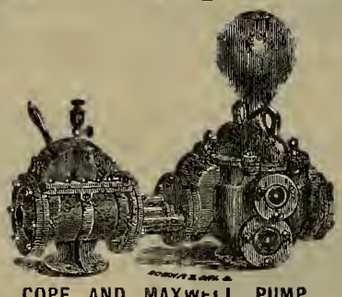
Pressure Blowers. **Champion Mine Ventilator.**

Compound Steam Pumps.

Yacht Engines.

Diamond Anti-Friction Metal.

PUMP
And AIR COLUMN.



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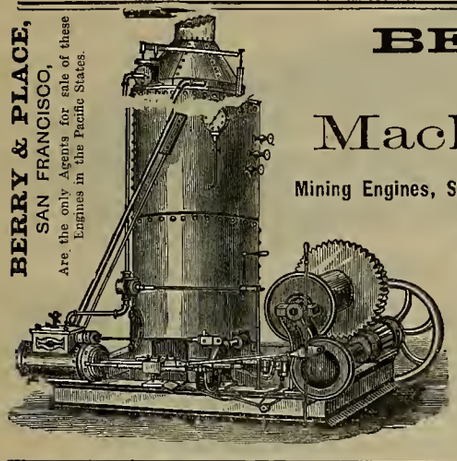

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MESSRS. DEWEY & Co., Patent Agents, S. F.—*Gentlemen.*—I have just received my letters patent on machine for opening oyster shells, and compliment you upon your success. I shall not only contribute to you my own business, but also that of friends. Thanking you, gentlemen, for your promptness and the very thorough manner in which you have prosecuted this matter, I am, yours truly. T. W. TEMPLE.

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Publishers. SAN FRANCISCO, SATURDAY, NOVEMBER 30, 1878. VOLUME XXXVII Number 22.

State Ore Deposit Collection.

Mr. A. W. Jackson, Mineralogist of the University of California, has issued a bulletin addressed to the "mine owners, mining engineers and mining superintendents of the Pacific coast." The object of the publication is to solicit the aid of those who are favorably situated, in obtaining for the State an ore deposit collection, to be located at the University, Berkeley.

The object of the University is to give our young men such a training as shall enable them to step from their college walls, better citizens, positive aids to the advancement of our coast. Accordingly, each of the great branches of our industry is represented at Berkeley, in the various scientific colleges. Of these latter, the College of Mines is of paramount importance. And it is to ensure the greater success of this college, that the collection of ores is desired. Such a collection as is wished will enable students to obtain a full, clear and practical idea of what they may expect to meet in the actual working of our mines, making them immeasurably superior to the mere student of books, or even of ordinary mineral cabinets. But, as Mr. Jackson says: "Such an ore deposit collection will subserve even a higher and far more important purpose than instruction. The geological relations of the ore deposits of this coast have never been systematically studied. Much has been learned, it is true, from the examination of separate, isolated deposits; but they have never yet been studied *as a whole;* comparative investigations on a wide scale have never yet been made. They could not be, for it is only by means of such a collection as we are now soliciting that the study could be carried out, and as we said before, it does not exist and has never been made. Ore deposits are subject to *laws;* but it has been found that very few only of these laws are of a *general* character. The results of experience in one country cannot consequently be applied with safety to another. Every mineral region must be studied by itself and the laws of its formation worked out independently. That this has been done to but a limited extent for California and for the Pacific coast at large, is familiar to you all. If we consider for a moment the millions of dollars that have been uselessly expended in prospecting for, and in the development of worthless mining property, the great economical importance of the work proposed becomes at once evident." Thus it is proposed, not only to increase the usefulness of the University to the student, but to make that institution a center from which the results of careful investigations of our ores, may go forth to enlarge our general stock of information and guide our investments.

The following directions for selecting the specimens are given:

Each ore deposit upon the Pacific coast should be represented by hand-specimens in the following manner:

1. By specimens of each of the different ore minerals upon the deposit.

2. By specimens illustrating the *gangue* or *veinstone.*

3. *Contact* specimens of gangue and ore mineral.

4. By specimens of the country rock from both foot-wall and hanging-wall.

5. Contact specimens of vein and country rock.

Then, hand-specimens illustrating any other important geological feature of the deposit should be included; such as a change in the country rock, either in the dip or strike of the vein, the intersection of two or more veins, peculiar selvage phenomena, horses, etc.

The specimens should be selected by competent men. They should be accompanied by any available information with regard to the mine and the surrounding country—the more complete the detail in all respects the better.

It is recommended that the specimens be trimmed to a uniform size, say, 4 in. x 3 in. x 1½ in., labeled with a number referring to an accompanying catalogue, separately packed in paper, arranged together in a box, and forwarded to the *"Ore Deposit Collection, University of California, Berkeley, Cal. Care of Wells, Fargo & Co.'s Express."* Wells, Fargo & Co. will forward parcels so addressed, free of charge.

The receipt of the minerals will be promptly acknowledged. The specimens will be determined. The labels will bear the names of the donors.

This endeavor on the part of the Faculty of our University will recommend itself to all interested in the welfare of the coast, and especially to that class to whom the circular is more directly addressed. No reasonable effort should be spared to render the collection a success.

PRIZE FOR A MILKING MACHINE.—The Royal Agricultural Society of England has offered this year a prize of $250 for an "efficient milking machine," an implement of which Prof. Sheldon, of the Agricultural College of Cirencester, thinks dairy farmers at the present time stand most in need. He considers a milking machine one of the knottiest problems which inventive genius has got to solve, the difficulty being to combine motive power with the adaptability of the machine to all kinds of teats and udders, and which, to be really valuable, must enable a man to milk 15 cows within the hour—milk them cleanly and thoroughly, and without injury to the udder or teat of the cow. The *American Dairyman* thinks the inventive genius of our Yankee nation will be found equal to the problem, and as so much as already been accomplished in this direction, its solution is not likely to be very far in the future.

AN improvement in the Idaho quartz mine, Nevada county, is reported.

Manufacture of Ice.

It has been found by experience that in most localities ice can be manufactured by artificial means, cheaper than natural ice can be cut and shipped to the cities where it is sold. This is especially true on this coast, where the larger cities are remote from the lakes and other places where ice forms, and where transportation is expensive. Various devices have been invented for the manufacture of ice, most of them, however, being very expensive, and requiring a very large space for operating.

A company has recently been incorporated in this city, which has acquired from N. J. West, of London, the sole and exclusive right to manufacture and sell on the Pacific coast his world-renowned ice-making and refrigerating machines, which, although well and favorably known in Europe, has never been introduced on this coast until now. These machines obtained the first-class prize medal at the great exhibition in London in 1862; the prize medal at Vienna exhibition of 1873; and have been supplying ice at the Paris exposition. Apparatus has already been constructed under these patents, which is now in successful operation in Great Britain, in India, and in New York, equivalent to the manufacture of a million of pounds of ice daily.

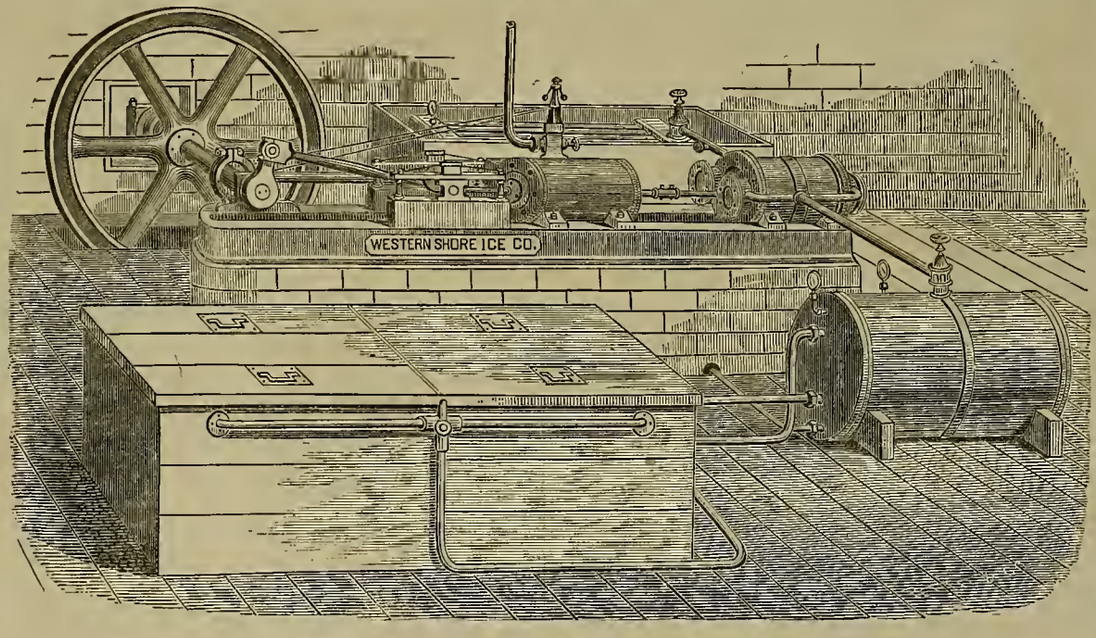
The company organized here is called the Western Shore Ice Company, which is now prepared to supply these machines to hotels, restaurants, clubs, breweries, mines, dairies, country towns, and all manufacturers and consumers of ice on this coast. The accompanying drawing illustrates one of the patent transparent block-ice making machines, manufactured by the Western Shore Ice Co. To this apparatus a very plain and simple steam engine is attached for working the air pump. This is made direct-acting, by which means the use of all belts or gear wheels is avoided. Where, however, a separate motor exists, the machine may be had without the steam engine, in which case there is, of course, a proportionate reduction in the cost.

A one-ton machine of this description will manufacture clear ice in blocks of any desired thickness, from three inches to four feet and upwards, at a cost, we are informed, of one quarter of a cent per pound.

A twenty-ton machine will make the same description of ice at a cost of one-twentieth of a cent per pound. The company state that where power is already on the premises, the cost of manufacture will be less than one-half of the above figures.

Many valuable improvements have been recently made, and the apparatus is acknowledged to be one of the most complete and economical ice-making machines in the world.

Among the various other purposes for which this new patent machinery is valuable, are the cooling of air or liquids, preserving meat, fish, vegetables, fruits, etc., cooling hospital wards, theaters, dairies, mines, and for all purposes where a low temperature is desired. The success attending the introduction of the apparatus is proof of its superiority. The most eminent brewers in the world, including Allsop & Sons, Truman, Hanbury, Buxton & Co., and Guinness & Co., have adopted the system and have 11 of these machines of the largest kind in use, while 38 of them are employed in various other breweries in Great Britain. All machines sold are accompanied by a guarantee.



WEST'S ICE MAKING AND REFRIGERATING MACHINE.

These machines may be used to advantage at our deep mines where large quantities of ice are consumed. They are also very useful in dairies, as the air may be kept at an equable temperature in dairy rooms, and at any desirable coolness. The Western Shore Ice Company are prepared to supply refrigerating machines of a capacity for cooling from 5,000 to 50,000 cubic feet of air per hour to 30° Fahr. Circulars and further information may be obtained by applying to the Secretary of the Western Shore Ice Company, No. 330 Pine street, rooms 61 and 62, San Francisco.

UNDER FAVORABLE AUSPICES.—The Geological, Mineralogical and Mining Section of the Academy of Sciences, organized as a society subordinate to the Academy, begins its life under unusually favorable auspices. It starts out with an endowment, so to speak. It has all the resources of the Academy of Science in that department—a valuable library of special publications, periodicals already collected in its own field, and on the shelves; a pleasant section or room-like alcove in the Academy building, with tables and writing room—exclusively its own—where their books are; a mineralogical and geological collection, to begin work upon; with its share in the prospects of the Academy generally. The section has besides a very comfortable meeting room at Prof. Price's laboratory, where the microscope and other tools have been generously placed at their disposal. Under Joseph Le Conte's influence all the good professional talent on the coast can work harmoniously, and will.

JOHN POE has been prospecting in Sierra county, about seven miles above the Sierra Butte quartz mine. He reports good prospects. A hatch of 50 pounds of his rock produced at the rate of $35 silver and $8 gold. The ledges are well-defined. They contain a little copper and are slightly tinged with galena.

THE Llampaico gold washings are estimated to yield a profit of nearly $17,000,000. The engineer says it will take 124 years to wash away the deposit at the rate of 242,000 cubic yards a year

A VEIN supplying enough gas for lighting and fuel purposes for the Thompson Steel Works, has been struck in a Pennsylvania well.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—EDS.

That Stick of Timber,

EDITORS PRESS:—In the issue of the PRESS of October 26th, I find an answer to the query of a "Constant Reader," in which there are some errors in calculation as well as typographical. My object is to introduce a much simpler and more abridged method, entirely eliminating from the problem the element of extracting the square root, which is a very tedious operation to the majority of people; and solving the same by the simple operations of multiplication and division, and that by using fewer figures. Using the dimensions of the stick of timber as given by you, I would first obtain the square of the mean diameter. Take the mean of the squares of the two ends, which is 40 inches; also take the square of the middle point, which is 36. Take half the difference of the two numbers and add it to the smaller, or subtract it from the greater; which gives 38 inches as the square of the mean diameter. Or, by another method, take the diameter of each end, the middle, and two intermediate points; which in the present case would be 4, 5, 6, 7 and 8. Square each number separately, and add the results together, which gives 190. This divided by 5, the number of points of measurement, gives also 38 inches as the mean square. Having obtained the mean diameter, we will proceed to make the calculation. Take the length, reduced to inches, which in this case is 264. Multiply by 38. The result is 10,032, which, divided by 144, gives 69.66 as the number of feet of board measure—a little in excess of your figures. To use the diameter 40, as many contend would be right, would give 73.33; and to use 36, as many others declare correct, would give 66 feet; the first of course too large, and the latter too small. Take half the difference as before, and add to the smaller, or subtract from the greater; this gives the result as heretofore found, viz., 69.66. This method is equally applicable to obtaining the cubic contents by using the divisor 1,728, instead of 144. It is often necessary to find the board measure of round timber, or its cubic contents. Suppose we take the same stick of timber, assuming it to be round, with the same diameters; take the mean diameter 38, and multiply by the decimal .7854, which will give the true mean diameter of the round stick, 29.84, and 54.71 feet board measure. The cubic contents would be 4.55 feet; the cubic contents of the square stick is 5.8 feet. To obtain the weight, divide the specific gravity of the timber by 16, moving the decimal point of the quotient one place to the right, and multiply by the number of cubic feet, *e. g.*: Assuming the specific gravity of the squared stick to be $.75 \div 16 = 46.8$, the weight of a cubic foot, $\times$ by $5.8 = 271.44$ lbs as the weight. J. L. C.

Deer Lodge City, Montana, Nov. 4th, 1878.

[With regard to the answer obtained in the issue referred to, we would say that it was obtained by the ordinary rules of mensuration. The volume of the frustum of a pyramid is equal to the sum of the volumes of three pyramids having a common altitude, viz., that of the frustum; and bases respectively equal to the upper base of the frustum, the lower base and a mean proportional between the two. The same answer may be obtained by continuing the sides of the frustum, until a full pyramid is formed, calculating the volume of the whole large pyramid and of the small one formed by the prolongations of the sides of the frustum, and then subtracting the smaller result from the larger. The remainder would be the volume of the frustum, in other words, of the stick of timber. Each of these methods gives a volume equivalent to 68.44 board feet, the result given in our previous issue.

The rule given in Haswell for this problem is: "To the sum of the areas of the two ends add four times the area of the middle section, parallel to them, and multiply this sum by 1-6th of the perpendicular height." Apply this to the problem in question. The sum of the areas of the two ends is $16 + 64 = 80$. The area of the middle section is 36, which, multiplied by 4, gives 144; $80 + 144 = 224$; $224 \times 22 \times 12 \div 6 = 9,856$ = the volume of the stick in cubic inches. To obtain the board feet, divide by 144, $9,856 \div 144 = 68.44$, the same result obtained above. Our correspondent has used a method of approximation, and we are inclined to think that he will find our result not far wrong.—EDS.]

PETROLEUM IN GERMANY.—A flowing well has been struck near Heide, in Holstein, (Germany), as the result of an experimental boring. The *D. A. Polytech. Ztg.* affirms that the product is in all respects equal to the American article.

The Martin White Case.

[Continued from last week.]

Lodes or Veins as such, cannot be Located.

The vein is the principal thing in the sense that it is for the sake of the vein that the location is made; the surface is of no value without it; no location can be made until, a vein has been discovered within its limits, and the surface must or at least ought to be in comformity with the course of the vein. (R. S. 2320.) But the *location is of a piece of land including the vein.*

"A mining claim located after the 10th day of May, 1872, whether located by one or more persons, may equal, but shall not exceed, 1,500 feet in length along the vein or lode; but no location of a mining claim shall be made until the discovery of the vein or lode within the limits of the claim located. No claim shall extend more than 300 feet on each side of the middle of the vein at the surface, nor shall any claim be limited by any mining regulation to less than 25 feet on each side of the middle of the vein at the surface, except where adverse rights existing on the 10th day of May, 1872, renders such limitation necessary. The end lines of each claim shall be parallel to each other." (R. S. 2320.) This section alone shows that it is a surface parallelogram not less than 50 feet in width that must be located. But the purpose of the law is more clearly indicated by its granting clauses. What is it that the locators have the exclusive right to possess? Having complied with the laws they shall have the exclusive right of possession and enjoyment of all the surface included within the lines of their locations and of all veins, lodes and ledges throughout their entire depth, the top or apex of which lies inside of such surface-lines extended downward vertically, although such veins, lodes or ledges may so far depart from a perpendicular in their course downward as to extend outside the vertical side-lines of such surface locations. (R. S., 2322.) This is the only part of the act which grants the right to possess any lode, ledge or vein. The vein originally discovered, and for the sake of which the location is made, is lumped in with other mineral deposits that may happen to exist within the limits of the surface claim, and no part of it is granted except that part, the top or apex of which lies inside of the surface lines extended downward vertically. This, it would seem ought to be conclusive, but the language of Section 2325, is, if possible, still more convincing; "Section 2325. A patent for any land claimed and located for valuable deposits may be obtained in the following manner: Any person, association or corporation authorized to locate a claim under this chapter, having claimed and located a piece of land for such purposes," may, by taking the prescribed steps, obtain a title upon payment of $5 per acre for the land.

A Location is a Piece of Land.

Thus it appears that a location on a vein must be made by taking up "a piece of land" to include it. No other means are provided, and it is only upon condition of complying with the law that the locator becomes entitled to anything. The discoverer of a vein may be allowed a reasonable time to trace its course before being compelled to define his surface claim, and in the meantime may be protected in his claim to 1,500 feet of the vein, but his location will never be complete until his surface claim is defined.

That this is the only possible construction of the statute seems so plain to our minds that we should have thought it superfluous to say a word in defense of our view if we were not aware that an opposite opinion is very largely prevalent.

Reason of the Mistaken Idea.

We think this is due to the fact that the custom of locating a vein claim by means of a notice posted on the croppings, and of bolding it by record of the notice and work done at the discovery point, without any definition of boundaries, has prevailed so long and so universally on the Pacific coast that the system has come to be regarded by a great many as something essentially inherent in the nature of things. The right, under such locations, to follow the vein in whatever direction it might run, to the extent claimed in the location notice, taking the adjacent surface necessary for the convenient working of the mine as a mere incident thereto, has been so long recognized and enjoyed as to have almost assumed the character of one of the natural and inalienable rights of man. That the Government, in disposing of its mineral lands, has adopted a radically different system, under which a vein can only be located by means of a surface claim, and held only to the extent that it is included within the surface lines, is a thing too incredible to be believed by those to whom the old customs seemed rooted in the very foundations of justice.

Time for an Awakening.

But disagreeable as the awakening may be, it is time we were opening our eyes to the fact that a new system has been introduced. The act of Congress of May 10th, 1872, has effected the changes above indicated. Its language is plain, unambiguous, and whatever may be our opinion of the impolicy of the changes effected by it, we are bound to submit and conform ourselves to its requirements. If the terms of the statute left any room for construction the *argumentum ab inconvenienti* might be entitled to great weight, but it cannot be invoked where the language of the law is so plain as it is in this instance.

The New System a Good One.

Besides, we do not share in the opinion that the new system is so utterly bad. Nobody can pretend that it is a great improvement on the system which it displaced. We are willing to admit that cases may arise to which it will be difficult to apply the law, but this only proves that such cases escaped the foresight of Congress, or that, although they foresaw the possibility of such cases occurring, they considered that possibility so remote as not to afford a reason for departing from the simplicity of the plan they chose to adopt. So far, the wisdom of the Congressional plan has been sufficiently vindicated by experience. It is true that veins and ledges are not found to be perfectly regular in their formation—they have not a perfectly straight course even in depth—and near the surface they present still greater irregularities of strike and dip; but still they approximate the ideal vein that Congress seems to have had in view sufficiently nearly to admit of an easy application of the law in all the cases of conflicting claims that have fallen under our observation.

As to the Difficulty

Of establishing surface lines immediately upon the discovery of a vein, that also is conceded. It is a well-known fact that the croppings of a vein are always a very imperfect and often a very deceptive guide to its course, and it will often be difficult and sometimes impossible to locate a surface claim in conformity with the course of the vein even after years spent in its development.

But all this affords

No Argument Against the System.

Unless the miners voluntarily restrict themselves by local regulations, a claim may always be 1,500 feet long by 600 feet wide. Let the discoverer of a vein be ever so unfortunate in locating his claim he cannot possibly get less than 600 feet of the vein, while under the old law the most he could get was 400 feet. How then can it be said that he is subjected to any hardships? So far from restricting his rights the new law has very greatly enlarged them, and at the same time has made them vastly more certain and secure.

Immediate Tracing not Necessary.

Furthermore, we do not understand that the law requires the surface claim to be defined immediately upon the discovery of the vein. We think that under any circumstances the discoverer, if he went to work diligently to trace out its course, would be allowed a reasonable time for that purpose, and in the meantime would be protected in his right to 1,500 feet of the vein. In the absence of any State or Territorial or local regulation prescribing the time to be allowed for tracing, the question as to what should be deemed a reasonable time would have to be determined in view of the facts and circumstances of each case. We said, however, in the Golden Fleece case (12 Nev., 329), and we still think that this is a matter for local regulation under the power delegated to the miners by section 2324 of the Revised Statutes, to make rules not in conflict with the laws. Any reasonable rule for the provisional holding of a claim, by means of the posting and recording of notice, during the time necessary for tracing would, we feel confident, be favorably viewed by the courts, especially if it required the locator to use diligence in the work of tracing during the time allowed for that purpose. This, however, is a question which we are not called upon to decide in this case. We have been led into this line of argument in response to what has been said by counsel for respondent in regard to the great hardship imposed upon the discoverer of a vein by compelling him to define his surface claim before he could possibly ascertain the course of the vein. If we are right in our opinion that he would be allowed a reasonable time for tracing, the supposed hardship does not exist.

The Old Law no Better.

If we are wrong, and if the discoverer must set his stakes without stopping to trace the vein, even then, as we have shown, he is better off since, than he was before the statute. His surface line will necessarily include at least 600 feet of the vein, and may include upwards of 1,600. In the latter case he may be compelled to readjust his lines so as to take only 1,500 feet, but in any case he can secure 600 feet. Before the statute he could claim no more than 400 feet of the vein, and of that he was not secure for a day. The moment he developed rich ore he was beset by trespassers, and in order to enjoin them from stealing his property, was obliged to trace the vein between them and the location point. He was harassed with litigation, and his means often entirely consumed in the prosecution of work not necessary for the development of his mine, but essential for the vindication of his title. Under the new law this source of vexation and expense is entirely swept away. Within his surface lines the discoverer of a vein is secure, and he might well consent to sacrifice something in the extent of his claim for the sake of that security. So far, however, from having to make such a sacrifice of his claim, at the very worst, is more ample than it ever was before. Sound policy, therefore, concurs with the language of the statute in sustaining our conclusion that a vein can only be located by means of a surface claim. How soon after the discovery of the vein "the location must be distinctly marked on the ground so that its boundaries can be readily traced" (R.S., 2324), we do not decide, but until it is so marked we are clear that the location is not complete and the law has not been complied with.

THE Government has paid the fishery award.

New Incorporations.

The following companies have filed certificates of incorporation:

CABINET CON. M. Co.—Nov. 18th. Location: Nevada. Directors—J. J. Green, E. C. Lloyd, J. P. Cochran, Geo. Burgess and David Wilder. Capital, $10,000,000.

ADRIATIC M. Co.—Location: Flowery district, Storey county, Nev. Capital, $10,000,000. Directors—Joseph Clark, R. N. Graves, C. H. Fish, W. W. Stetson and A. K. P. Harmon.

ARIZONA CON. M. Co.—Location: Tucson district, Pima county. Capital, $10,000,000. Directors—Frank Sbay, C. M. Chase, Moritz Neisser, W. S. Bell and Wm. Sternitzky.

HARRINGTON M. Co.—Location: California and Nevada. Capital, $12,000,000. Directors—J. F. Miller, O. H. Lagrange, A. Hemme, T. F. Cronise and T. B. Shannon.

UNCLE SAM M. Co.—Location: Tombstone district, Pima county, Arizona. Capital, $10,000,000. Directors—A. W. Blair, Wm. H. Bootbe, J. M. Barney, E. G. Boothe and E. A. Trowbridge.

MOUNT ROSE M. Co.—Location: Humboldt county, Nev. Capital, $10,000,000. Directors—H. L. Lightner, B. W. Mudge, F. A. Huntington, R. P. De Noon and W. T. Rohinson.

HEART BASIN GRAVEL M. Co.—Capital, $15,000,000. Directors—Sol. Heydenfeldt, P. J. O'Conuor, Julius Bandmann, J. M. Nougues and J. H. Watts.

RICHELIEU M. Co.—Capital, $640,000. Directors—W. E. Brown, E. S. Miller, David Bush, E. W. Hopkins and E. H. Miller, Jr.

LIBERTY M. Co.—Capital, $10,000,000. Directors—E. B. Pond, E. N. Hall, W. G. Crandall, George Congdon and S. Liukton.

NORTH SIGOURNEY M. Co.—Location: Bodie district. Capital, $10,000,000. Directors—J. C. Wade, A. F. Main, J. C. Shain, F. W. Utter and John H. Daley.

SIERRA NEVADA M. Co.—Nov. 6th. Location: Tuscarora. Capital, $10,000,000. Directors—J. A. Reichert, Hyrum Wilder, L. W. Crane, G. S. Fife and J. H. Van Vleet.

APACHE G. and S. M. Co.—Location: Arizona. Capital, $6,000,000. Directors—E. Worth, C. E. Atkinson, T. E. Atkinson, James L. King and C. Wittrau.

MORISCO M. Co.—Location: California and Nevada. Capital, $10,000,000. Directors—E. O. F. Hastings, H. P. Christiansen, R. C. Rogers, J. P. Garvey and O. H. La Grange.

EMPIRE G. and S. M. Co.—Location: Tulare county. Capital, $10,000,000. Directors—Thomas Fowler, P. W. Murphy, J. R. Arques, Edward Martin and George C. Perkins.

OPHIR S. M. Co.—Location: Arizona. Capital, $10,000,000. Directors—John Henderson, W. Meeks, G. W. Osborn, Samuel McCullough and J. H. Mayhew.

FRANKLIN S. M. Co.—Location: Arizona. Capital, $10,000,000. Directors—John Henderson, W. Meeks, G. W. Osborn, Samuel McCullough and C. W. Kinsman.

MARYLAND CON. G. and S. M. Co.—Location: Bodie district. Capital, $12,000,000. Directors—E. J. Baldwin, A. C. Dunn, C. W. Fox, D. L. Smoot and John A. Rice.

UNITED G. Q. BONANZA Co.—Location: Volcano, Amador county. Capital, $500,000. Directors—Charles McLaughlin, Tully R. Wise, George W. Newhall, Maurice Casey, Lewis Lamherton.

CLARA CON.—Location: Dakotab. Capital, $10,000,000. Directors—S. Heydenfeldt, Alpheus Bull, J. W. Gashwiler, Thomas Bell and W. H. A. Mason.

BODIE RICHMOND M. Co.—Nov. 16th. Location: Bodie mining district, Mono county, Cal. Directors—I. F. Miller, President; O. M. Cummings, V. President; E. L. Willard, Treasurer; O. D. Squires, Secretary; I. D. Wright. Office, 331 California St., Room 28, Stevenson Building.

BRANNAN M. Co.—Location: Nevada. Capital, $10,000,000. Directors—Samuel Purdy, S. K. Theller, B. S. Bernard, E. N. Hooper and J. S. Luty.

CAHAWBA G. M. Co.—Location: Tuolumne county. Capital, $3,000,000. Directors—C. W. Kellogg, H. L. Coye, F. W. Hadley, J. J. Mane and Isaac D. Huntoon.

MAGENTA M. Co.—Location: Bodie district. Directors—C. T. Hutchinson, Andrew J. Moon, Charles Jost, John F. Lohse and Louis Franconi.

WHO WAS THE FIRST HYDRAULIC MINER?—Mr J. S. Phillips has been at some pains to discover the name of this historic individual. He believes that he has succeeded. He says, in his "Explorers', Miners', and Metallurgists' Companion," speaking of hydraulic gravel mining: "This really magnificent system was first devised and practically applied in California, but I regret to say that I had considerable difficulty in obtaining the name of the man, as he, like Marshall and Comstock—the discoverers of gold in California, and silver and gold in Nevada—has been sadly neglected by those few whom he has directly enriched, as well as by the millions of his fellowmen indirectly benefited by his very determined and useful energy, and practical skill. I am informed by Mr. R. R. Craig, of San Francisco, that Mr. Edward Mattison was the first to apply the power of water for such a purpose under a 60 feet head of pressure, as passed through a small nozzle of at first only three-fourths of an inch in diameter, on a gravel bank at the American Hill mining claim, situated about one mile west of Nevada City, Nevada county, Cal."

MECHANICAL PROGRESS.

Progress in Tools for Accurate Measurement.

Eastern mechanical writers assure their readers that there has been, of late, as much, or more, improvement in tools or instruments for measuring as any one branch of mechanics' tools. Only a few years ago the vernier callipers were comparatively unknown, and working to the one-1000th part of an inch a myth; now, in almost every machine shop, the vernier is a common tool and everything of any importance is measured by it. Standard gauges in the form of cylinders for both outside and inside measurement have been in use in some of the larger and better equipped shops, but have not come into general use on account of their cost. They are made now at more reasonable rates, and should take their place in every shop, seeing that they will be found to more than pay for their cost in the time saved in working up the accurate sizes. The gauge should never be allowed to go into the shop to be used in common, but be kept for reference, and for setting slide gauges. Used in this way they will last a lifetime and retain their accuracy.

Screw thread gauges are now made adjustable, and can be used for fitting threaded work, as they can be closed together even when worn; and in connection with the screw thread gauge is the V or angular gauge of 60 degrees for grinding threading tools and also for turning lathe centers. The practice of grinding threading tools and turning off lathe centers without this gauge—and by the eye only—should never be allowed. "Snap," or calliper gauges are now made very cheaply and accurately, one variety having both outside and inside measurements. Such tools will pay for their first cost in a year.

The idea of making everything to a standard measure should be encouraged in every way possible. The advantage of interchangeable work can hardly be counted in dollars and cents; for instance, imagine every maker of gas pipe to have his own standard of sizes and thread; why the confusion at the Tower of Babel was nothing compared to what it would be if this "no standard" system were to prevail. It would be but little worse than the loose way in which the general run of shops make some of their work—the system of making bolts and nuts, for instance.

A BALL SAFETY-VALVE.—A recent English invention has for its object the adaptation and application to steam-boilers of an entire ball, for the purpose of a safety-valve for the escape of steam as required, such valve being capable of being moved repeatedly, so as to present a fresh face to the seating, and thereby economize the use of the valve. And his invention consists in the use of a ball made of brass, or other suitable material, resting on a seating of steel or other suitable metal or substance harder than that of the ball, and pressed down as required on to the seating by means of a weighted frame capable of swinging freely on the ball. This ball is sufficiently large in diameter to admit of its being moved a number of times on its seating, so as to present each time it is moved a fresh face to the seating, no one face intersecting another. The ball may also be moved at convenient intervals before being worn on any one face. The valve or ball is weighted with ordinary dead weights, but the frame by which the weights are suspended, instead of being fast to the valve, as usual, is made to swing freely on the ball at the top by means of a center piece of suitable concave form, lined with soft metal or other suitable material, to prevent injury to the ball.

MOLTEN CARBONATE OF SODA IN PUDDLING.—The *Iron Age* translates from a French authority an account of the efforts which E. Vanderkeyn has made to use molten soda in puddling. He states that the main benefit to be derived is the elimination of silicon, especially from coke irons, and that experience has taught him that 2½ times the amount of silicon in carbonate of soda is sufficient. The best time to charge the alkali is 3 or 4 minutes before the iron comes to nature, care being taken to close the damper so that the powdery material is not carried off by the draft. Mr. Vanderkeyn has also found that phosphorus and sulphur are reduced in amount, and he considers the manufacture of high-grade iron from ordinary pig possible by the use of alkalies. Inferring from experience in the metallurgy of another metal, we would add that the purifying action of molten caustic alkalies is still more energetic.

ELECTRIC LIGHT ON A VELOCIPEDE.—The electric light is evidently choosing many methods of coming forward. We read that it has been successfully applied to the bicycle by an enthusiastic Englishman. The monitor is the hind wheel of the bicycle and the apparatus a small ordinary magneto-electric machine with rotary magnet, aided by a small pocket battery. The carbons are regulated by a train of wheels, worked by the front wheel of the bicycle, the consumption being about one inch per hour. The apparatus takes up the room of a small valise, and costs in all about $25. The light is steady and equal to 120 candles, its great advantage being that it lights up the road thoroughly for 200 yards ahead on a dark night.

Fixing the Quality of Boiler Plate.

It seems that sharp competition has so cut into prices for steam boilers that boiler makers have prevailed upon plate makers to roll out very inferior stock for them to secure it at a low price. The plate makers now propose to agree among themselves not to produce this dangerous material, and the *Iron Age* heartily approves the proposition. It is impossible, says our exchange, to say what action will be taken by the meeting, but all manufacturers of good brands are interested in keeping up a high standard. This is fully understood and appreciated by the Inspector General, who evidently desires to work to the same end so far as the provisions of the law under which he acts, will allow. The present law, however, is considered very defective in fixing the ultimate strength of boiler plate as the standard of quality. It is well known that a hard, brittle iron will sometimes show a tensile strength as high as that of a more ductile plate, and sometimes much higher. Among the greatest strains to which boilers are subjected are those which result from the expansion and contraction of the iron, and a soft, tough plate will best stand this class of strains under ordinary conditions. If buyers of boiler plates wanted only those of good quality, and were willing to pay what they are fairly worth, it would be a matter of small consequence what the law provided. Unfortunately, in times like these of sharp competition, cheapness becomes a consideration of prime importance, even with steam users. A meeting of the trade cannot fail to be productive of good results in calling public attention to the fact that the law gives no guaranty of security for steam users against the consequences of using inferior material or accepting cheap and second-rate workmanship in boilers.

THE METALLIC SLEEPER PROBLEM.—Many railroads, the Central Pacific among them, has tried experiments to test the efficacy of iron sleepers in the hope to cut off the expense of perishable timber. The same problem is being worked at in Europe. It is stated that M. de Soignie, a Belgian engineer, and formerly a forge master, has patented a system of rail and longitudinal sleeper in steel, rolled all in one piece, and that the John Cockerill Company are now rolling an experimental couple-of-thousand pieces, to be laid near Ghent, between Quatrecht and Melle. The compound rail and sleeper is 12 meters long by 300 millimeters broad, and weigh 51 kilometers the meter run. If adopted, the Belgian iron and steel trades would benefit to the extent of 102 kilometers of steel, and 15 kilometers of iron for every meter of way laid with the new combination, and this, of course, is reason enough why it should be warmly recommended to the attention of the Belgian Minister of Public Works. All the advantages of the Hilf and De Serres and Battig sleeper, both of which are now being experimented with by the State, are combined and augmented in M. de Soignie's invention.

A BRIDGE MADE OF OLD RAILS.—A correspondent of the *Railroad Gazette* informs that journal that at the workshops of the Prince Edward's Island railway a bridge is being constructed from old iron rails. The plan of the bridge is a lattice girder, 31 feet span. The top chord is formed of three rails laid parallel; the bottom chord is formed in like manner, the lower rails being placed in an inverted position. The diagonal bracing is formed of short pieces of rails, bent at the upper and lower ends and twisted with a half turn in the middle, so as to cause the flanges to come in conjunction with the flanges of the top and bottom chords. The flanges are then riveted together with three-eighth-inch rivets. At each place where the braces and counters meet the chord a half-inch iron plate is introduced, which binds the three rails of the chord together. The rails used are 40-lb. iron of the Sandberg pattern. The bridge is designed by Mr. G. C. Cunningham, chief engineer of the road.

LARGE WHEELS FOR AFRICA.—A Philadelphia paper says that Messrs. Hoopes, Bro. & Darlington, spoke manufacturers, of West Chester, Pa., are now engaged in filling an extensive order for some of the largest wheels ever turned out from any establishment of the kind in the country. They are to shipped to Port Natal in the south of Africa, where they will be used for hauling goods to and from the interior of that country. Some idea can be formed of their size by their dimensions, which are as follows: The hind wheels are 5 feet high, spokes 3 inches, hub 12 by 14½ inches, and felloes 3 by 4½ inches. The front wheels are 3 feet 9 inches high, spokes 3 inches, hubs 11 by 14½ inches, felloes 3 by 4½ inches. The order calls for 64 sets or 256 wheels, but the firm found some difficulty in procuring a sufficient amount of timber of the right kind to complete the order.

LOCOMOTIVES FOR THE ELEVATED RAILWAY.—The *Railroad Gazette* gives the following dimensions of the four-wheeled locomotives built for the New York elevated railway: Cylinders, 10x14 in.; driving wheels, 38 in. diameter; distance from center to center of driving wheels, 6 ft.; length of fire-box, 5 ft. 6 in.; width of fire-box, 2 ft. 10½ in.; depth of fire-box, 2 ft. 8 in; diameter of boiler, 2 ft. 10 in.; 100 flues, 1½ in. diameter; hight of smoke-stack above rail, 10 ft. 10½ in.; weight of engine with boiler and tank filled, 23,740 lbs.

SCIENTIFIC PROGRESS.

Forests and Fungi.

Dr. H. W. Harkness, of Sacramento, is one of our most able and devoted mycologists. His studies have not only enriched the treasures of sciences in the branch he chooses, but they also have most important practical bearings. At the last meeting of the Academy of Sciences, Dr. Harkness presented an elaborate paper on "Fungoid Diseases in the trees of the Sierra Nevada." The writer began by describing the various fungoid diseases which affect vegetation, and instanced the *Peronospora* in the potato field, the *Erisyphe* in the wheat, the *Sphæria Morbosa* of the fruit trees, and the *Meruluis* and *Polyporus* among the trees of the forest, as all types of a large number of parasitic diseases that are silently converting our forest trees into their original elements. In many cases, he said, it is probable that the trees has attained its growth before it is attacked, but the external signs are so obscure that valuable trees are often lost, before the presence of the disease is suspected. A notable example of this is to be found in the Douglass spruce of our mountains, which is one of our most beautiful trees, while for many purposes the timber is of great value. The species of fungus known as the *Dædalia* causes the lumberman to suffer a great loss in these trees. The disease attacks the living trees in the form of a dry rot. Its presence is often not detected until much labor has been expended in preparing the lumber for market.

The fungus first finds lodgment beneath some dead limb. Following the course of the limb as it enters the heart wood of the tree, the mycelium begins immediately to branch upward and downward along the line of the longitudinal cells. Ramifying among these it saps the cell contents and destroys the vitality of the structure. On making a section of the trees the line of devastation may be easily traced by the minute channels filled with the decaying wood.

Dr. Harkness then reviewed the *Polyporus Revolutus*, which, he said, makes havoc with the fir tree of the Sierra. The fungus attaches itself to the bark of the tree; its mycelium soon penetrates to the cambium beneath; there it spreads over a considerable space, and begins to force its way directly through the sap-wood toward the heart. The tree, however, does not die soon, and it is only after years of contest that the fir fails prey to the destroyer. So general is the disease among the firs that few, if any, die from any other cause. In conclusion, he gave an extended account of the fungoid disease which attacks *Libocedrus Decurrens*, a tree of great value for timber, the consumption of which is constantly increasing as its good qualities are becoming better known.

THE ELECTRIC LIGHT AGITATION.—Many people are on the alert to see what is to come of the loud promises which were made on the part of Mr. Edison that he should soon puncture all the gasometers in the country. It seems evident that the announcement was made a little in advance of the accomplishment, but the inventor is in vigorous pursuit of his triumph. The latest news is that a company has been incorporated to be called the "Edison Electric Light Company." The capital is fixed at $300,000, with the right of increase. According to Eastern exchanges, the object of the company is stated generally to be "the production of heat, light and power by electricity." The present object, however, is to supply a fund which is to assist Mr. Edison in carrying forward his experiments to a point where he shall give a positive demonstration of the powers of his new inventions. Precisely what these inventions are in all their details of transmission of force and multiplication of the light derived from electricity, Mr. Edison has not yet told to anybody, fearing that the devices may be patented abroad. The invention as to the use of electric lights, it is said, will not include the use of carbon points as ordinarily known in electric lights, but instead the incandescence of a metal simpler and cheaper in every way. Mr. Edison has determined upon the general features of his light, its manner of production, etc., but in many minor points connected with the distribution of the light for ordinary domestic and business purposes much work is yet to be done. No date has been fixed for the public demonstration, nor will any be made until after the invention is patented here and abroad.

PRACTICAL RESULT OF AN ARCTIC EXPLORATION.—Wheat from a new source made its appearance in Europe this year, the Danish vessel *Neptune* having brought a cargo from the Obi river in Siberia, to Hamburg. The voyage from Hammerfest, in Norway, through the Arctic sea to the mouth of the Obi and return was made in five weeks, and without any serious difficulty. Siberia is a great country in extent and there are said to be almost limitless possibilities in the way of wheat raising on its vast steppes, but as long as the country is as thinly peopled, and as difficult of access as at present, our Western wheat growers will have little to fear from its competition. The voyage of the *Neptune* was suggested by recent explorations made in the Arctic sea.

UNITED STATES SURVEY OF THE AMAZON.—Capt. T. O. Selfridge, United States Navy, in command of the United States steamer *Enterprise*, recently returned from an important survey of the Amazon river. He is busily engaged upon his report, which will be presented to Congress in December by the Secretary of the Navy. The extensive maps, some 30 in number, will not be ready for the public for some months, owing to the large amount of work necessary to prepare them. The expedition to determine the navigability of the Amazon and Maderia rivers has proved eminently satisfactory. The 150 who went there from the Southern States, having but little capital and indifferent labor, have had a hard task in their warfare with wild nature in redeeming the soil from its dominion. Now, that they have accomplished this, they are doing better, and appear to be contented in the home of their adoption. The *Enterprise* was the first foreign naval ship that ever ascended the Amazon for any distance. The sole representative of American energy on the Amazon is a small colony of Southerners now settled at Santa Rem, some 500 miles from its mouth. There are about six families, who have remained to test the adaptability of the Brazilian soil for American enterprise.

THE TERRITORIAL SURVEYS.—Prof. Hayden and Major Powell have reported to the Secretary of the Interior the general results of their topographical and geological surveys during the past season. The former says: The results of the season's labor, though a short one, has been on the whole very satisfactory. About 12,000 square miles of very difficult country was surveyed—much of it in minute detail—and a mass of observations secured for the twelfth annual report, which will make it of more general interest and value, than any preceding. The Yellowstone Park and the Wind River range of mountains formed a part of the region covered by Hayden's Survey. The work under Major Powell has been prosecuted south and east of the Grand Canyon of the Colorado river. Little irrigable, but extensive grazing lands have been discovered. He reports having collected much ethnological material, and states that he has nearly completed a map showing the distribution of the various Indian tribes within our present boundaries, at dates when they were first known to Europeans.

THE NEED OF CORRECT STATE SURVEYS.—We read that Prof. J. Peter Lesley, at present State Geologist of Pennsylvania, and for some years engaged in conducting the elaborate geological survey of that State, breaks out into loud lamentations over the utterly inadequate delineations of the topography of the State on which he has to lit his geological charts. "They neither lit on to each other nor correspond to any common standard map," he says. County lines, he says, are sometimes half a mile away from their true places. The joint commission of the States of New York and Pennsylvania to establish the line between those States, has found the old accepted line wrong at every point so far as it has surveyed. The Coast Survey is now authorized to extend its system of triangulation over any State which provides for a scientific survey, and there never was a time when it was easier to get large corps of expert surveyors.

ACCELERATION OF NERVOUS VELOCITY BY THE WILL.—A translation in the *Journal of the Franklin Institute* says that Chauveau has lately undertaken two distinct sets of experiments. In the first, he compared the velocity of transmission in the nerves of the laryngeal muscles (red voluntary muscles), and in those of the cervical position of the œsophagus (red involuntary muscles). In the second, the comparison was extended to the nerves of the terminal portion of the œsophagus (pale involuntary muscles). He finds that in the motor nerves of the red involuntary muscles, the velocity of transmission of centrifugal excitement is about eight times less than in the nerves of muscles which have an identical structure, but which belong to the portion of the muscular system that is controlled by the will.

WINE TESTING IN PARIS.—The *Journal Officiel* states that the French Minister of Commerce and Agriculture has directed the Agronomic Institute to undertake the chemical analysis of every description of wine at present on view at the Paris exhibition. More than 10,000 varieties of French, Spanish, Italian, Austro-Hungarian, American and African wines are to be examined. This gigantic task has been entrusted to M. Boussingault, director of the laboratories attached to the Institute, who will be assisted in his labors by M. Josef Boussingault, his son. The analysis will be carried out at the laboratory built by the Institute at the dairy connected with the Vincennes farm.

MICROSCOPY.—Upon the whole the initial number of the *American Quarterly Microscopical Journal*, which is just issued, is a credit to the progress of microscopical research in this country. There is rarely a copy of a new journal which shows so many excellences and so few faults. The *Journal* is illustrated by six full-sized plates on stone, illustrating the essays presented, and an exquisite steel plate of new diatoms, described by Prof. H. L. Smith. The *Journal* should receive the encouragement of all microscopists and literateurs. The editor is Prof. Romyn Hitchcock, 150 Nassau street, New York.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending Nov. 7.	Week Ending Nov. 14.	Week Ending Nov. 21.	Week Ending Nov. 27.
Alpha	15½ 13	14⅝ 13⅜	11 6	11⅜ 9¼
Alta	14⅜ 12⅝	13⅛ 11	14⅛ 9¼	9 7½
Andes	1¼ 50c	1.05 90c	1 50c	75c 50c
Alps	80c			
Argenta	7½ 7	5⅞ 4½	4⅛ 3½	4¼ 3
Atlantic	1.30 1	1.30 1.20	1.20	
Aurora Tunnel	1 70c	80c 70c	75c 50c	
Baltimore Con	3 2½	3¼ 3	2.60 2	2½ 1⅛
Belcher	8⅞ 7⅜	9¼ 7⅜	8⅛ 4½	6 4
Belmont	2¾ 2¼	2½ 1⅝	1¾ 5oc	1.10 50c
Best & Belcher	26 23	25½ 20½	23 15	17½ 16
Bullion	14½ 11⅛	13⅜ 11⅝	13 6¼	7⅜ 6
Bechtel	1 90c	85c 80c	80c 50c	63c 50c
Belle Isle	50c 40c	45c 30c	40c 30c	30c
Bodie	20 17⅜	17⅜ 16⅛	19 16	17 16⅛
Benton	7¼ 6¾	7 6	6¾ 2	5 3
Bulwer	16½ 16	16 13	16 13	16 15
Boyle				
Black Hawk	1⅛ 1	1.05		50c
Belvidere	1¼	1⅛ 1.40	1	1¼ 90c
Booker	2 1.10	1¼ 1.10	1¼ 75c	1 75c
Oaledonia	5¼ 4.60	4.90 4	4.65 2¼	3½ 2.60
California	13 11½	12¾ 8¼	10 8	9¼ 8¼
Challenge	2 1¼	1.80 1.60	1.60 1.40	1.35 1
Chollar-Potosi	61 58	59 50	54 30	41 36
Comanche				
Confidence	11½ 10	11½ 9	10¼ 6¾	8¼ 5
Con Imperial	1.35 1¼	1.30 1.10	1.10 70c	85c 75c
Con Virginia	13½ 11⅛	13⅜ 8¾	9⅝ 8	8¼ 7
Crown Point	11 9⅜	10¼ 9	8¼ 5	6 5
Gon Washoe	2 1	3.10 3	3.45	3.05
Champion	1½ 50c	75c 40c	60c 40c	45c 40c
Concordia		1 50c		
Dayton				
DeFrees	20c 15c	15o 10c	10c	25c 5c
Daney				
Day	70c 60c	50c 40c	45c 25c	35c 30c
Eureka Con	35 33½	36 30	36 32	35 33
Exchequer	7⅝ 6	7¼ 6¼	7¼ 3	5½ 4
Endowment	85c 50c	60c 45c	45c 30c	50c 30c
Gen Thomas				
Grand Prize	8½ 6¾	8⅝ 7¾	8 8	11 9¾
Gala	20c	40c 35c	25c 20c	25c 20c
Golden Chariot	50c 25c	25c	25c 20c	
Golden Terra	4¾ 4½	4½	4¼	5
Goodshaw	65c 60c	65c 50c	55c 45c	50c 35c
Gould & Curry	13½ 10¾	13⅜ 12¾	12¾ 8¾	9⅜ 8½
Hale & Norcross	24½ 22¼	22½ 17½	18¾ 13¾	13¾ 12¼
Hillside	4 3½	3¾ 3	4 3½	3½ 3
Highbridge	2.65 2	2.30 2	2.60 2	2.15 2
Homestake	10	12	1¼ 13⅛	
Hussey	60c 40c	60c 45c	50c 40c	40c 35c
Independence	2½ 2.40	2¾ 1¼	1.95 1	1½ 1¼
Julia	6¾ 5½	6 4½	5 2½	3¼ 2¼
Justice	8⅝ 7½	8¼ 6¾	7¼ 4½	6 4.40
Jackson	8½ 8	8¼ 8	7¾ 6¼	6½ 5¼
Joe Scates				
K K Con				1
Kentuck	8¼ 7½	7¾ 6	7 4	5 4½
Kossuth	30c 25c	30c 25c	30c 25c	
Keystone				
Lady Bryan	3½ 2¼	3 2½	3¼ 1.40	2¼ 1.30
Lady Wash	3½ 2¼	2¼ 2	2 1	1¼ 1¼
Leopard	80c 60c	75c 60c	1.10 1	1.05 1
Leviathan	95c 85c	85c 50c	65c 45c	50c 45c
Leeds	2 1½	1½ 1.20	1½ 1¼	1¼ 1
Lee				
May Belle	60c 40c	75c 50c	70c 60c	75c
Modoc	55c 50c	60c 50c	30c 15c	30c 20c
Manhattan	3½ 3¼	4.60 3¼	4.80 3.90	4.60 4
Martin White	9¾ 9¼	9¾ 9¼	9¾ 8¼	8¼ 8
McClinton	75c 60c	75c 50c	75c 50c	55c 50c
Meadow Valley	50c 45c	40c 30c		
Mexican	76½ 67½	74 65	75 35	39½ 30
Mides				1½
Morning Star	3¼ 3	5½ 5	4¼	
North Con Virginia	12¾ 10	12 10	12 6¼	7 5
New York	1½ 1.30	1.60 1	1¼ 50c	90c 60c
Northern Belle	10½ 10	11 10¼	10½ 10	10½ 9¼
New Coso		10c 5c	25c 5c	25c
Navajo	85c 60c	75c 60c	50c 40c	50c 40c
Occidental			1 75c	
Ophir	58¾ 51	58 49	57¾ 37¾	43¾ 35
Oriental	1.05 40c	1 65c	75c 45c	45c 25c
Overman	28 24	26¼ 22¼	23½ 12¾	13¼ 11½
Panther				
Phenix			2¾	2¼
Phil Sheridan	1½ 1	1.10 95c	1 50c	75c 55c
Prospect		20c		
Raymond & Ely	11 6¾	8¾ 7	6¾ 6	9¼ 7
Richer	1½ 1	1	1 75c	80c
Rock Island				
Rye Patch				
Rough & Ready	2¼ 2	2 1¼		
Savage	23 18½	20⅜ 15¾	17 9½	11¼ 10
Seg Belcher				26 17
Sierra Nevada	200 182	194 183	197 60	65 39
Silver Hill	3½ 2¼	3 2¼	2½ 1½	2 1¼
Silver King	15	16¾ 16	17 15	15
Silver Prize	5c	5c	5c	
Succor	1.30 95c	1¼ 1	1½ 60c	60c 40c
Summit	1.40 1	1 90c	1	1.80 85c
Scorpion	4¾ 2¾	2¾ 2½	4 2	1.60 1
Solid Silver	1	1.10 1	1.10 1	65c 50c
South Bodie	60c 40c	65c 50c	55c	55c 50c
South Standard	50c 40c	50c 34c	30c 26c	30c 15c
Star	70c 50c	60c 55c	60c 50c	50c
St. Louis	1 90c	1 40c	75c 65c	
Syndicate	2			
Tioga Con	2¼ 1¾	2¼ 1.90	2½ 1.80	1.80 1½
Tiptop	1.40 1	1¼ 1	1¼ 1	1¼ 1¼
Trojan	30c 25c	55c 30c	40c 30c	30c 25c
Union Con	161 148	159 142	155 55	65 48
Utah	45 34	43 40	42½ 22	22½ 17
Vermont Con	5¾ 5½			
Ward	1½ 1	1.30 1	1.10 75c	80c 70c
Wells-Fargo	85c 55c	70c 50c	65c 20c	40c 20c
Woodville	50c 40c	55c 45c	50c	30c 25c
White Cloud			75c	
Yellow Jacket	25 22½	24½ 20	22½ 14½	17½ 14½

Sales at S. F. Stock Exchange.

Friday A. M., Nov. 22.

725	Alta	400	Gila 25@20c
345	Alpha 11¾@11¼	1295	Grand Prize 10@10½
1635	Best & Belcher 16@17	470	Goodshaw 40@45c
1255	Bullion 7¼@7¾	475	Golden Terra 5
915	Belcher 5¼@5	340	Hussey 40c
985	Con Virginia 8¼@8	6155	Highbridge 2.10@2.15
425	California 9@9½	100	Independence 1.30@1.45
215	Chollar 39@41	100	Leeds 1½
843	Crown Point 6¾@6¼	90	Lady Wash 1¼
2780	Con Imperial 80@85c	400	Leviathan 50@45c
870	Caledonia 3¼@3¾	150	McClinton 50c
1250	Exchequer 5@5¼	670	Mono 6¼@7
940	Gould & Curry 9@9¼	450	M White 8
2230	Hale & Nor 12¾@13	400	Modoc 20c
440	Justice 5¼@5¾	150	Manhattan 4¼@4.35
1440	Julia 3@3¼	1440	Navajo 40c
190	Kentuck 9@9¼	235	New York 90@80c
2345	Lady Bryan 2¼@1.90	50	N Con Vir 7¼@5
2030	Mexican 3¾@3⅜	65	Northern Belle 10@10¼
640	Overman 12@13¼	200	Oriental 25c
3060	Ophir 41@39¾	1235	Paradise 2¼@2¾
200	Succor 8¼@8¾	705	Phil Sheridan 75c
3575	Sierra Nevada 65@66	250	Raymond & Ely 7
2115	Savage 10@10½	200	Richer 80c
3295	Union Con 59@65	300	S Standard 10@5c
700	Utah 20@21	500	S Bodie 50c
1750	Yellow Jacket 16¾@17¼	900	Summit 85c@1
	AFTERNOON SESSION.	50	Sitting Bull 50c
610	Andes 70@50c	570	Silver Hill 2
1930	Argenta 4@4¼	110	Silver King 15
	Bechtel 65c	375	Scorpion 1¼@
	Bodie 16¾@17	800	Tuscarora 5c
830	Belmont 1.10@1.10	765	Tiptop 1¼@1.40
210	Bulwer 15@15¼	2	Tioga Con 1.80@1½
200	Black Hawk 50c	100	Trojan 30c
	Belle Isle 30c	300	University 1.40
925	Booker 75@80c	400	Ward 80c
500	Belvidere 1¼	450	Wells-Fargo 40c
150	Champion 80c	**Saturday A.M., Nov. 23.**	
1500	Caledonia (B H) 1¼	495	Aurora T 80c
865	C Pacific 3@2¾	930	Alta 8@7¾
125	Dudley 2160		Argenta 4@3¾
520	Day 35@30c	195	Best & Belcher 17@16¾
900	DeFrees 50@10c	580	Bullion 7¼@7¾
1150	Endowment 85@50c	50	Belcher 5¼@5
835	Eureka Con 23@35	200	Bodie 17@16¾
110	Bulwer 15¾	495	Mono 6@6¾
825	Con Virginia 8@7¾	50	Martin White 8
230	California 9	350	McClinton 50c
100	Confidence 8¼@8	50	May Belle 75c
295	Chollar 40@41	495	Northern Belle 10@9¾
630	Crown Point 5¼@5¼	1260	Navajo 40@50c
325	Caledonia 3¼@3.40	100	Oriental 40c
2720	Con Imperial 85@80c	1630	Paradise 2@1.80
550	DeFrees 5@10c	610	Raymond & Ely 8¼@9
1035	Exchequer 5¼@5	1100	Red Cloud 1¼
200	Eureka Con 3¼@3¼	100	S Bodie 55c
460	Endowment 50@40c	990	Summit 95c@1
800	Gould & Curry 9¼@9¾	150	Sitting Bull 70c
1325	Grand Prize 10@9¾	300	Star 50c
100	Goodshaw 50c	1500	South Standard 10@5c
650	H Nor 12¾@13	2000	Tuscarora 5c
350	Highbridge 2.10	325	Tiptop 1.40
50	Hillside 3¼	240	Tioga Con 1¼
?0	Hamburg 2	300	University 1¼
1870	Independence 1.40@1¼	**Tuesday A.M., Nov. 26.**	
1305	Justice 5¾@5¼	90	Alpha 10c@10¼
1655	Julia 3¼@3 1/16	1160	Alta 7¾@7¼
45	Jackson 6¾	830	Andes 65@75c
375	Kentuck 5@4¾	590	Best & Belcher 16¾@16
1530	L Bryan 2@1.80	495	Belcher 5@4.60
2170	Mexican 34@33	630	Bullion 6¼@6¾
750	McClinton 50c	465	Benton 3¼@3
195	Modoc 20c	870	Baltimore Con 1¼
50	Northern Belle 10¼	1690	California 8¼@8
1310	Navajo 40c	310	Caledonia 2@2.70
1015	Ophir 36@3⅜	1650	Con Virginia 7¼@7
670	Overman 13@13¼	1000	Con Imperial 80@75c
1270	Paradise 1.80	310	Chollar 36@38
275	Raymond & E 7¼@7¼	410	Crown Point 5¼@5¾
795	Savage 11@11¼	170	Chall nge 1@1¼
20	Seg Belcher 26	200	Con Washoe 3.05
4740	Sierra Nevada 47@54	830	Exchequer 4
50	Star 50c	1000	Gould & Curry 9¼@9¾
350	Tiptop 1¼	410	Gould & Curry 9@9¼
4080	Union Con 55@62	775	Hale & Nor 13¾@13¾
780	Utah 19¼@22½	385	Justice 4½@5
810	Yellow Jacket 16@16¼	900	Julia 2.90@3
Monday A. M., Nov. 25.		145	Kentuck 4½@4¾
240	Alta 8@7¾	475	Lady Bryan 1.80@1.85
230	Alpha 10	100	Lady Wash 1¼
200	Andes 75c	200	Leviathan 50c
500	Best & Belcher 17¾@17¼	885	Mexican 30@30¼
650	Belcher 5¼@4.85	300	Mides 1¼
1800	Bullion 7@6¾	100	New York 65c
200	Baltimore Con 1¼	2025	N Bonanza 13@14
1650	Benton 5@4¾	400	North Sierra Nev 10c
355	California 8¾@8¼	985	N Con Virginia 7@6
1200	Con Virginia 7¼@7¼	1185	Ophir 35¾@35
435	Crown Point 5½	475	Overman 11¾@12¼
705	Con Imperial 75@80c	235	Phil Sheridan 75c
200	Challenge 1.35	300	Sierra Nevada 39@42
85	Confidence 7	350	Savage 10¼@10⅝
375	Caledonia 3@2¾	10	Seg Belcher 20
1205	Exchequer 4¾@4.40	700	Solid Silver 60@65c
645	Flowery 50@25c	175	Scorpion 1¼@1.40
935	Gould & Curry 9¾@9¼	840	Silver Hill 1¼@5c
675	Hale & Nor 12¾@13	400	Succor 75c
275	Justice 4¼	800	Trojan 30@25c
1210	Julia 3@2.80	165	Utah 17@18
1.0	Kentuck 2410		Union Con 48@50
1150	Lady Bryan 1¼@1.30	100	Woodville 25c
250	Leviathan 50c	1250	Yellow Jacket 70
150	Lady Wash 1¼	1150	Wells-Fargo 30@25c
1080	Mexican 37¾@35	450	Yellow Jacket 15¼@14½
1100	N Sierra Nevada 15@10c		AFTERNOON SESSION.
3950	N Bonanza 2¼@1½	1450	Argenta 3@3.10
400	North Con Vir 6¼@6	725	Belmont 60@65c
150	New York 75c@50c	100	Bodie 16¾@16¼
1420	Ophir 37¾@35	250	Bulwer 15¾@15¾
215	Overman 12@11½	150	Black Hawk 50c
300	Phil Sheridan 55@65c	470	Booker 75c@1
1050	Solid Silver 50c	500	Caledonia (B H) 1¼
400	Scorpion 1¼@	2450	Champion 40@45c
100	Senator 20c	400	C Pacific 2¼
430	Savage 10¼@10⅝	600	DeFrees 20c
2480	Sierra Nevada 45@48	300	Day 35c
200	Succor 75c	300	Dudley 1
835	Silver Hill 1¼@1¼	165	Eureka Con 34@35
550	Trojan 30c	550	Endowment 30c
250	Utah 20@21	300	Golden Terra 5
2600	Union Con 55@52	660	Gila 20@25c
300	Ward 75c	300	Grand Prize 11¼@10¾
200	Wells Fargo 20c	250	Goodshaw 35@40c
200	Woodville 30c	650	Hillside 3½
460	Yellow Jacket 16¼@16¼	250	Highbridge 2.10@2
	AFTERNOON SESSION.	350	Hussey 40@35c
1700	Argenta 3½@3	50	Hamburg 1½
200	Aurora T 50@60c	5	Homestake 20
250	Bodie 16¾@16¼	1200	Independence 1¼@1¼
35	Bulwer 10	500	Jefferson 1¼
1525	Belmont 60@50c	50	Jackson 6@5¾
145	Booker 75c@1	50	K K Con 1
250	Belvidere 90c	125	Leeds 1.10@1
50	Black Hawk 50c	605	Mono 6@6¼
100	Bechtel 50c	500	Manhattan 4¼@4
300	Champion 50@40c	200	Modoc 30c
4.0	C Pacific 2¼@2	1100	Martin White 8¾@8
500	Chieftain 10c	485	M White 8@8¼
200	Dudley 1¼	400	New Coso 2c
150	DeFrees 20@25c	275	Northern Belle 10@9¾
100	Day 35c	925	Navajo 45@30c
450	Endowment 40@45c	200	Oriental 45@40c
995	Grand Prize 10¾@10¼	1000	Paradise 2.50
200	Goodshaw 40c	635	Raymond & Ely 8¾@9
200	Hussey 40c	100	Red Cloud 2
50	Hamburg 1¼	350	Summit 1.80@1¼
70	Highbridge 2@2.10	1000	S Bodie 50c
205	Independence 1¼@1.30	100	Star 50c
225	Justice 4¼@4.90	150	Sitting Bull 50c
50	Leeds 1¼	455	Tiptop 1¼@1¼
150	Modoc 25@30c	300	Tioga Con 1¼@1¼
115	Manhattan 4¼@4.60	500	University 1¼@1¼

SALES OF LAST WEEK AND THIS COMPARED

Thursd'y A.M., Nov. 21.			Wed'sday A.M., Nov. 27.		
430	Alpha	10¼@11	310	Alta	7¼@7½
525	Alta	8@8¼	235	Alpha	9¼@9¾
745	Best & Belcher	15¾@16	560	Best & Belcher	17¼@17¾
1230	Belcher	5¼@5¾	1935	Belcher	6¼@6¾
1500	Bullion	7¼@7¾	1965	Bullion	6¾@7
1725	California	8¼@8¾	530	Caledonia	2¼@2.60
1360	Con Virginia	8@8¼	935	Con Imperial	75c@80c
1790	Crown Point	6@6¼	1770	California	8¼@8¾
175	Chollar	40@40¼	1590	Con Virginia	7@7¼
2065	Con Imperial	75c@80c	1000	Confidence	9¼@9¾
60	Confidence	7¼@8	225	Chollar	38@40c
420	Caledonia	2¼@3	880	Crown Point	5@5¼
1010	Exchequer	4.90@5	1060	Exchequer	4.15@4¾
785	Gould & Curry	9¼@9¾	730	Gould & Curry	8¼@9
745	Hale & Nor	10¾@11	730	Hale & Nor	12¼@13
410	Justice	4¼@4½	570	Justice	4.40@4.60
1695	Julia	2.90@3	1075	Julia	2¼@3
370	Kentuck	4¼@4¾	580	Kentuck	4¼
1640	Lady Bryan	1.40@2	755	L Bryan	1½@2
1390	Mexican	38@41	6340	Mexican	33@35
2235	Ophir	42¼@43	2150	Ophir	39¾@42
400	Overman	12¼@13	825	Overman	12½@12
1720	Sierra Nevada	56@60	2530	Sierra Nevada	47@50
1040	Savage	9¼@9¾	1240	Savage	10@11¼
50	Succor	95c	20	Seg Belcher	17
3045	Union Con	57@58	100	Succor	80c
350	Utah	23@24¼	3195	Union Con	60@63
715	Yellow Jacket	15¾@15½	670	Utah	20@21
	AFTERNOON SESSION.		900	Yellow Jacket	15
300	Andes	1@75c		AFTERNOON SESSION.	
815	Argenta	4@4¼	720	Argenta	3.10@3¼
100	Aurora T	75c	100	Advance	5c
370	Belmont	1@1.10	225	Andes	60@75c
3 5	Bulwer	14¼@16¼	225	Bodie	16
210	Bodie	15¾@16	1220	Belmont	50@60c
200	Bechtel	60@55c	300	Booker	85@90c
723	Booker	75c	250	Bechtel	55@60c
100	Black Hawk	1	150	Bechtel	60c
80	Belvidere	1¼@1¼	200	Black Hawk	1
600	Belle Isle	30@4.c	150	Belvidere	40@50c
325	Benton	4¼@5¼	725	Benton	3¼@3
100	Champion	45c	530	Challenge	1¼
1400	Chieftain	10c	40	Champion	35c
100	C Pacific	2.80@2.90	270	C Pacific	2.90@3
100	Caledonia (B H)	1¼	250	Dudley	1
470	Challenge	1¼@1¼	165	Eureka Con	36@37
50	Day	35c	200	Endowment	45c
25	Dudley	1¼	150	Belvidere	40@50c
300	DeFrees	5@10c	725	Benton	3¼@3
700	Endowment	35@40c	530	Challenge	1¼
165	Eureka Con	32¼@34	40	Champion	35c
1815	Flowery	1	270	C Pacific	2.90@3
300	Goodshaw	45c	250	Dudley	1
1455	Grand Prize	8¼@8¾	165	Eureka Con	36@37
40	Golden Terra	4¼	200	Endowment	45c
590	Hussey	40@45c	830	Flowery	55@60c
65	Hillside	3@3¼	180	Grand Prize	10¼@1
650	Highbridge	2.10@2.20	500	Gila	20c
100	Ida	25c	100	Goodshaw	30@4¼c
3 5	Independence	1.35@1.40	545	Hussey	35@45c
50	Jackson	7	215	Hanuburg	1¼@1¼

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in Mining and Scientific Press and other S. F. Jou rnals

ASSESSMENTS—STOCKS ON THE LISTS OF THE BOARDS.

Company.	Location.	No.	Amt.	Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business
Belcher S M Co	Nevada	16	1 00	Oct 8	Nov 12	Dec 3	J Crockett	203 Bush st
Bechtel G M Co	California	3	25	Nov 5	Dec 11	Dec30	W H Lent	327 Pine st
Caledonia S M Co	Nevada	25	50	Nov 15	Dec 20	Jan 10	R Wegener	414 California st
Champion M Co	California	1	25	Nov 22	Dec 27	Jan 16	Jno Crockett	203 Bush st
Concordia M Co	California	1	10	Oct 31	Dec 5	Dec 26	G A Holden	310 Pine st
De Frees M & M Co	Nevada	8	15	Oct 25	Dec 2	Dec 23	T E Atkinson	310 Pine st
Endowment M Co	[Nevada	2	25	Nov 21	Dec 30	Jan 21	R H Brown	327 Pine st
Equitable T & M Co	Utah	19	05	Nov 7	Dec 9	Dec 28	S Healy	45 Merchant s Ex
Gila Con M Co	Arizona	3	03	Oct 17	Nov 18	Dec 10	W J Pettigrew	419 California st
Gen Lee S M Co	Arizona	3	25	Oct 19	Dec 3	Dec 31	T E Atkinson	310 Pine st
Gould & Curry S M Co	N vada	34	1 80	Nov 18	Dec 23	Jan 14	A K Durbrow	309 Montgomery st
Julia Con M Co	Nevada	7	1 00	Nov 1	Dec 6	Dec 28	A Noel	419 California st
K K Con M Co	Nevada		1 00	Nov 8	Dec 10	Dec 30	B B Minor	309 Montgomery st
Leopard M Co	Nevada	8	50	Oct 15	Nov 19	Dec 11	R H Brown	327 Pine st
McCrackin Con M Co	Arizona	2	50	Oct 22	Dec 6	Jan 6	H Aug Whiting	211 Sansome st
Manhattan S M Co	Nevada	1	00	Oct 12	Nov 15	Dec 5	J Crockett	203 Bush st
Modock Con M Co	California	7	50	Nov 14	Dec 23	Jan 13	J W Pew	310 Pine st
New York M Co	Nevada	17	30	Nov 12	Dec 14	Jan 3	D L Thomas	203 Bush st
Nevada S M Co	Nevada	56	3 00	Oct 22	Nov 27	Dec 18	W W Stetson	309 Montgomery st
North Con Virginia M Co	Nevada	14	1 00	Nov 21	Dec 27	Jan 17	G O Pratt	309 Montgomery st
Ophir M Co	Nevada	34	1 00	Nov 5	Dec 10	Dec 30	C L McCoy	203 Bush st
Real del Monte M Co	Nevada	4	1 00	Oct 15	Nov 25	Jan 6	C V D Hubbard	312 California st
Raymond & Ely M Co	Nevada	9		Oct 21	Nov 23	Dec 17	J W Pew	310 Pine st
Sierra Nevada S M Co	Nevada	56	3 00	Oct 22	Nov 27	Dec 18	W W Stetson	309 Montg'y st
Succor M & M Co	Nevada	20	50	Oct 12	Nov 15	Dec 3	W H Watson	302 Montgomery st
Silver Prize G & S M Co	Nevada	3	15	Nov 7	Dec 11	Jan 2	H W Redington	111½ Leidesdorff st
Tioga Con M Co	California	3	20	Oct 10	Nov 13	Dec 3	W H Lent	327 Pine st
Tuscarora M & M Co	Nevada	2	05	Nov 13	Dec 19	Jan 13	M E Sperling	309 California st
Utah S M Co	Nevada	22	1 00	Oct 15	Nov 20	Dec 9	G C Pratt	309 Montgomery st
William Penn M Co	Nevada	4	03	Nov 22	Dec 24	Jan 11	O J Humphrey	328 Montgomery st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Arizona-Utah G & S M Co	Arizona	03	Sept 10	Nov 9	Dec 14	O H Spencer	408 Califo nia st
Armand G & S M Co	California	1	25	Sept 24	Nov 4	Dec 2	J L Fields	240 Montgon ery st
Challenge Con M Co	Nevada	1	20	Nov 22	Dec 23	Jan 14	W E Dean	203 Bush st
Colorado G & S M Co	Nevada	1	25	Oct 18	Nov 22	Dec 12	C E Wetmore	419 California st
Dardanelles M Co	Nevada	6	1 00	Nov 12	Dec 13	Dec 30	J S Dimon, Jr	310 Mont'g'y st
Dudley M Co	California	1	25	Nov 1	Dec 5	Jan 6	E C Masten	22 Nevada Block
Father DeSmet Con G M Co	Dakota	2	1 00	Nov 13	Dec 18	Jan 15	T Widmann	404 Montgon ery st
Florence B G M Co	California	2	03	Nov 12	Dec 17	Jan 7	F A McGee	32 Merchants' Ex
Gen Robt Allen S M Co	Arizona		25	Oct 29	Dec 2	Jan 2	M C Southard	411½ California st
Jupiter M Co	California	1	10	Oct 17	Nov 21	Dec 12	E C Masten	22 Nevada Block
Lodi M Co	Nevada	1	25	Nov 20	Dec 23	Jan 11	O J Humphrey	328 Montgomery st
Mammoth M Co	California	1	50	Oct 31	Dec 9	Dec 30	B R Zantzinger	302 Montgomery st
Mayhelle Con M Co	California	1	15	Oct 31	Dec 5	Dec 26	G A Holden	310 Pine st
Mayflower Gravel M Co	California	1	15	Oct 13	Nov 18	Dec 2	J Morinio	328 Montgomery st
Magnolia G M Co	California	1	10	Nov 22	Dec 27	Jan 16	T A White	113 Leidesdorff st
McMillan S M Co	Arizona	1	25	Nov 22	Jan 12	Jan 29	A C McMeans	24 Safe Deposit Build
Mount Jefferson M & M Co	California	1	05	Oct 17	Nov 25	Dec 17	J W Clark	318 Pine st
Mineral Fork M & S Co	Utah	1	02	Oct 31	Dec 7	Dec 30	Otto Mitchke	328 Montgomery st
Nevada Gravel M Co	California	4	05	Oct 10	Nov 16	Dec 4	J Pentecost	511 California st
Oriental Con G & S M Co	California	1	50	Nov 19	Dec 23	Jan 13	F C Moscbach	327 Pine st
South Standard M Co	California	3	20	Nov 5	Dec 10	Dec 31	C A Sankey	331 Montgomery st
South Utah M Co	Nevada	1	05	Nov 18	Dec 21	Jan 7	G S Healy	45 Merchants' Ex
S F Petroleum Co	California	4	30	Oct 5	Nov 12	Dec 5	Wendell Easton	22 Montgomery st
Starr King S M Co	Nevada	15	20	Oct 16	Nov 21	Dec 10	H P Bush	27 Merchants' Ex
Tiger M Co	Arizona	2	1 00	Oct 21	Dec 10	Jan 20	W H Lent	327 Pine st
Wall Street Q M Co	California	4	10	Nov 23	Dec 28	Jan 15	D K Tripp	401 California st

MEETINGS TO BE HELD.

Name of Company.	Location.	Secretary.	Office in S. F.	Meeting.	Date
Del Rey S M Co		S A Chapin	65 Merchants' Ex	Annual	Dco
Godfrey Gravel M Co		J M Buffington	309 California st	Annual	Dec 2
Gold Bar Gravel M Co		O D Squire	28 Stevenson's Build	Annual	Dec 7
Gould and Curry M Co	Nevada	A K Durbrow	309 Montgomery st	Annual	Dec 16
Hasson Con M Co		F R Bunker	606 Montgomery st	Annual	Dec 2
Mexican G & S M Co	Nevada	C L McCoy	203 Bush st	Annual	Dec 3
Manzanita Con Gravel M Co	California	J F Pope	320 Sansome st	Annual	Dec 4
Mexican M & R E Co	Mexico	P

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

CALIFORNIA.

AMADOR.

VOLCANO.—*Ledger:* The Harmon boys, who own a recently-discovered quartz ledge near Mace's mill, had a clean-up lately, which yielded at the rate of $75 per ton. Something like ten tons were passed through the mill. The Rising Sun mine is located back of Aqueduct, towards the Mokelumne river. Within the last few days a valuable body of quartz has been struck.

MARBLE QUARRY.—Five saws are running at present by steam. In a few weeks work will be suspended for a season, so as to fit up to run by water power, also to put in new saws, and do needed repairs. Six men are employed. The marble is very hard, but considered of fair quality. It is expected that the marble will improve in quality when the quarry is developed 10 or 12 feet deeper. The works are located on the north fork of Dry creek, down in a deep hollow, surrounded by high hills. The quarry is owned by Tubbs & Collins, Oakland.

PIONEER DISTRICT.—*Dispatch*, Nov. 23: The Groesbach mine has upon its dump about 90 tons of good ore ready for crushing. Recently a very rich strike has been made in this mine, and the rock now being taken out shows large quantities of free gold and sulphurets. The Wildcat mine, owned by McQuade & Toop, is still being worked, with the most flattering prospects. They have several tons of rock upon the dump, which look much better than the last they had crushed, that paying the handsome little sum of $30 per ton. Joe Le Duc has about 30 tons of rock out at his claim, near Ledford's ranch, on the Antelope toll road, which shows largely of free gold and sulphurets. Dick Stoken, better known as Lucky Dick, has recently discovered a remarkably rich lead on Pioneer creek, just south of the Groesbach mine. The Modoc mine is being worked by Mr. Jack McNamara, the rock of which is now being crushed at Mace's mill.

MONTERICHARD.—This thriving little mine, at its last clean-up, the first of the month, produced a result about $800 in advance of any former clean-up—the rock averaging between $9 and $10 per ton. The shaft is being sunk another 100 feet, 35 feet of which has been attained; making the mine now about 295 feet in depth. The lead at the bottom is somewhat wider than above, and the rock appears to continue improving in quality as well as quantity.

HOISTING-WORKS COMPLETED.—The steam hoisting-works for the Moore mine has been completed. The workmen are now engaged in putting up a mill just below the hoisting-works, which will be run by water power.

CALAVERAS.

ITEMS.—Mr. Jas. Duryea, proprietor of the well-known claim in Chile gulch that bears his name, is about to resume hydraulicing. Several Celestials have purchased the lot owned by P. Moro, situated in San Andreas gulch, for the purpose of mining the same. It is said that good rock is again being taken from the well-known Blue Jay mine, at Mosquito.

EL DORADO.

KELSEY.—*Mountain Democrat*, Nov. 23: In the Gold Deposit, the shaft has been sunk 10 feet since last accounts, and the ore still improves as the sinking progresses. It shows a larger percentage of sulphurets, which give the most flattering results. The arastra was cleaned up last week and gave a return that astonished those who saw the ore before it was reduced. The mill is now completed and in operation. Its capacity will be about 20 tons in 24 hours. A sale for the sulphuret furnace is now being graded, and the building of it will soon commence. The material to be used is the "rock soap" of Alderman & Co. This material is proving to be a great success for a variety of purposes, one of which is fire walls. It is easily handled, and, so far as it has been tested, appears to be fire-proof. Therefore the Superintendent has decided to build the furnace of it. The success of the Gold Deposit has caused considerable stir in mining circles here and elsewhere, and parties are coming and examining our mines almost every day, with a view to buying and working them for legitimate results. The first north extension of the Gold Deposit has been bought by a San Francisco company, and they will commence operations immediately.

PLACERVILLE GOLD QUARTZ CO.—The work of sinking the shaft to the 400 level is progressing rapidly. The shaft now out of the vein in the softer material of the foot-wall at a depth of about 360 feet. The winze in the north drift of the 300 level is keeping pace with the shaft. A large quantity of high grade ore has been taken out and is stored in the drifts, to be raised when the work on the shaft is completed.

GRAND MINING ENTERPRISE.—Mr. Mendenhall, of Livermore, one of the pioneers who came to California before the discovery of gold, and who is associated with Thomas Stapleton in the gravel hill mine at Diamond Springs, has been making arrangements for hydraulicing that large tract of gravel. Large pipes are to convey the water from Hangtown hill just south of Placerville, across Weber creek, a distance of over 6,000 feet, to the mine in question. This will give a tremendous pressure, and as the hill is free from the lava capping there is a comparative certainty that it can be hydrauliced very profitably.

INYO.

SNOW'S CANYON.—*Independent*, Nov. 16: A bullion shipment of $1,300 has been made by Messrs. Grove & Mitchell, the proceeds of five tons of ore from their mine in Snow's canyon, a silver brick weighing 22 pounds valued at $500, and a gold bar weighing four pounds worth about $800. This is one of many small shipments from the five-stamp mill at that point, which has just concluded a two months' run. The works were started up in the spirit of experiment, to thoroughly test the ores from the many mines in that vicinity. The results have been very satisfactory. Some of the most promising mines have now men at work, and ere long when some little improvements are made in the mill and ore accumulates operations will again be resumed there.

KEARSARGE IMPROVING.—The developments in both of the Kearsarge tunnels grow more and more encouraging. In the main ledge at the heading of the long tunnel, Supt. Gray is now finding ore, specimens of which assay into the thousands. The plan now is to suspend crosscutting and run straight to the vertical line of the shaft (a distance of 80 feet), then by an up-raise of 140 feet to make the connection therewith. The Whitney tunnel is in 60 feet, at which point the ledge had increased to five feet in width, about one-third of which was ore that would easily go $150 a ton. As stated heretofore, it is only a question of distance (perhaps 300 feet) when this ledge will merge into the Kearsarge proper. In view of these favorable facts, there is a probability that work on the proposed deep tunnel, starting near the mill, will be commenced before spring; in any event the other two will be driven straight along all winter. The mill will not likely be started up before spring, although there is already quite a pile of good ore on the respective dumps.

ITEMS.—The new Lee district water-works are reported a complete success. Prospects are reported favorable in the Brown Monster or Old Eclipse mine.

MARIPOSA.

FERGUSON MINE.—*Gazette*, Nov. 23: The Ferguson mine, which is situated on the northern bank of the Merced river, has resumed operations and is again in full blast. It will be remembered that some ten years since this mine was yielding a large amount of gold, and gave employment to a large number of men, and made remunerative returns to its owners. But ill fate for a time was against it. The history of the mine from that time to the present is pretty well known to the people here, and would be of little interest to the general reader. The present prospects of this mine are perhaps better than ever before. The company have erected a new stamp mill, which is run by an overshot wheel, calculated to have sufficient power to run 20 stamps, if more at any time should be desired. The work, principally, is in the No. 2 shaft, which is sunk 200 feet below the tunnel, on the vein, which varies in width from 3 to 7 feet, from the first station to the second, and will pay from $10 to $25 per ton. The stopes above the first station look exceedingly well, and pay from $15 to $40 per ton. There is sufficient rock in sight at this level to run the mill for two years, as the pay chute is 500 feet long. By the 1st of December, drifting and stoping at No. 2 level will commence, where there is an abundance of rock in sight that looks well. This mine is now owned by Messrs. Ferguson & Leachman, and superintended by Robert Francis.

VIROIN HILL MINE.—This mine, owned by Opie & Blair, has just cleaned up, and from 21 tons of rock they realized 33 ounces of gold, which is pretty good for top rock. It was taken out of the first 25 feet from the surface in sinking the shaft on the vein, which varies from 1 to 3 feet in width, and is in slate formation. This company have a good vein in the same neighborhood, called the "Victoria," from which they now have 50 tons of ore on the dump ready for crushing, which will pay from $15 to $20 per ton. The ledge is about 2 feet wide, and is also in slate formation.

ASTRO VEIN.—This vein, owned by Henwood & Stewart, was recently discovered; it shows a vein 8 inches wide at the top and 2 feet at the bottom of the new shaft, 12 feet deep. The rock shows well in gold and sulphurets. The owners intend soon to put up a 12-foot arastra to run by water power. They have a mill site and water privilege, that can be used for milling purposes, convenient to the mine.

MONO.

SOUTH STANDARD.—Bodie *Standard*, Nov. 20: Making fair progress sinking main shaft; since last report have sunk 20 feet. Are now 350 feet deep. Will commence timbering up from the bottom to-day to meet timbers 50 feet above, which will take two or three days, after which will continue shaft down. The formation is very regular, and indications good as greater depth is attained.

QUEEN BEE.—Engine and boiler in place and hoisting hy steam commenced. Engaged squaring up and cribbing the shaft, which will be completed this week. As soon as sinking is resumed 100 feet more depth will be attained, when ore will be again extracted.

ORIENT.—Shaft now down 100 feet. In the east crosscut at that level have struck a vein formation rock which assays $27 per ton in gold.

BULWER.—The station in the South Standard shaft is now completed, and the guides are being placed in the shaft. The work being done is principally cleaning the drifts and laying track. It is expected to be ready to hoist ore about the 25th inst.

A NEW STRIKE.—The indefatigable prospector, Rodger Homer, while walking over the west side of Bodie bluff was tempted to explore a piece of ground which he thought contained mineral. A few blows of the pick revealed to his astonished vision a vein of white quartz enclosing pieces of almost solid gold. The quartz was about eight inches in width and nearly three inches of it gold. Assays made from this remarkable find gave the result of $41,684.50 in gold, with $1,570 in silver.

OTHER BODIE MINES.—About 18 feet from the main shaft of the Standard the east crosscut 334 feet from the surface struck a two-foot ledge of fair ore. The ledge in the upraise from the 300 level is in a three-foot ledge of good ore. October shipments from this mine amounted to $87,401.02. The Bodie ledges are looking well. Regular shipments continue. For October they amounted to $123,645.06. The stopes in Pacific No. 2, of the Con. Pacific, are yielding rather more than the usual quantity of rich ore, which is working easier. The west crosscuts from the north and south drifts on the 250 level of the Red Cloud Con. are expected to cut the Packard & Morton in about two weeks. The Blackhawk has struck a favorable quartz stratum. Summit has two fair ledges. No particular changes in South Bodie. Everything in the Spaulding is in good working order. It is reported that improved hoisting works will soon be placed on the ground of the Enterprise. The shaft is down 90 feet. Everything well in the Mono & Cross. Prospects of an immense fissure in Riqueza. A big vein expected soon in Bodie Tunnel. Rustler shaft down 180 feet and still going. Ominous stringers of quartz in the Glen Dale Con. shaft. Indications point to an early strike in the Goodshaw. Two feeders of ore have been lately cut in the Syndicate. The California shaft is down 133 feet. Work resumed. The Dudley shaft is in good sinking ground at a depth of 208 feet. Will shortly commence extracting ore from the Charter Oak. East crosscut of White Cloud advancing rapidly as possible. No changes.

FRENCH M. DISTRICT.—*Standard*, Nov. 20: A new district named the French mining district has been formed in this county. The mines are situated about 25 miles from Bishop Creek, and the same distance from Lake district. They were discovered in September last and work commenced upon them. Among the locations made are the J. H. L., Leonia, Oakland, Lyon, Verlague, Charlotte, C. C. Shaft and Morning Star. The owners are August Dussene, Eugene King, Jules Gadwelle, Pierce Thabard, Charles Mayson, Antoine Verleguet, Dennis V. Bertrand, Jackson Shipply, Charles Worthley and Christ Heldebrand. Rich assays are said to have been obtained from the ore extracted and the result of the workings thus far have been eminently satisfactory. Winter will probably retard the working and the locators must consequently await the opening of spring before much work can be done.

NEVADA.

ITEMS.—It is reported that gravel that will go $3 per carload has been struck in the Watt mine. Lafayette, No. 2, a mine now being worked on Osborn hill, is said to show good rock, and the company is about to incorporate. The frame of the new mill for the Scadden Flat mine is up and will soon be enclosed. In due time the machinery will be in place and running. The Derbec made lately a $2,500 clean-up. The Mammoth Blue Gravel M. Co. have leased their claim, on the road between Bear valley and Scott's Flat, to D. Wellington & Co. five years. A recent clean-up from 18 loads of Ford, McDonald & Mullen's claim, New York hill, yielded $100 per load. The claim is now worked to a depth of 100 feet, and the ledge is showing a width of 12 inches. The crushings from this ledge have been uniformly rich. Marks Zellerbach has received a patent for mining claims in the Columbia hill district, which include 526 77.100 acres. Nine loads from the Centennial have yielded at the rate of $154 per load. Wm. B. Fowler has been appointed foreman of the Planet gravel mine. Messrs. Ragan & Jamieson, who have a two-foot ledge on Water street, Nevada City, are taking out some good looking rock. Among other enterprises owing the encouragement if not their existence to the success in the Derbec is the Mount Blanc mine.

WASHINGTON NOTES.—*Herald*, Nov. 19: The Yuba mine prospects look favorable. The ledge, which for a time last summer appeared to be lost, has been again found. It is three feet thick and looks well. Only eight men are at present employed in the mine, and it is being thoroughly prospected by tunnels. Scotchman Creek mine will start up in a day or two, arrangements having been made for water. Mr. E. Bond is pushing ahead the work at Alpha, getting the flumes and ditches made and the mine fitted up so as to be ready to take advantage of the water season. Washing has commenced at Omega, the late storm having furnished sufficient water to make a run with.

PLACER.

HYDRAULICING IN THE HIGHER HILLS.—*Herald*, Nov. 23: Commencing at the southeast side of the north fork of the American river, between the mouths of Indian and Shirt Tail canyons, Mr. DeKruse, of Wisconsin Hill district, is opening extensive bar and bank diggings. Coming up Indian canyon, the first claim in the bed of the stream is owned by Mr. Stone, of the Toll-bridge, and three partners. It is two miles in length. The second claim is owned by Mr. H. Stemple, of Iowa Hill, and it is one and a half miles in length. The third claim is owned by Messrs. Coleman Brothers, of Grass Valley, and it is nearly three miles in length. Mr. Simonds, of Dutch Flat, is the superintendent. The claim extends up to the wire suspension foot-bridge, across Indian canyon. The fourth claim is owned by Mr. J. Burns & Company, and is one mile in length. The fifth claim, of a little less than one mile, is held by Mr. Echmidt & Company. Stone's claim has been leased to a company of Chinamen, for the present season. Mr. Stemple has done an immense amount of work. He has constructed a bedrock tunnel, of 150 feet. He has also laid down a plank-flume, eight feet wide and three feet high, of 700 feet. He has probably expended $10,000. The third, or Indian Canyon claim, was formerly owned by a Mr. Bumpus, who cleaned up a fortune in gold. Messrs. Coleman Brothers have laid down 1,200 feet of bedrock flume, which is 10 feet wide and 7 feet high. They have used nearly 120,000 feet of lumber, which was sawed at the Sugar Pine mill, and at the Mt. Pleasant mill, of Messrs. Spencer & Company. The expense of fitting up this claim has not been far from $12,000. This is decidedly the most valuable of all the claims in Indian canyon. There is a deposit of tailings, to be run off towards the North Fork, of from 20 to 30 feet deep, extending a distance of over two miles. Going up on the southeast or left bank of Indian canyon, the claims are located as follows: the DeKruse claim, owned now by Mrs. Hill and her agents; the Kidder claim; the Morning Star, or the Coleman & Company's claim; the Swiss Boys' claim; G. Jones' claim; Austin Brothers' claim; Judge Spear's claim; and two or three others not remembered. Coming down on the northwest or right bank, the following is the order: P. Stone's claim; W. Davis' claim; J. Mills' claim; Mr. Barbor's claim; Mr. Entwistle's claim; Mr. Hobson & Company's claim; Chinaman's claim; the Seven Points, or J. Mitchell's claim; the North Star, or Weisler, Bird & Company's claim; and lastly, the Oregon, which is owned by Messrs. O. J. and E. G. Spencer, of Mount Pleasant mill, C. F. Macy, of Iowa Hill, and Hill, Conklin & Ladd, of San Francisco. The Morning Star Company has a mining patent for 165 acres; P. Sloan, for 41 acres; and the Orion Company, for 100 acres. It is said that Mr. Hobson has 50 acres in his claim; but he and all others, excepting the three companies mentioned, hold only a possessory right to their claims; hence they must expend one hundred dollars worth of work each year, or lose their title.

SAN BERNARDINO.

SILVERADO EXTENDED.—Colton *Semi-Tropic*, Nov. 23: A party of prospectors have discovered some very rich silver deposits in the Santa Ana range of mountains, some 30 miles south of here. The ledge is a continuation of the Silverado deposits, and the locations are in plain sight from here. The ledge is reported as turning out very rich, and they are jubilant at their success. The same parties report finding a ledge of tin ore about sixty miles north of here, and very nearly on the line of the proposed cut-off from here to Mohave. This ore assays very rich, many specimens going over 40% tin, and the ledge is reported to be 40 feet in width. These, with other finds over the county, indicate that prospectors have yet a large field over which to exercise their skill. Many square miles of our county have never yet been pressed by the foot of the white man, and there remains many a rich mine undiscovered, which will, when found, put ducats into the pockets of the lucky prospector. Fuel is low in price and water abundant and of exceptional purity, and can be had at a nominal cost.

SAN LUIS OBISPO.

CHROME AGAIN.—*South Coast*, Nov. 22: A fine specimen of chrome has been laid on our table by G. W. Hampton, Esq., which was taken from a claim recently located and now being worked by him. Mr. J. L. Kester has made some recent discoveries of chrome which promise to be both rich and extensive. The London Chrome Co. have run a tunnel about 125 feet into their mine, which prospects so well that the company feel encouraged to go on. Several other parties are now opening new mines, and so far as we can learn, the prospects of all are good. The chrome interests of this county are really becoming a matter of importance, not only to the owners of mines but to the shippers and consumers of the mineral.

SHASTA.

WHISKYTOWN DISTRICT.—Reading *Independent*, Nov. 20: Bell, Woodward & Knox have struck their ledge 200 feet below where they have already worked it, and from which they have taken many thousand dollars. The ledge where they have tapped it by a tunnel exhibits the same quality of rock as that taken out nearer the surface. This is without a doubt one of the best paying mine in the Whiskytown district.

IGO.—*Independent:* J. B. Batcheller informs us that the Hardscrabble mine, under the superintendence of R. G. Harvey, has made several satisfactory clean-ups this season, and that they have plenty of water to keep several little giants running. He also reports an unusual amount of activity among the miners of the district, and predicts a prosperous mining season.

COPPER CITY.—*Independent:* At the Extra Co.'s mine work is going on at the usual lively

Continued on page 348

Mines and Works of Almaden.—No. II

[Translated for the PRESS from "ANNALES DES MINES."]

The price per cubic meter of masonry may be estimated in the following manner:

First—Arches.	francs.
Bricks	20.00
Lime	2.50
Transportation	2.50 to 5.00
Mason work	9.00
	34.00 to 36.00

Second—Massive Masonry.	francs.
Stone	6.00
Transportation	3.00 to 5.50
Lime and sand	2.50
Mason work	7.00
	18.50 to 21.00

Here are also, on the subject of the work of stoping and sustaining, some precise figures taken from the official register of the administration of the mines:

From July 1st, 1875 to July 1st, 1876: First—Stoping, number of stopes on the average, 120; volume stoped, 6,680 cubic meters. Expenses—Stoping, 292,615 francs; repairing of tools, 17,250 francs; total, 309,865 francs. Number of day's work paid for, 54,747.

The total number of cubic meters of rock stoped has been:

In ore	6,367.850
In sterile rock	371.507
Total	6,730.357

From this it results that it has cost, on an average, 46 francs per cubic meter.

The production has been as follows:

	Tons.
In ore	19,498.489
In sterile rock	1,590.446
Total	21,088.035

Of the 6,367.85 cubic meters of ore stoped in the mine, 4,312.071 cubic meters came from the reserves, which regularly should not furnish but one-third of the total production; they represent, from what we have said, the third of the entire deposit. It is only that they have for a long time allowed these reserves to accumulate, and that they have properly decided to reduce them to a less exaggerated amount, by removing a considerable part of them in the last two years. Also the ton of ore has not cost so much this year, for stoping, only 15.90 francs; while the stoping has cost 25.90 francs, 23.70 francs, 26.50 francs, 23.80 francs, 18.40 francs for the five preceding years. These figures justify what we have previously said upon the removal of the reserves.

Second, Supporting.—In figures at all precise I am here deficient. Much the more so, because the accounts of the mine are not kept distinct for the timbering, and the masonry, and also because the accounts for the year terminating July 1st, 1876, were not yet completely drawn up at the time of my visit to Almaden.

The expenses of sustaining vary from 200,000 to 250,000 francs per year; they were for 1875-76 in the neighborhood of 230,000 francs. Or we may calculate for the year—for laying—504.924 cubic meters, of arches, cost, 4,476.53 francs; and 2,687.199 cubic meters, of stone work, cost 18,328.68 francs. We have just seen that the price of the cubic meter of masonry for the arches can be estimated at 35 francs, and that of the cubic meter of the massive stone work at 20 francs.

The masonry work should not, therefore, cost but about 72,000 francs, and the remainder, more than 150,000 francs, should be devoted to the work of timbering and to repairs. This figure explains itself when one recalls the number of timber men (120 men) constantly occupied, and the high price of wood (75 francs per cubic meter) for supporting.

We now pass to the study of the means of transport and of extraction.

Tramming.—All the work of interior transportation, whether of ore to the shafts, or of material to the foot of the workmen, or of tools back and forth from their depositories, come under this head. For tramming, rectangular wagons of iron, holding 216 liters, (a liter is about a quart), containing a weight of 400 kilogrammes of ore. They move over the tracks of iron placed 0.78 meters apart, formed of rails which weigh 10 kilogrammes per running meter. The work designated as service of extraction and of introduction, comprises all the interior movements; it is paid for at the rate of 0.25 to 0.32 francs per 100 kilog. of weight extracted or introduced, except for the materials for construction, for these, indeed, the administration pays by the cubic meter of masonry in place; the price varies according to the position of the works, it is on the average 2.50 francs for the vein San Pedro y San Diego, and 5 francs for San Francisco and San Nicholas.

Hoisting.—The extraction to the surface is made in the same wagons, which are raised in cages guided by strong oak beams of Canada oak, and suspended by flat cables in strands.

Until 1873 the hoisting was done only in the San Teodoro shaft, by means of horses or mules. Since the month of March, 1873, the work of hoisting and lowering has been also carried on by the shaft of San Miguel. Near the mouth of this shaft is placed a steam engine of a nominal force of 20-horse power, with a horizontal cylinder, with condensation and variable expansion of the system of Meyer; the two reels upon which are rolled the cables are put in movement by this machine, by the intervention of a gearing of cog-wheels. The velocity of the cables is about 2 meters per second. The engine also put in motion one of Guibal's ventilators, which draws off the vitiated air from the mine.

Until the introduction of this steam engine, the shaft of San Miguel had never served but for the descent of men; but they were obliged in 1874 to interrupt the hoisting from San Teodoro, in order to regulate the walls of the shaft and to introduce a system of guides; these operations have been finished, as also is the erection of the hoisting engine, but the provisional arrangement at San Miguel having given good results was retained.

The engine at the San Teodoro shaft has a nominal power of 40 horses; it consists of two vertical cylinders with condensation and variable expansion of the Audhemar system; the admission and the discharge of steam is accomplished by valves; it was constructed in the shops of John Cockrill, at Seraing. A small auxillary machine of six-horse power is arranged to come to its aid in case of necessity. Its power is calculated in such a manner as to be able to effect in 12 hours the normal hoisting and drainage of the mine, by means of water tanks.

At the San Aquilino shaft is placed an engine of 30-horse power with a vertical cylinder, with condensation, and Guinottes apparatus for variable expansion. Its use is essentially the raising and lowering of workmen, who, entering the mine by a drift on the first level, at 44 meters below the surface, descend from the first level as far as they wish to go. One avoids thus on the one hand some work for the machine, and on the other the necessity on the part of the workmen who live lower than the shaft San Aquilino of climbing up there every day. Besides this work the engine serves also for extraction.

The mines of Almaden are then actually served in a manner entirely satisfactory by steam engines of the most perfected types, while four years ago their installation was regarded, with reason, as one of the most defective that could be seen even in Spain. This situation was the less comprehensible, as the mines of Almaden have given for a long time considerable benefits; it is only explicable by the carelessness of the Spanish government, its systematic defiance with regard to the engineers, and by the innumerable difficulties which gave rise to an excessive division of powers, particularly by the absolute separation of the technical direction and that of the administrative service. To remedy this state of things was required all the energy of M. Mouasterio, Inspector General of Mines, who was obliged continually to strive against the inertia of the government and against the ill wishes of the workmen of Almaden, who made, to the introduction of machines, the same irrational opposition that is made to almost all improvements, however rational they may be.

It may be asked why have they established engines of these different types. The principal reason has been the desire to make comparative trials, and to furnish to young mining engineers, for whom a sojourn at Almaden is a sort of applied school, the opportunity of seeing intimately and in their different details, different systems working concurrently.

Drainage.—The work of drainage divides itself into two parts: 1st, the elevation of the waters from the 7th level, that is to say, from 208 meters in depth; 2d, the elevation of the water from the 8th, 9th and 10th levels as far as the 7th.

The first of these services is accomplished at present almost exclusively by means of tanks of water, by the steam engine of San Teodoro shaft. Although they still work nearly four times a year a single acting steam engine of Watt, established in 1791, this engine is one of the first of these constructed by Watt, employing the movement of the working beam to open and close its valves, and to effect the condensation. The working beam of wood has only been consolidated later by the addition of some bars of iron. This machine puts in motion a column of seven suction lifting pumps, whose pistons, also of wood, are not one of the least peculiarities of this installation, which only conserve for it the title of a historic monument.

Two reservoirs, the one of 1,380 cubic meters no the 5th level, the other of 914 cubic meters on the 7th, serve to collect the waters of the mine.

The production of steam for this steam engine is effected by means of boilers heated by wood; for the services of stoking is paid at about 1.50 francs for lowering the level of the water in these reservoirs, or about 5 cubic meters of water extracted.

The water below the 7th level is raised by means of very large simple hand pumps, disposed in columns, and worked by men who receive for this work from 1.50 to 2 francs per day of 6 hours. It is to this service to which the slaves were formerly condemned in the mine.

It is now maintained by adjudication, paying to the contractor from 12 to 14 francs per centimeter of water lowered in the lower reservoir.

It is evident that the source of drainage still leaves much to be desired; this comes no doubt from their relatively smaller importance; the mine does not produce in fact, according to the observations of several years, but 72 to 84 cubic meters of water in 24 hours, of which a notable part comes from above the 7th level. For this part the expense has diminished since the installation of the engine of the San Teodoro in a remarkable proportion. It does not cost but little, in effect only 5,000 francs, in place of 40,000 which it formerly cost.

The price of extraction of the same has also descended, owing to the vein improvements, from 3.20 francs to 1.90 francs per ton.

Ventilation.—The ventilation of the mine is affected naturally, in consequence of the difference of level of the mouths of the shafts, which communicate with each other. The fresh air enters by San Teodoro and by San Aquiliuo, and escapes by San Miguel, after having traversed the works. In the hot season the current tends to be reversed, and it is prevented by means of a ventilator at San Miguel. Before the establishing of this apparatus, the ventilation was accelerated in summer by a fire at the base of the shaft.

The active renewals of the air is nowhere more necessary than at Almaden. It is charged with mercurial vapors and with miasma from the decomposition of wood. Very few of the old workmen, and above all, of the overseers, have escaped the mercurial trembling.

Shops.—The shafts of San Aquilino and San Teodoro, placed at the western extremity of the town of Almaden, less important than that of San Miguel, which is in the town itself, are covered with solid constructions which shelter the engines, and surrounded by a certain number of sheds which serve for shops and magazines. There are found there a forge and a carpenter shop, a shop for repairs. The two first serve to put in condition the tools used in the regular works; the third for the manufacture and repair of material for tramming. Here are found the principal machine tools, worked by a small steam engine of 12 horse-power. In these shops can be manufactured the tools which are used, but they prefer, nevertheless, to buy them; the repairing of a notable part of these tools is also done by contract.

All the service of the warehouses, the reception and the giving out of goods is done by children, who receive 0.40 francs to 0.85 francs per day, and by two old workmen whose health has been ruined by service in the mines to such a point that their labor is far from meriting the moderate salary, which is given them more as a pension than as remuneration for services rendered. It is also to these invalid workmen who are confided the work of exterior repairs, the keeping up of roads, etc., when they demand care to be kept in order.

All this work upon the surface employs about 650 men and 220 children; they are paid under the head of general expense of exploitation.

How They Salted that Mine.

[Written for the PRESS by G. R. E.]

This is the way he tells it: In the fall of 1873 I was prospecting around in Utah. One day when I was riding along on my animal, looking for a new prospect, I saw an eight-mule team hitched onto a load of cement barrels. "What are you doing with cement in this region," said I to the driver. But he was not inclined to be communicative. My curiosity was roused, I am something of an inventor myself, and I thought I would follow the wagon and see what new use they were putting so much cement to in a mining country. I camped after the team for a couple of days until I saw it drive up to a shaft. There was a shed over the shaft and under it a windlass. Near the shaft was stacked up about 150 sacks of ore. I picked up two or three specimens. It was chloride ore. One of the specimens assayed $250. I have the other specimens yet.

"Are you going to build a mill?" I asked the men at the shaft. But they were as uncommunicative as the teamster, and made me know that my absence would be about as pleasant as any advice I could give them. So I went off on my animal and prospected around in the neighborhood. I passed by the hoisting works several times. I saw that they had built a close shed near the shaft. I noticed that the cement and ore had disappeared. Not an ore sack, not a stave, nor a hoop, nor a barrel head was to be seen. But the miners were no more sociable than at first. I was not welcome there, so I wandered about awhile and then went back to Salt Lake.

After I had been in Salt Lake a few weeks, there came to the city an old "capitalist," whom I had known for years in San Francisco. He remained there five or six weeks and I saw him frequently. He looked half tickled and half worried. I knew he had something "big" on his mind. Sure enough. He knew I was a prospector and something of a judge of rock. So one day he asked me if I would go out into the country with him for a few days and look at a mine which he thought of buying. "Where is the mine? You have not paid for it?" said I.

"No," said he, "I have given them $2,000 and I am again going out to look at it before signing the papers. They are going to get $250,000."

"Well," said I, "I will go and be of service to you if I can."

Well, we went to the mine. It was the old shaft where I had seen the cement barrels hauled. The men did not know me. I had my city clothes on and I was shaved clean. They had a square shaft 37 feet deep. We went down it. From the top down to where they struck the ledge, there were little stringers of ore. At 30 feet down a wedge-shaped vein came in. Where they first struck it, it was about six inches wide, but it widened out as they went down, and where it crossed the bottom of the shaft, it was three and one-half feet across. It was a true fissure vein. The walls were smooth and hard country rock. It assayed from $75 to $80 a ton. On the whole it had the appearance of a first-rate ledge.

"Well, what do you think of it?" said the old gentleman. "Do you think this is the same ore as those specimens I showed you? I've had an expert here before and he says it is, and thinks the mine is a big thing."

"Well," said I (we were off to one side when we had this talk), "you've given them $2,000 since we've been here. That makes $4,000. Before you give them any more, just get a permit for me to put a few shots into the vein."

He asked the men, and they were glad to do anything to prove the richness of their claim. So I went to work in the bottom. The men wouldn't help me. The old gentleman was too nice and weak; so I had to work with a single hand-drill. I blew out some of the side of the vein and some of the bottom. I found nothing but vein matter. The men were mighty happy, and wanted to know if we were not satisfied. "Wait till I put in a few more shots," said I. "Do you want to spoil the whole mine," said they. "Spoil the mine," said I; "you have never seen better work than that," said I; "I know something about mining." So I blew out a little more of the side and bottom.

When I was ready I called the old man and we "consulted." "Let us get away from this country," I said to him. "Don't you pay a cent for the mine; it's salted."

"Look here," said he, "you're playing me; you want to get some of your friends to buy it."

"Come down with me," I said. We went down together. I pulled out the loose ore from the side and bottom, and showed him the country-rock where the vein ought to be—I had struck it about four feet below the bottom of the shaft. He thought we had better leave, too. But I told him to be careful, and not to let them know what we had found out. "They are regular mountain cut-throats. There's another of them that you haven't seen; he's shut up in that shed. He's the artist of the party; he made the mixture for the vein."

So we pitched the broken ore back into the holes, hitched up our animals, told the men to come in to Salt Lake and get their money, and started for town. The old gentleman did not pay $250,000 for that mine.

Well, a few days after they came to town for their pay. "Did you have the ore assayed?" they asked me. "No," said I; "but *he* did." "How did it go?" "Oh, it went just what you told him it would." "We're glad of that." "Look here," I said to them, confidentially, "if your game had succeeded you might have been lynched." "What do you mean?" said they. "What became of those cement barrels?" I asked. "Why didn't you pack that cement in sacks?" "Some people know a good deal, don't they?" said they. "Some people do," said I. "Some don't."

Shortly afterwards those men disappeared from Salt Lake.

The old gentleman gave me $3,000, and begged me never to tell anybody. Some twelve months after, when I passed the shaft, I found that all the pay ore had been cleaned out and carried away to some other unknown locality.

Silver Mill Wisdom.

From a little pamphlet by M.P. Ross, entitled "The Silver Mill," we take the following:

Amalgamation.

The modern amalgamating pan is a growth from the old arastra, and though quite simple of construction, has been the subject of a variety of forms. A better knowledge of what they can and should do, has narrowed those down to common generalities. The pan holds from one and one-half to two tons of pulp; the gearing underneath is open and plain; the muller is raised by a left-hand screw on top, the handwheels of which should be large; the jam wheel being no smaller than the screw wheel from the fact that at times it is the subject of even greater application of muscle than the latter. Again, when in fast motion it is decidedly inconvenient to adjust a small wheel under a larger one.

As the muller and driver are held to position by but one bearing, it is strange that the inclination has been to make this short. Eighteen inches is none too long for the bore of a driver, and the shaft should pass entirely through it when the castings are new, provision being made in the cap for the end of the shaft when the castings are worn.

Much time and labor are saved in babbitting the shaft, if it is made with a taper downward through the babbit; in which case, instead of withdrawing the shaft and cutting the old babbit, new babbit is poured with the old, the taper preventing displacement even if the new babbit becomes broken.

But the most important feature of a pan—one which may involve many dollars per day, but which often receives but little attention, and, though simple in principle, is very often not understood because not studied—is the pulp currents.

These currents must needs be uniform and regular to insure uniform work, and they must be strong enough at the bottom of the pan to carry the quicksilver. The motion of the muller makes a current by throwing the pulp to the outside as it advances, which then rolls up at the side and over to the center to be thrown out again. This, so far, cannot be improved upon, and the only service left for the wings is to add to the pan capacity by preventing the pulp from running too high up the sides, to accom-

plish which the best shapo is of an inverted ploughshare. Having very naturally a good current above the muller, we have only to work in unison with this underneath.

With the grooves between the shoes leading straight out, the current is impelled only by centrifugal force, which is insufficient to carry the quicksilver; but if the point of a shoe touches the diameter, its outer end being a very few inches either forward or back, a current is forced proportionate to the angle of departure from the given diameter. If the dovetails in the muller and pan bottom are relatively similar, to admit of the shoe and die being one and the same pattern, the currents of the two will be similar and in unison. When the currents are outward they coincide with that above the muller, inward currents being the reverse. A confusion of the two—unless one strongly overbalances the other—effects stagnation. It does not follow that because an inward current works contrawise to the one above the muller, that it cannot do good work; if it is strong they will compromise.

Definite rules for the angle of draft for shoes and dies cannot be laid down, because the speed of pan, the character and thickness of pulp, and, if grinding, the weight of muller, have each their influence.

It must rest with the millman to determine if the mechanical part of his amalgamation is perfect, or if his quicksilver is churned, or his castings cut out too quickly. A remedy is at hand, if systematically sought.

The speed of pans, a few years ago, was generally 60 or 65 revolutions per minute, 85 or 90 is more common now. With the slow motion the pulp should be thick, with the fast motion much thinner, and the charges of the latter are worked much sooner. A modern mill with fast batteries and fast pans accomplishes more than the slow one of old.

The screw on the settler driver should, unlike the pans, be right-handed, for besides being more convenient in case of a slipping belt, the power applied to turn the screw, helps the muller along.

Settlers are of two classes, one having mullers with wooden shoes, and the other having arms with either wooden or iron shoes or stirrers.

For heavy, unground sand, the muller is easier to start and less liable to clog, and is more commonly used in such cases, but for well ground sand the other style is superior.

A settler should never be allowed to foul by an accumulation of heavy matter at the bottom; it is a positive preventative of good work. It may seem easier to advocate this than always to follow it.

A seeming natural remedy for such a condition is really an aggravation to it, namely, a liberal use of water. There is a point in the thinning when the quicksilver will he precipitated, but the heavy sand held in suspension.

If, after the charge is run out, which should leave about eight inches in the settler, a pan is drawn and no water added for a half hour, the warm charge will gather and carry the sand; now enough water, only, is added to reduce it to an appearance of still some thickness, and this is all the water that is used in the charge. A horn spoon will show its success in advance of results.

Concentrations for a silver mill must necessarily he simple and capacious. Good agitators shoveled out often are profitable.

In some ores "sand sluices" are very effectual. A "sand sluice" for concentrating is a broad sluice 20 or 24 inches wide and in it, at intervals of eight or ten feet, are vertical strips at the sides to hold unfastened riffles. Thin riffles are laid in and the sand runs over them for a time, say one or more hours, when another conrse of riffles one-half inch, or less, thick, is laid on top of the others. This is repeated until the sluice is full, when it is shoveled out, meantime the sand should run through a duplicate sluice. These sluices should have a grade of about three and one-half inches to the rod, it is then under control; for by starting with a thin riffle at the bottom, a strong current may he had, whereas a thick riffle will give a deadened current.

These sluices are an advantage when blankets are profitable, and if followed by blankets relieves the lathes from much coarse, heavy material.

A blanket sluice should have a grade of about three inches in seven feet.

A Gift to Botanists.—The inheritor of the Villa Musset, near Cannes, has presented the building, together with the magnificent herbarium and library attached to it, and all the scientific instruments and appliances, to the French government, to he maintained as a place of study for botanists of all nations, free of cost. Persons desirous of studying there, whose applications are favorably entertained by the management, will be provided with free board and lodging in the institution for six weeks, and every opportunity afforded them to prosecute botanical research. In the case of applicants not provided with academical credentials, an introduction or letter of recommendation from some recognized *savant* will he required.

Introspection.—A chemist of Prague is said to have invented a form of mirror by the assistance of which the interior of wine or other casks can be thoroughly inspected without the necessity of removing their heads.

The East India government will keep an eye on war correspondents. Their plans are sometimes disturbed by enterprising newspaper men.

Useful Information.

Surplus Ships.

Those who have crossed the bay frequently during the last few months have noticed the large number of ships idly waiting for charters and have concluded that the ocean freighting business must be dull. Thus it is all over the world and the *Maritime Journal* quotes an extract from a speech of a Bristol, England, shipowner, which states facts and draws conclusions. He said: Last month more than 50,000 tons of shipping were lying idle in Bombay. In Calcutta, ships had been lying 12 months, during which time there had been from 80,000 to 100,000 tons disengaged and constantly pressing on the market, with freights averaging about one-half the paying rate. The China seas and the Straits are full of ships. In Australia, a friend has had a ship waiting for three months for a chance to load some. In San Francisco, there were in July 100,000 tons lying in port. The explanation of the present condition of the shipping trade is no new or intricate story. Free trade increased the volume of exchange in the world—in other words, the volume of the carrying trade of the world—so immensely in proportion to the then existing supply of shipping, that high profits were the rule for many years. Ship building was actively stimulated, and all the arts connected with it were energetically spurred on. The history of the building of iron ships is the history of a constant series of discoveries and inventions, involving a rapidly progressive facility of production, and leading by changes of form and new systems of management, to such a reduction of cost and extension of accommodation as would have seemed, only a year or two before each improvement, to be fabulous and incredible. Hence a perpetual temptation to fresh tonnage; and hence two million pounds sterling of shipping are lying idle in the Indian ports at this moment.

A New Poison for Rats and Mice.—At the Zootechnical Institute, in connection with the Royal Agricultural Academy at Proskau, a series of experiments has been carried out upon the comparative activity or inactivity of the various poisons most commonly employed for the destruction of rats, mice, and other rodents. The result of these are now published by the director of the Institute, Dr. Crampe. Of all the materials experimented with, the most efficacious proved to be precipitated carbonate of baryta. This occurs as a heavy, fine, white powder, devoid of taste or smell, and can be purchased at any ordinary drug store. In the experiments of Proskau, a portion of it was mixed with four times its weight of sound barley meal, and made into a stiff paste with water, and small pellets of the soft cake introduced into the holes of rats, house mice and field mice. One great advantage of this preparation is that the smallest quantity of it proves fatal. Further, it appears to cause immediate and complete paralysis of the hind extremities, so that it may be assumed that mice eating of it in their holes will die within them, and so not prove destructive in their turn to domesticated animals that might otherwise devour the carcasses. It was found in practice that neither fowls nor pigeons would touch the paste, either in its soft state or when hardened by the sun, so that its employment is probably free from danger to the occupants of the poultry yard. Some rabbits on the other hand, that got access to the paste, ate heartily of it, and paid the penalty with their lives.

Effect of Constant Vibration Upon Iron.—Shafts of side-wheel steamers and propellers sometimes break suddenly, and it is supposed that the constant vibration of certain qualities of apparently sound iron causes a crystallization and loss of cohesion. Lately the steamer *City of Chester* was proceeding at an ordinary rate of speed in clear, calm weather, when, without a word of warning, two blades of her wheel dropped off simultaneously, crippling her at once. The manufacturers and builders believe that an examination of the remainder of the propeller will probably show again that the constant vibration had crystallized the metal, so that the wheel went to pieces all at once, like the deacon's "one-horse shay." The Brooklyn *Eagle* suggests that this gradual crystallization of iron is one of the dangers which threaten the elevated roads. How long the trestle work will retain its strength of fiber under the ceaseless vibration it is called upon to endure, it is a question which only costly experience will determine.

Ventilation of Cupboards.—The ventilation of cupboards is one of those minor matters that are frequently overlooked in the erection of houses, while the want of a thorough draft is apt to make itself unpleasantly apparent to the smell. The remedy of the defect is however, very simple; if possible, have perforations made through the back wall of the closet, and a few in the door; when the wall of the closet cannot be perforated, bore holes freely on the top and bottom. To prevent dampness, with the accompanying unpleasantness and injurious effects of mildew in cupboards, a tray of quicklime should be kept, and changed from time to time as the lime becomes slacked. This remedy will also be found useful in safes or muniment rooms, the damp air of which is often destructive to valuable deeds and other contents.

The Composition of Curare.—An inquiry, says The *Pall-Mall Gazette*, has lately been made by scientific experts in Brazil into the nature of "curaro," the remarkable poison of the Amazon and other Indians, the preparation of which has hitherto been kept a "trade secret" by the Indian manufacturers in Amazonas. Professor Jovert, however, recently contrived to get an Indian expert to confide it to him, and show him the plants and mode of preparation, and himself succeeded in making it and ascertaining also the physiological action of each ingredient. One of these is the powdered outer bark of the *Strychnos castelnæana* another the outer bark of the *Cocculus toxiferus* of Weddell. The watery extract of these barks is boiled down to a proper thickness, after adding leaves of an *aroidea* of the Phylodendron genus, leafy twigs of a *menispermacea*, and four *piperaceas*. By the experiments made at the Rio Janeiro, *strychnos* rapidly paralyzes the motor nerves; the *aroidea* has similar action; the *cocculus* paralyzes the muscles, and especially the heart, but acts much more slowly than the *strychnos*; the *menispermacea* is a general excitant of the nerves, and thus assists the more rapid action of the preceeding ingredients; and the pepper renders the toxical qualities more active.

Mushrooms as Egg-Inducers.—The coming of the rains brings forward an abundant crop of mushrooms in many parts of this State. They are so plenty that the price sometimes hardly pays for gathering. We read in foreign exchanges some statement which lead us to advise our poultry growers to experiment with this material, to test the truth of its alleged value in bringing hens up to their business at certain times in the year. The following is a method said to he largely employed in many parts of Germany, more especially in Nassau, with the object of inducing hens to continue to lay at periods of the year when they are wont to discontinue that useful occupation. The edible fungi of all sorts that may be within reach are collected, dried, and ground into powder. A mixture is then made of half a pound of the powder with one pound of ground linseed husks, two pounds of rye and wheat flour, and half a pound of ground acorn powder; a paste is prepared from it with the aid of a little water, and small pellets of this, about the size of a pea, are given to the fowls daily. To which of the several ingredients the "egg-compelling" powers of this mixture are to be attributed our contemporary has neglected to tell us. We presume the virtue lies in the edible fungi so carefully collected. And if this he the case, it would not he necessary to use all the other substances mentioned, some of which are not easily attainable hy those who desire to experiment.

Killing Clothes Moths.—Prof. C. V. Riley, United States Entomologist, gives the following advice for killing clothes moths: The early days of June should herald vigorous and exterminating warfare against these subtle pests. Closets, wardrobes, all receptacles for clothing, should he emptied and laid open, their contents thoroughly exposed to light and air, and well brushed and shaken before being replaced. In old houses much infested with moths, all cracks in floors, wainscots, shelves, or furniture should he brushed over with spirits of turpentine. Camphor or tobacco should he placed among all garments, furs, plumes, etc., when laid aside for the summer. To secure cloth linings of carriages from the attacks of moths, sponge them on both sides with a solution of corrosive sublimate of mercury in alcohol, made just strong enough not to leave a white mark on a black feather. Moths may he killed by fumigating the article containing them with tobacco or sulphur, or hy putting it, if practicable, into an oven heated to about 150° Fahr.

Paraffine as a Lubricant.—A correspondent of the *Railroad Gazette* announces that the Erie railway has reduced its oiling expenses from $5,000 to $1,000 a year hy using paraffine on passenger car journals, and has reduced the number of hot journals from 535 to 332. It is now used during the winter months, without the addition of any other oil, but it is found that in summer it becomes so limpid that it is hard to keep it in the axle-boxes. During the summer months it is therefore mixed with some other lubricant to give it more "body."

Good Health.

The Sun Bath.

Dr. E. C. Angel gives to the *Sanitarian* his views on sun bathing. He says: "My own personal observation of the efficacious results of the therapeutic use of the solar rays extends over a period of fully 12 years, and embraces a considerable variety of diseased conditions, for the most part chronic." He believes in the use of what he calls a "solarium," and gives farther details as follows:

It is important that the solarium should be well ventilated, and the best results, it will he recalled, are recorded of open air insolation. Modern costume deprives the body so much of light and air that the skin lacks sensibility as well as tone; and there is not only great advantage to he derived from the sun, but there is often much benefit received from exposure to the wind.

The sun alone reddens, the sun and wind conjoined magnificently bronze, the exposed surface in a manner that the winter months will not efface, while the benefits and strengthening effects are still more lasting. Insolation under glass, however, whether white or colored, is a bleaching process, in which there is neither burning nor discoloration.

The construction of a solarium is very simple. Its situation in cities should always be at the top of the house, and a high house at that, that it may admit air, light and sunshine from all sides. The roof should consist of sash and glass—an outer layer of white glass and an inner layer of blue glass—with an air space of an inch or more between. The sides should have double sash as well as double glass, and may he ornamented with varied colors and figures to amuse the eye and please the fancy. This mode of construction will diminish the intensity of the heat in summer and the cold in winter, and practically makes the structure available for every day in the year on which the sun shines.

Leading from the apartment already described should he another, with enclosed sides of lattice, consisting of revolving blinds. This room should he open at the top, and would only he available during the warm season. The use of the blinds are threefold—to screen the inmates, to regulate light and shade, and to temper the winds to the nude tenants.

In conclusion, I will not go quite as far as Voltaire, who advised two dull actors to plant themselves in the sun for six months; but I will take the liberty to urge an increased attention to solar therapeutics on the part of the medical profession, for the sun's rays may be employed with absolute advantage and with as absolute safety.

Without anticipating medical miracles, the professional practitioner may rely upon deriving from judicious insolation such ruddy complexions, hardened muscles, improved digestion, purified blood, enlivened spirits, and invigorated vital powers as shall more than justify all I have advanced in defence or praise of solarization.

Amount of Food for Men vs. Women.

Men eat more than women, when their work is of the same kind. It does not follow, however. that because men eat more that they get more strength from their food, for generally women have better digestive organs, and abstract more nutriment from the same amount of food.

So, too, while men and women eat at the same table, it is observable that they do not eat the same quantities of the same dishes. Men eat more heartily of the force-giving foods than women do, probably because there is more demand for them. This is perhaps the only difference. At a restaurant largely patronized by ladies, I have noticed that biscuit, tea, cake, ice cream, and delicacies were more in demand by women, and meats and hearty food by men. —*Dr. Holbrook.*

A New Treatment for Consumption.—The *Medical Record* gives the following: The theory of cure is to clear the lungs by a mechanical effort, chiefly by manipulating the muscles of the throat so as to cause more forcible breathing; second, to establish perfect digestion; third, to promote a process of healing the tubercles, so that they shall become chalky or calcified masses; fourth, to compel the patients to take plenty of fresh air, sunlight and outdoor exercise. To secure perfect digestion a special diet is ordered in each case, and the food is changed as the power of assimilating it improves. To promote the calcifying of the tubercles the salts of lime, which are found in most vegetable and animal food, must he supplied in a soluble condition; the theory is that too much heat in ordinary cooking destroys the natural combination of these salts with albumen and renders them insoluble to a weak digestion. Outdoor exercise is regarded as so important that the patients are instructed to go out in rain, snow, dampness, or even night air or dew, the habit thus acquired neutralizing the danger of catching cold from such exposure. Only strong head-winds and extreme hot weather need be guarded against. The patients sleep with the windows open, summer and winter.

How Galveston Escaped.—The people of Galveston have proved that the way to keep yellow fever out of a place is to keep it clean and drained. Although that city was formerly subject to a severe visitation of the plague once in three or four years, it has had none for 11 years past, owing to the means taken after the great epidemic of 1867 to put the town in good sanitary condition. This experience is of value with regard to other diseases than the yellow fever, and should be duly heeded throughout the country both in cities, villages and country homes.

Best Season for Fish.—Their quality is best just before the spawning season, when they are in good health and condition. Just after spawning they are least valuable as food. Fish that have not attained the spawning age are always in season.

The Orange.—The orange is very easily digested, admissable in health and disease, and one before breakfast will often prepare the delicate stomach for a good meal better than anything else.

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NEW ADVERTISEMENTS.

Western Iron Works, Perry Edwards, Prop'r, S. F.; Phœnix Oil Works, Hutchings & Co., Oil and Commission Merchants. S. F.; The Risdon Iron and Locomotive Works. S. F.; Gold Mine Wanted, W. S. Keyes, S. F.; South Pacific Coast Railroad; Delinquent Notice—Mount Jefferson M. & M. Co.

The Week.

In the mining world little of note has occurred during the past week in the domain of legitimate operations. The close condition of the mining share market, even under good reports from the Comstock mines, is indeed remarkable. But it is, nevertheless, attracting more attention than it merits. Of course, the result of the Sierra Nevada crosscut will affect greatly the hopes of the great lode. And yet it has been amply proved already, that at great depths the greatest bonanzas are to be found. The success of the Sierra Nevada ore body will be merely adding proof to proof. Meanwhile it may be said this week as it was last, that in no other part of any State or Territory of our coast is the feeling so universally blue to-day as it is on the Comstock. It is very noticeable that in every other district, whatever the character of the mines, or the state of the weather, the miners are universally cheerful, looking forward with unusual hopefulness towards the coming year. As far as California is concerned, it may be said that their hopes will not prove baseless. As for the quartz mining here, that has assured success, and the placer interests may depend upon unlimited supply of water, the long delay of the rains being a very good sign of a wet winter.

Comparison of the exports and imports of gold and silver coin and bullion exhibits the following: Month ended October 31st, 1878, excess of imports, $2,096,807; month ended October 31st, 1877, excess of imports, $293,169.

The Martin White has made a bullion shipment.

Supt. Weber of the Tiptop mine, took down $20,000 to Phœnix on Nov. 13th.

The Next Excitement—With a Qualification.

A short while ago, Indian district, Mono county, was dubbed "the next country for a rush." A comparatively small district, with nothing but ledge mining to offer, can present little inducement to the general run of prospectors, when compared to a tract of hundreds of miles of placer ground, along the banks of an ever-flowing river. Make these placers yield from $5 to $50 per day to the man, and the temptation to stampede becomes quite irresistible. At present the favored land is along the banks of the Upper Snake, and the glowing correspondent clearly anticipates that a rush is coming.

The Salt Lake *Tribune* has published lately two articles on the Snake river placers, one a short report from a recent visitor at one of the bars on the river, and the other a letter dated Snake River, November 13th. These articles have been quite extensively copied, and already in Salt Lake City a movement of miners towards the north, bound for the river, has begun. The short report referred to says of James Lane's placer mine at the month of Raft river:

"The claim is being worked by the new silver-plated copper plate process, and is panning out from $17 to $20 per day to the man. The ground is worked by four men, who operate two sets of plates. After a ten days' run, completed just before our informant left the mine, a clean-up was made. One set of plates yielded 80 ounces of amalgam, carrying $5.50 in gold to the ounce, and the other set, over 60 ounces of $6 amalgam. Mr. Lane pays his men $1.50 per day and board; the incidental expenses of running the plates are a mere nothing, so that the lucky Lane is making about $70 every day. But the beauty of the Snake river diggings is that they are not confined to any one gulch or bar. The river is 1,100 miles long, and the fine gold has been found along its banks in every bar for a distance of 400 miles."

The correspondence is somewhat more detailed. The copper amalgamating plates are described as one-fourth of an inch thick, of convenient area, and put up like an inverted V. Lane's claim is made somewhat richer than in the above report. "The ground," says the writer, "is now yielding from $40 to $50 per day to the man." The plate-process is described as something new, at any rate for that region. It is, in fact, by means of this process, it is represented, that the Snake river stores of gold are to be made available. It had long been known that the bars of the river contained gold, but experience had proved it too difficult of saving. Now, however, proof is offered of the success of the process and the resources of the country, in the 75 or 100 ounces of gold shipped, after every weekly clean-up, to San Francisco. The writer, forgetting apparently the weakness of human nature, advises all who meditate a "rush" to wait till winter is over. He says, quite truly, that there is plenty of room for all, and closes:

"Aside from its value as a mining region, the Snake river valley is a magnificent country. The river itself is clear, wide and deep, its banks well wooded, and its waters stocked with salmon-trout in indescribable profusion and of extraordinary size. Fishing in this river is most exhaustive sport, and Snake river anglers often throw in a baitless hook in order to enjoy a breathing spell. The country through which the stream stretches is wild and beautiful, and now that cold weather approaches and ye Bannack is on the "swap" instead of on the shoot, prospecting is a perfectly safe employment."

These descriptions may apply well to the lower Snake, after it has turned to the northward, but from all we can gather from reading and from conversing with prospectors who have visited the region, they are hardly applicable to the upper Snake, say from the neighborhood of the Shoshone falls, to the branches in the Wind river mountains. Gold exists all along the river. That was acknowledged long ago, as the excitement of 1870 bears witness. But it is very fine gold, difficult to save. The hostility of the Indians who make the banks their hunting grounds in summer, combined with the difficulty hitherto experienced in getting out enough pay, may sufficiently account for the little attention paid to this region in the last few years. And there is nothing at all impossible in the supposition that at last, by happy coincidence, a peace with the Indians and the discovery of a successful process, have combined to declare a new era for this neglected field.

As we picture it, the region of the Snake river is grand in a kind of barren, terrible beauty. There is the river, wide and deep, cutting its channel through the great lava flood and gnawing more slowly at the porphyry below. It has beautiful falls that should long ago have wakened the enterprise of some Niagara man. It is well stocked with fish, as the writer says. As for well-wooded banks, that is to be doubted, for we know that in calculating probabilities of success for a mining camp on the river, the amount of driftwood brought down has been thought an important item under the head of fuel. Grant that the immediate banks may be wooded. Go beyond them on either side and the limit of inviting scenery has been reached. Nothing but the vast, dreary lava flood with its occasional sage-brush relief—the same barren aspect that frightened Lewis & Clarke, and after them Fremont, so that all turned aside to the north and did not even see the Shoshone falls. Still, many a good thing may come from a barren land, and barrenness holds little ground as an argument when gold is in the question. Snake river may yet prove to have as great a store for the placer miner as it undoubtedly has for the geologist and the tourist.

The river may be reached by way of Kelton or Humboldt Wells. The best season for working, considering the stage of the water and the state of the weather, is from the 1st of September to the latter part of November, and from the early part of March to the middle of May. In midsummer the river is too high, and in midwinter the weather is too stormy. Provisions in plenty can probably be obtained at the river. Without the new process a man may be able to pan out $3 to $4 per day. With regard to the V-shaped amalgamating plates it may be told that a gentleman in San Francisco, who is the inventor and patentee of V-shaped riffles, knows nothing of their use on Snake river. The appliance in use must be something different from a riffle, or it is an infringement. A San Francisco house made lately, it is said, quite large shipments of amalgamating plates to the river.

No doubt we shall soon be more enlightened with regard to these resurrected placers through the columns of the *Tribune*. We hope this may prove to be the case. Meanwhile, we say to the unsettled miner: Investigate before you rush.

A New Dry Washer.

We have just witnessed a test made with a dry washer recently invented by a gentleman of this city. The aim had in view by the inventor has been to devise a machine in which gold might be separated from fine gravel, etc., by air instead of water, as is employed in concentrating tables and riffles now in common use. Such a device is evidently a desideratum. For in many dry places water enough cannot be obtained to admit of the successful working of material known to contain considerable gold.

The machine which Mr. Gawley now puts forward as the result of his labors, may be described briefly as follows: A cylindrical frame about six feet long and two feet in diameter is made in four or five sections. Around these sections is coiled a stout wire. Around the coil of wire again is coiled a wire screening, the sections of the cylinder being covered with screens of different coarseness, the finest being nearest to the hopper. Around the whole is rolled a sheet of zinc, closing the cylinder tightly, and strapped firmly on. Within the cylinder, distributed at regular distances around the periphery, are iron straps, about an inch and a half wide, set on edge and running the entire length of the cylinder. This cylinder or barrel has a shaft at each end, and is fixed nearly horizontally in the bearings, dipping, however, with a slight inclination, away from the hopper. The cylinder is open at both ends.

The hopper end of the machine consists of a large cubical box containing a blower, an ordinary centrifugal one, worked by a crank outside. On the side of this box towards the cylinder is a hole opposite the open end of the latter and through which the blast passes. The gold-bearing material is fed into the cylinder, just ahead of the blast. The axle of the blower is connected with the cylinder by gear, so that the same motion of the crank that produces the blast, revolves the cylinder with a slow, steady motion.

Before describing the test we witnessed, we will state that the apparatus used was a rude one, merely intended to illustrate the principle. In practice, zinc will be replaced by amalgamated copper, in the covering of the cylinder. This covering will be fastened on, not by straps, but by thumbscrews. The blower will be furnished with a balance-wheel.

The material used in the test was a fine, sandy clay, mixed with gravel and brass filings. Brass filings are so much lighter than gold that the machine operated to disadvantage in attempting to save them. Nevertheless the working was well illustrated, and the principle on which its success depends was amply vindicated. The crank was turned, sending a sharp blast through the cylinder. The material was fed down on top of the blast. The light stuff was blown through the cylinder and escaped. The heavier material sank, but being caught between the longitudinal partitions, was elevated as the cylinder turned, and finally allowed to fall again, exposed to the blast. This was continued until the larger pebbles, too heavy to be blown through the cylinder, at one gust, found their way to the "tailings" end, and here put out of the way. After operating for some little time, the crank was stopped, the zinc sheet unstrapped and unrolled. In the bottom of the zinc was found the brass filings, mixed with a considerable quantity of the sand and clay. The finer particles were nearest the hopper end, the coarsest close to the tailings-end. Some of the filings were blown entirely through the cylinder, but not enough to raise any doubt as to the efficacy of the machine in saving gold, when the lightness of brass is considered.

The machine is simple, may be easily transported and more easily worked. Two men can manage it; one turning the crank, the other feeding at the hopper. When the machine is put into working order we hope to be able to report a complete, critical test.

Foundry Notes.

Iron Pipe Manufacture and Ship Building at the Risdon Iron Works.

At the Risdon Iron Works, in this city, they are making 20,000 feet of iron pips for the Sandwich islands, to be used on the the irrigating works of a large sugar plantation, owned by Claus Spreckels, of the California Sugar Refinery. Some of this pipe is 42½ inches in diameter, some 40 inches, 37 inches and 35 inches. Part of it is No. 14, part No. 9, No. 7, and some is quarter inch iron. The pipe is being made in sections of 16 feet each and of four different diameters as stated, for convenience in being made up in nests of four pipes each, for shipment. That is, the 35 inch is put into the 37 inch, the 37 into the 40, and the 40 into the 42, making a piece heavy enough to cover measurement freight. The whole lot will weigh about 700 tons, and will be completed ready to be laid. The joints will be made of lead, under the Smith patent; some 40 tons of lead will be required for these joints.

The Risdon works are at present making about 400 feet per day complete, and have a large number of men employed in handling, steam-punching, rounding up, riveting and caulking the work in its process of construction, and it would well repay a visit to the works, to see the order and regularity with which each division of the work is carried on. The pipe is all carefully made and each piece shows evidence of thorough workmanship.

One of the features in connection with the job is the punching machine, put up by the firm for this special purpose. It punches 12 holes at a time and 40 times a minute, making 480 holes per minute. The plates then pass to the hydraulic inventing machine, which compresses the rivets with a steady pressure of from 10 to 30 tons and noiselessly, does better and truer work than scores of hammers pounding away from morning till night. With these riveters half-inch rivets can be driven cold and as good work done as if they were hot.

The 30-inch pipe, used by the Cherokee Gravel mine, was ¼-inch thick, and has stood a pressure of 400 pounds per square inch for the last four years, not showing any leaks or weakness. Yet all the rivets were driven *cold* by these machines, no caulking being done on the round seams, and only the edge split on the horizontal seams. Numerous experiments have been made to test the machine-driven rivets against those driven by hand, and the machine work has been effectually proved the best, at first, and after continued duty. The holes in the plates may not be exactly fair one with the other, yet the steady pressure will cause the metal to "flow" and fill up every particle of space, so that upon cutting the seam through the center of the rivet the joint and rivet cannot be seen, while in hand riveting such spaces are never filled up. At these works may also be seen the machines for punching by water pressure, and it is the intention of the proprietors to shear as well as soon as they can get the machines made.

This company have already made nearly all the heavy pipe work in this State, having completed in all about 175 miles of pipe, and they are putting up the best class of tools their large experience calls for, so that such work can be supplied at a minimum cost to the purchasers. In connection with this class of boiler-work, the company are doing a large job on the steamer *Bolivar*, an English vessel that came from South America to this port, with the old-fashioned engine and boilers in very bad condition. She was brought to Goodall & Perkins, and given to the Risdon Iron Works, to be altered to a proper boat to carry passengers and coal from British Columbia to this port. She was taken upon Taylor's ways, moved over to one side, cut in two pieces at the middle, and the front portion moved apart 80 feet, in proper position to the after half. The space is being built up with good, solid iron frames and plating, iron decks put in, and new compound engines put on board, making a first-class ship. She will have a tonnage of 1,800 tons, and will make one of the finest ships on the coast. Those desirous of seeing iron shipbuilding in progress will do well to take this opportunity of visiting the vessel on the ways, as it shows that California is not very far from being a shipbuilding port, either with wood or iron. We shall have more to say on the question of shipbuilding in our next issue.

A Strike in the Golden Fleece.—A short time ago we published some account of the Golden Fleece Gold and Silver mining company's mine, 10 miles north of Reno, in Peavine district, Washoe county, Nevada. We are glad to learn from a contemporary that a promising strike has lately been made in the mine. The miners have come upon a vein six feet wide. A specimen exhibited in Reno is described as full of black sulphurets with quartz resembling Comstock ore. It is expected to assay from $75 to $100 per ton. As the tunnel pushes further into the hill it is said that the ore is becoming free of base metal.

W. F. Englebright, of Nevada, has been appointed U. S. Deputy Surveyor for the surveying of mining claims.

The miners in the Prietta mountains, south of Prescott, are said to be having more than usual good luck.

A first-class quartz mill is being made in San Francisco for the Tiger mill.

The Panama Route from New York.

All those who came to this coast by what is known as the Panama route will have a vivid recollection of Aspinwall, as giving them their first views of tropical surroundings. The town, of which we give a view herewith, is on the north side of the Isthmus of Panama, on Navy bay, 48 miles by rail from Panama. The harbor is a good one, and has ample shipping facilities. There are several fine wharves, each owned and used by one of the following steamship lines: The Pacific Mail Co., to New York and San Francisco; Royal Mail line running to Southampton; West India line, plying between Aspinwall and Liverpool, touching at the principal West Indian islands; the Atlas line to Liverpool via New York; the French line to France, and the German line to Bremen. Most of these different lines dispatch steamers twice a month.

The permanent population of Aspinwall is only about 2,500, the white population fluctuating according to the demands of business.

The busiest part of Aspinwall, and in fact, the only part where any business of importance is transacted, is along the water front. The Pacific Mail Steamship Co. built a wharf there some years ago, which cost upwards of $800,000. It is a magnificent piece of work, 600 feet long and covered the entire length with a substantial roofing, in which merchandise is stored when awaiting transfer across the isthmus. At this wharf the steamers of the line land their freight and passengers.

Among the buildings of interest at Aspinwall is the Episcopal church erected about 20 years ago, through the liberality of the Pacific Mail Steamship Co. and the Panama Railroad Co. It is constructed of stone and very handsomely and substantially fitted up. Near the church is a monument erected to the memory of Aspinwall, Stephens and other friends of the great isthmus route.

The place is best known of course as the landing on the Atlantic side for the Pacific Mail steamers. This is probably the best known transportation company in the world, and for many years, before the Pacific railroad was built, brought by far the largest proportion of people to this coast, comparatively few coming overland or around Cape Horn. Even now, with the railroads to compete with it, such are the accommodations offered, that large numbers of passengers travel to and fro by the Mail steamers, preferring a comfortable ocean passage to the crowded and dusty cars. The steamers are commodious, well managed and comfortable, and the fare and appointments being first-class, make the voyage of 5,200 miles a pleasanter one than the shorter trip across the continent by rail. The steamers connect at Panama with the Pacific Steam Navigation Co.'s lines to all the important ports of South America. At Aspinwall connection is made with the various lines previously enumerated. The main office of the Pacific Mail Co. is at No. 6 Bowling Green, New York, and D. S. Babcock, Esq., is President. The General Agents of the Pacific coast are Williams, Blanchard & Co., the offices, wharves, etc., being at the foot of First street, corner of Brannan, in this city.

The trip up or down on the Pacific side is the pleasantest ocean voyage in the world. Glassy seas and sunny skies are the rule. The steamers keep close along the coast, affording the passengers occasional views of tropical scenery and life, as at Acapulco and elsewhere. The vessels in use are all first-class specimens of naval architecture, complete in their appointments, and all possible conveniences are afforded the passengers. The land passage of the isthmus is divested of all discomforts by the railroad, the trip from Panama to Aspinwall occupying a very short time. Our view of Aspinwall, showing the wharf of the Mail Company, is from a photograph by Muybridge, taken not long since. This well-known photographer has made a most complete set of views of Central American scenery, showing all the prominent features and places of the country, with characteristic views of the natives in their various occupations. He has taken the trouble to make a very full and interesting set, so that when bound together the whole is a sort of illustrated description of the country and people.

A Long-Lived Meteor.

August and November are the months in which old earth interferes with the orbits of the meteors, and brings down their sparkling showers upon her. In November, the greatest number of meteor-showers is expected about the 12th or 14th of the month. We are being favored this year with the celestial fireworks rather later than usual. And it seems that some little performances not on the bills have been given in some localities. E. H. Walker, Principal of the Reading, Shasta county, school, has sent to us the following sketch of a brilliant meteorite, that fell Friday evening, the 22d inst., as it appeared to him at Reading:

"It made its appearance at 7:55 P. M., west of north; at an elevation of about 40°, traveled in a southwesterly direction, and disappeared nearly due west. It lighted up the country hereabouts almost as bright as daylight. The remarkable part remains to be told. The trail was the largest, and continued visible for a longer time than any other that I have ever seen or heard of. *It remained in sight to the naked eye for 20 minutes!* Soon after the meteor disappeared, the middle part of the trail began to bend downward and to move eastward, drawing the west branch with it, while the east branch moved westerly. A parabolic curve was formed, both branches extending westward. The curve continued to rise until it attained an elevation of 50° before it disappeared."

On the same evening at Marysville, about 100 miles south southwest of Reading, a meteor was seen. The subjoined account of it was telegraphed to San Francisco the following morning: "A meteor of great brilliancy was seen in the northwestern heavens last evening a little after eight o'clock, moving from the east to the west. It gleamed forth with such splendor as to illuminate the whole city, and made it light as day. After traversing with a hissing noise, the erratic body burst into a shower of crimson and emerald brilliants, which descended in luminous rain until extinguished. It put to shame terrestrial pyrotechnics." These two descriptions must refer to the same phenomenon. But the appearance described by Mr. Walker is certainly very strange, though not unprecedented, as far as the length of time that the train remained visible is concerned. Admiral Krusenstern in his "Voyage," describes a fire ball the train of which shone for an hour after the body had disappeared. During the magnificent display of 1833, trains were noticed that remained visible for half an hour or more.

If Mr. Walker will furnish still further information with regard to the state of the weather, the direction and force of the wind, at the time he saw the meteor, and the apparent constitution of the train, whether it appeared as a continuous streak or an aggregation of particles; and then, if another intelligent observer, in some other distant locality, will report as full data of the phenomenon, as Mr. Walker has sent, it may be possible to make this meteor an important aid to science.

The Standard Soap Works.

Our attention was first called to this meritorious undertaking by the exhibit of the Standard Soap Company at the recent fair. We were glad lately to have had the opportunity of examining their new works at Berkeley. It is generally supposed that a soap factory is the most disagreeable of all places in the world; this had been our experience, and we were agreeably surprised in finding a very different state of things at the works at Berkeley. The establishment consists of a large and handsome structure very strongly built of wood. The main building is 300 feet by 210 feet on the ground floor and five stories high. There is a warehouse 300 by 40 feet, and, also, a number of adjoining smaller buildings.

Besides the universal cleanliness, another noticeable feature is that there is no fire in any part of the building except in the boiler-room. All parts of the building which require heat for any purpose are supplied with steam from the boiler. In the boiler-room is also placed a superheater, in which are to be placed the fats and oils, etc., to be subjected to a pressure of 250 pounds to the square inch of superheated steam. By this means the glycerine will be removed without loss, as is not the case by the present arrangements. When this apparatus is got in running order it is estimated that a saving of some $30,000 to $40,000 per year will be effected.

The general principles of soap-making are perhaps too well understood to require any description, and the finer points of the operation too abstruse for discussion here. Suffice it to say that the fats are heated in large and deep vats by means of steam, with a solution of caustic soda, until the chemical combination of the stearic, oleic, or palmitic acid of the fat or oil with the soda has been effected, and the various impurities of the fats and the soda have separated out. The rest of the operations, perfumings, etc., though very interesting, are not well adapted for discussion in such an article. The two tubs or vats in which the above reactions are effected at the works at Berkeley have each a capacity of 250,000 pounds of finished soap. The price of the raw material which goes into each of these vats for each "boil," as the operation is called, is $5,000. This will serve to give some idea of the magnitude of the business. In most soap factories the soap is ladled out by hand. This would be a tedious operation with a charge of 250,000 pounds, and it is consequently effected by a large siphon tube, moving upon a universal joint, and so arranged that it can skim the soap completely from the layer of *nigre*, or impure residue, upon which it floats. The soap is then run into large wooden molds, so as to dry and harden. When this has taken place, it is cut by strings, stamped, packed, etc. We have of necessity omitted a description of many of the devices for mixing, stamping, etc., and confine ourselves to stating that all the labor-saving devices, many of them original, that it seems could be thought of, are in use.

The boxes used for packing are all made on the spot, from lumber which arrives from Nevada, sawed and cut ready for nailing up. The soda comes from the same place, to be made into caustic soda in the works. Both of these articles are deposited right at the works by the Central Pacific railroad, which literally passes the door, and gives great facilities both for import and export of freight.

In all the arrangements for saving of labor and time, economy and quickness seem to have been equally consulted, and the whole reflects great credit upon the Superintendent, Mr. R. P. Thomas, who designed it.

The number of different varieties of soap manufactured, and the different styles in which it is got up as to color, perfume, etc., would astonish any one who is not familiar with the business. A number of novelties have been introduced by the company, such as the "Initial Soaps," in which an initial letter of a different color is formed in the soap as deep as the center; and the "Metallic Center Soap," in which a thin plate of perforated metal is placed through the length of the cake to keep it together till it all wears out. Another useful article which this company manufacture is the "Marine Salt Water" soap, which, being especially adapted to sea-going vessels, seems to find an extensive sale. But the list of soaps is too long for our space, and we must refer our readers to the office, No. 204 Sansome street, S. F., for further particulars.

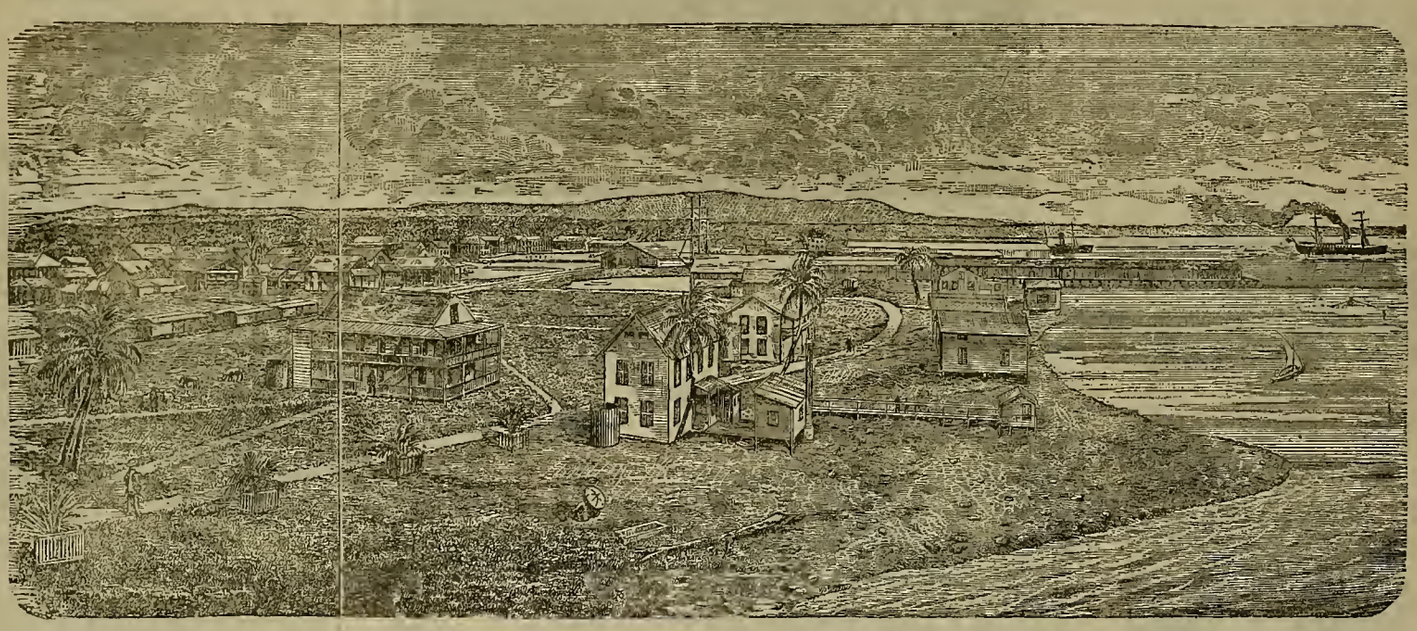
The business of the firm is already quite extensive, extending throughout the Pacific slope from Alaska as far as Panama, and the South Sea Islands. The yearly output is from $400,000 to $500,000 worth of finished goods, and the prospect seems to be that business tact and a thorough knowledge of the technical part of the work will (deservedly) prove a paying investment.

New Publications.

THE AMATEUR'S HANDBOOK OF PRACTICAL INFORMATION.—A little book, under the above title, has been published by the Industrial Publication Company, 176 Broadway, New York. It is intended for use in the workshop and the laboratory. It professes to give minute practical directions for "performing those little technical operations which are so frequently required in every day life, and in the workshop of the amateur. Its usefulness, if the recipes are trustworthy as they are said to be, may be judged of by the list of topics: Bronzing, Lacquering, Polishing Metal, Staining and Polishing Wood, Soldering, Brazing, Working Steel, Tempering Tools, Case-Hardening, Cutting and Working Glass, Varnishing, Silvering, Gilding, Preparing Skins, Waterproofing, Making Alloys, Fusible Metals, Cements, Glues, etc., etc.

THE RELATIVE PROPORTIONS OF THE STEAM-ENGINE.—This is the title given to a course of lectures on the steam-engine, delivered to the students of dynamical engineering in the University of Pennsylvania, by William D. Marks, Whitney Professor of dynamical engineering. A rational and practical method of determining the proper relative proportions of the steam-engine, seems as yet to be a desideratum in the English literature of the steam-engine. These lectures have been written under a realization of that fact. Topics already overwritten are omitted, and those are considered which have not hitherto received merited attention. The book is, of necessity, a collection of mechanical formulae accompanied by necessary general remarks and explanatory illustrations. The formula are reduced to the simplest possible form ready for immediate use. In the directness of these formulae, the value of the book lies. There are fourteen lectures. As an illustration of the matter contained, we give the subheads of one of the lectures: The weight of the rim of fly-wheel; value of the coefficient of steadiness; area of the cross-section of the rim of a fly-wheel; balancing the fly-wheel; speed of the rim of the fly-wheel.

The work is published by J. B. Lippincott & Co., Philadelphia. For sale at Roman's.



VIEW OF ASPINWALL, SHOWING RAILROAD TERMINUS AND PACIFIC MAIL STEAMSHIP WHARVES.

A MILL, that would save both gold and silver, would do well in Big Bug district.

Mining and Scientific Press Patent Agency.

Our U. S. and Foreign Patent Agency presents many and important advantages as a Home Agency over all others, by reason of long establishment, great experience, thorough system and intimate acquaintance with the subjects of inventions in our new community. All worthy inventions patented through our Agency will have the benefit of a description or an illustration and explanation in the MINING AND SCIENTIFIC PRESS or the PACIFIC RURAL PRESS. We transact every branch of Patent business, and obtain Patents in all civilized countries. The large majority of U. S. and Foreign Patents granted to inventors on the Pacific Coast have been obtained through our Agency. The files of cases and official records in our office, our patent law and scientific library (already the largest west of the Mississippi), are constantly increasing. These facilities, with the accumulation of information of special importance to our home inventors, by the experience of its proprietors in an extensive and long continued personal practice, gives them combined advantages greater than any other agents can possibly offer to Pacific Coast inventors. Circulars of advice, free.

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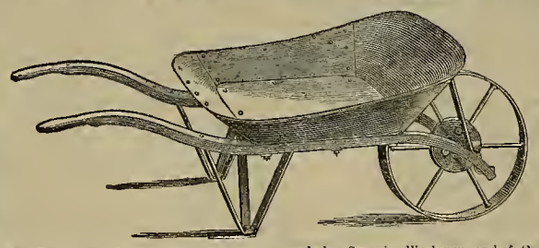

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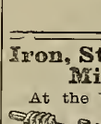

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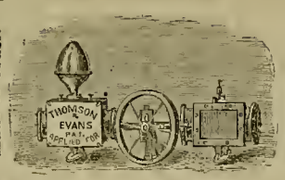

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The public are also cautioned against using the Hoskin Deflector because of its danger to life and limb, this device having already occasioned several deaths and other serious accidents. The BLOOMFIELD DEFLECTOR is entirely safe, its two and a half years use without accident, as well as its construction, proves it to be a reliable contrivance.

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L. & E. WERTHEIMER, Ag'ts, San Francisco

Continued from page 341.

rate, and the bullion shipments continue very uniform at the rats of about $1,000 per day, which is good for a 10-stamp mill. This company has a force of 50 men at work building a wagon road to Bully hill, which will be completed in about four weeks, and will be of immense value to the company, as it will give access to many thousand cords of good wood and timber, besides lessening the expense of hauling ore from Bully hill about one-half. At the Northern Light, President Whitney and Supt. Dunn are pushing the new tunnel, at a lively rate, and when they reach the ledge with this tunnel, they will have an immense amount of good ore opened above them, both drained and ventilated, which will be of great value to the property, as it will enable the company to extract many thousand tons of ore, before there will be any necessity for hoisting works. At the Potter mine on Bully hill work is going on with a good gang of men at a lively rate, and the ledge continues to have all the characteristics of an immense bonanza. About 40 tons of rock are extracted from this ledge daily, and there could be double that amount taken out if there were mills to work it. In this mine there has been a beautiful vein of copper ore cut the past week. It is three feet thick, and will average $75 per ton; and what makes this so valuable is the fact that the discovery takes place in the tunnel at a depth of about 120 feet from the surface. The Winthrop Co. are pushing their main tunnel both day and night, and are now 300 feet into the mountain, and will continue driving this tunnel until they cut the ledge, which they are sure to reach within the next 50 feet.

TEHAMA.

ITEMS.—San Francisco *Chronicle:* The Cow Creek mines are all owned and operated by Tehama county capitalists. The Donkey mine stockholders are going to erect a mill and reduction works early in the spring. The Afterthought mining company are about to consolidate with the Peck mine company, and commenced rebuilding the works that were destroyed by fire last spring. Should the winter be an open one this mill will be in full running order in 90 days.

NEVADA.

WARD DISTRICT.

Mr. L. Clement reports to the Eureka *Sentinel* that Ward is in a very flourishing condition. Heretofore the ore found there, which was very difficult to handle, has defied everyone who tried to treat it. It is now being chlorinated by roasting with salt, which converts from 93% to 97% of the silver to the chloride, and of this amount 83% is saved by amalgamation. The Martin White mill is working excellently, and crushes 40 tons of ore per day. Its capacity will be raised to 50 tons per day. The Paymaster mine is the most extensively developed of any mine in the camp, and shows a splendid body of ore. The Pleiades is also another very fine mine, and is being rapidly opened up. It is the property of M. T. J. Bell. The Governor mine, the property of the Governor Consolidated mining company, is another very promising property. The Martin White has made one bullion shipment.

BASE RANGE.

PHEASANT MINE.—Eureka *Sentinel:* This very promising property lies on a spur of a line of low-lying hills fringing the eastern side of the canyon, a slight distance south of the once famous Page and Corwin property. The ores of this region were always very rich, and we are glad to note that the ore of the Pheasant mine is no exception to this rule, if assays ranging in value from $400, $800, $2,000 to $4,000, and even $6,000 per ton, may be taken as an illustration of what the place is capable of producing. The outcrop of the lode can be traced for quite a distance above the surface configuration. The location has a linear extent of 1,500 feet, and there is considerable ore on hand at the mine, which will range well into the thousands.

ARIZONA.

AZTEC AND TYNDALL DISTRICTS.—Tucson *Star*, Nov. 7: Progress is being made very rapidly in these districts now. The Toltec and Aztec Syndicates vie with each other in pushing on their works; a large force is now rushing things on mines, and the mills work day and night. Messrs. Magee and Graham of the Toltec, and Superintendent Huntsr of the Aztec have been working the past week on the Sonoita and a large gang of men have been put on the reduction works, cutting mill timbers, ditching, making adobes, sawing lumber, building roads and bridges and taking out ores. Arrangements have been nearly perfected which will ensure two fine mills on the Sonoita, one for the Aztec and one for the Toltec mines. The mines are looking better with each foot of depth attained and this is notably the case in the Bushell and the St. Louis mines. Prof. Thos. Davis just in from Camp Toltec reports another strike in the Bushell shaft at some 70 feet, showing a finer grade of metal than any hitherto found, while the ore is coming into the St. Louis shaft in greater quantity and of a better quality than was expected at the depth reached, some 54 feet. Crosscutting will soon be commenced on the St. Louis, to open the ore bodies on either side of the shaft. Sinking will proceed, however, day and night and the mines be developed on a ratio with the rapid progress of the reduction works. A number of excellent locations have been made in these districts within the past two weeks, as several important sales of mining properties testify, to parties who are bound by the conditions of sale to develop the mines purchased. Some prospecting done on the Gibson, Ermenia, Cleveland, Rochester, Sumner, Monroe, Providencia and other mines has produced most excellent results, the size of ledges determined and first-class ores found, justifying thorough development. The mine owners and prospectors of the Santa Ritas are pushing work on their claims with much more than ordinary vigor now, as they see that reduction works in that section will create a market for their ores. Eastern capital is pushing into this section, and eastern machinery will mill the first ores of the Santa Ritas; eastern men see their opportunity and they have not been slow to avail themselves of it, not only in the Santa Ritas, but thoughout southern Arizona.

COLORADO.

CLEAR CREEK COUNTY.—The Farwell mill treats about six tons per day. The Clear Creek company's mill, F. M. Taylor manager, treats 10 tons per day. Scheyer, Dillingham & Co. will have sampling works at Silver cliff. The Freeland is shipping two carloads of ore per day. The Junction mine has been leased and bonded to Col. W. H. Moore. He has a four-foot ledge averaging over 100 ounces. Robbins & Co., a party of lessees, are operating on the Gunboat lode through a shaft 40 feet deep, and are drifting west on two inches of galena that mills 300 ounces of silver to the ton. A couple of lessees are stoping 100 feet west of the tunnel on a few inches of ore that mills from 200 to 300 ounces in silver. A party working on the Silver Ore lode, are mining successfully. They have a small but steady streak of ore the last run of which yielded 471 ounces per ton for first-class mineral. One of the last runs on Oneida ore milled 850, 500 and 145 ounces, according to the three classes. The prospects are certainly very encouraging at this point and further developments can scarcely fail to secure success.

ITEMS.—The Leadville *Reveille*, says of the Little Pittsburg mine: This mine within five months has made two poor men rich and promises to make two rich men vastly richer, and as yet it is not a twentieth part prospected or a quarter exhausted as prospected. An important agreement has just been perfected by the owners of the Winnemuck, New Discovery and Little Pittsburg, whereby these magnificent properties are consolidated and will be operated under one management. Borden, Tabor & Co. have paid $15,000 for the Eaton lode since the new strike was made. The Smuggler has a heavy body of ore which runs two and a half ounces in gold, ten ounces in silver and 70% lead. The receipts of ore at the sampling works of Eddy & James, from Nov. 1st to Nov. 12th, aggregated 530 tons or an average of 53 tons per day, counting out two Sundays. From one mine in seven days 215 tons was received. They have lately enlarged their works.

OREGON.

GRAND APPLEGATE DITCH.—*Sentinel*, Nov. 13: William Healy, the contractor on the Grand Applegate ditch, reports that a mile and a half of the ditch is complete, and the remainder will be finished by January 1st. The directors of this company are talking of enlarging the ditch so that a larger volume of water can be carried to the mines.

STILL PIPING.—At the mines of Klippel, Hanna & Co., piping is still going on, but if no rain falls within the next 10 days, their supply of water will fail and they will be compelled to suspend operations for a short time. A clean-up will be made when the water gives out. The Squaw Lake company will extend their hydraulic pipe some 600 feet before commencing their winter's work.

GIANT POWDER DECISION.—The following information we get from a dispatch to the *Chronicle*, dated Washington, November 25th

In the case of the Giant Powder Company, appellant, against the California Powder Company's Works et al., an appeal from the Circuit Court of the United States in the District of California—a suit for alleged infringement of letters patent granted in 1865 to the former company upon a new process for manufacturing nitro-glycerine, and combining it with gunpowder and other materials for the purpose of blasting, two of the patents, 4818 and 4819, being re-issues based upon the original—the Court holds that the re-issues must be and are hereby declared void, because they are not for the same invention as is set forth in the original patent of 1865. It is held, however, that the statements show nothing to affect the validity of the third patent sued on, and that the lower Court, therefore, erred in dismissing the bill of complaint as a whole. For this error the decree is reversed and the cause remanded, with directions to enter a decree dismissing the bill, so far as patents 4818 and 4819 are concerned, overruling the demurrer as to the residue and directing defendants to answer. The decision will prevent the Giant Company from collecting royalty from the California Company.

AT the annual meeting of the Challenge Con. M. Co. the old board of Trustees were elected, namely: A. K. P. Harmon, William Sharon, J. D. Fry, J. H. Robinson, and C. L. Weller. About 29,000 shares of the company's stock were represented.

THE miners of Belmont, Nevada, are organizing a union.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch from Washington. D. C

FOR THE WEEK ENDING NOVEMBER 12TH, 1878.

SAW GUIDES—James Griffin, Mendocino, Cal.
LOCKS—John Jett, S. F.
MILLS FOR GRINDING ORE—Wm. C. Salmon, John F. Salmon and Wm. H. Harris, Portland, Ogn.
WATER GATES—Philip Giovannini and Bruno Bennerscheidt, S. F.
ORE STAMPS—Stephen Kendall, Jackson, Cal.
SAFETY ATTACHMENTS FOR HOISTING CAGES—Charles W. Lane, Aurora, Nev.
COPY HOLDERS—Henry A. Peabody, Sacramento, Cal.

Notices of Recent Patents.

Among the patsnts recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of special mention:

WATER GATE.—P. Giovannini and Bruno Bennerscheidt, S. F.—Dated Oct. 12th, 1878. This iuvention relatss to certain improvements in that class of stop valves technically known as water gates, and it consists in ths employment of a pair of disks which slide transversely across the pipe in a suitahle ehannel and have their outer faces made to close respectively agaiust suitably formed faces or bearing in the pipes. These disks are moved forward and hackward by means of a screw, which operates through a nut having a channel or groove in its periphery to take hold of the disks. The innsr faces of the disks have each a peculiarly shaped lug, and a similarly shaped loose block between them serves to forcs the disks out of their bearings just as they reach a point opposite to these bearings and when the loose block strikes the bottom, thereby closing the passage effectually. When the gate is to be opened, the first movement of this block releases the disks from their bearings, so they will move easily. This gate is very efficient in pipes of all sizes and under any pressure, and from its psculiar double form and perfect joint formation, it is especially valuable for use in large water pipes.

RE-ROLLING OLN RAILS.—B. P. Brunner, S. F. This invention is intended to economize in the matter of re-rolling old railroad rails which have become battered, until they are worthless for their original use. These rails may, by a system of rolls designed for the purpose, be converted into merchantable bar iron; and it is for the purpose of cheapening this production that the prescnt invention has been made. It consists in the use of certain guides, by which the rail is held in the proper position and prevented from twisting, so that it can be compressed and brought into form with one or two less passes between the rolls than has heretofore been required. This process is also greatly aided by providing certain of the rolls with projecting pins, which assist in drawing the iron through, when it has so few points of bearing that it could not possibly be drawn by the friction between itself and the rolls. The invention, as a whole, is one which will have an important bearing upon a great manufacturing interest.

ICE MACHINE.—W. H. Mansfield, S. F.—Dated, Oct. 5th. This convenient little device was illustrated and described in the MINING AND SCIENTIFIC PRESS, of Sept. 21st, 1878. The ownership of the patent has been assigued by the iuventor to Thos. C. Van Ness and Robt. N. Williams, of this city. The ice machine is portable and intended for family use, where only a small quantity of ice is to be made at a time. The molds are peculiarly made so that a small piece of iee may be removed and the remainder left for future use. From five to 20 ponnds of ice may be made with it in a short time, and anyone can nse it.

BERKELEY CINNABAR.—Mr. J. S. Phillips has examined a small sample of "cinnabar" (?) from the tunnei run near Berkeley. He fonnd no mercury whatever. He says that the formation at Berkeley is all right, so that it would be no strange thing to find good cinnabar there. But the specimen examined was perfectly barren.

THE Bullion Club is the name of a new association of influential gentlemen in New York city, who hope by mutual interchange of information to promote an interest in legitimate mining, and to prevent the negotiation of unworthy schemes.

THE sale of delinquent stock of the Golden Gate Con. Hydraulic mining company is postponed to December 10th.

THE sale of delinquent stock of the Summit Gold and Silver mining company is postponed to December 9th.

THE Monte Cristo S. M. Co. has filed a certificate of increase of its capital stock from $1,400,000 to $2,000,000.

TWO bars of Peck bullion arrived at Prescott Nov. 17th.

News in Brief.

REVOLUTIONARY plots in Peru.

THE Marquis of Lorne has arrived at Halifax.

THE fishery award has been paid under protest.

RUMORED trouble with the Umatilla Indians.

WELSH slate quarries are reducing their force

THE Southern Pacific railroad will probably reach Gila City.

and lowering wages.

A NEW deposit of guano is reported discovered on the island of La Ridia.

SCHOONER *Laura Pike* wrecked on Humboldt Bar. Seven persons lost.

LABORERS are being sent to the Colorado desert for the progressing railroad.

BEACONSFIELD, notwithstanding, Parliament will meet on Decomber 5th.

IN case of war with a foreign power, 90 vessels could at once be supplied.

A BARREL of Peruvian yellow potatoes has been received at Washington.

AN English forger has been arrested in San Francisco, and an American defaulter in Lisbon.

IT is rumored that a line of steamers between New York and China is to be established.

IT is estimated that 70,000 boxes of raisin have been made in California this year.

CAMP equipage has been called for by ths English army in South Africa. More war.

HAYES has congratulated the Italian King on his escape from the dagger of the assassin.

THE Russian commander in Roumania has been suddenly ordered to postpone his departure.

THE Italian governmsnt will propose to Parliament measures against secret revolutionary societiss.

AT Cartbagena, Spain, some naval officers have been arrested for being concerned in a Federalist plot.

THE South, during her affliction, received over $1,300,000 relief from sister States.

SOLDIERS from Cuba carried yellow fever to Madras.

ENGLAND has at last succeeded in perfecting her quarrel with Afghanistan, and the armiss are advancing.

THE Commissionsr of Indian affairs will want $5,209,000 next year. This is $500,000 more than the appropriation for the current year.

THE Assayer at Denver is purchasing gold bullion at the rate of $100,000 per month. He expects it will soon increase to $150,000.

SCHURZ has reversed a Land Office decision permitting D. B. Nicholls to purchase eertain lands in Los Angeles district, at $1.25 psr acre.

DURING the 11 years of the bankrupt law, it is estimated that the aggregate failures in the whole country was only 1½% of the whole number of dealers and manufacturers.

SHERMAN will again recommend a new bond of small denomination, bearing less than 4% interest, to enable persons of small means to accumulate sufficient sums to buy 4% bonds.

AN engineer will be put in the field immediately and make a definite location of the route of the Chico and Colusa railroad, and begin to get the right of way.

FREE LIBRARY. — The members of the Mechanics' Institution will meet on Monday evening next, at 8 P. M., in the Institute building, to confer with the Trustees of the S. F. Free Library, with a view to consolidating the libraries and making the Free Library all that it should be. A great benefit may result from united action on the part of all who have at heart the welfare of such important institutions in San Francisco. Books are to save our nation and citizens who have hopes for the country can do nothing better than to aid every endeavor to furnish the masses with abundance of the best reading matter.

THE *Standard* announces the discovery of lignite coal, three and a half miles south of Bodie. It adds that the country has all ths characteristics of coal-bearing regions.

THE bullion shipments from Butte, Montana, for the week ending Nov. 19th, amounted to $12,203.

SOME very rich ore is coming from the 300 level of the Belmont mine.

THE Highbridge is showing more and richer ore than at any previous time.

THE Kelly Lode, Western Nye, is producing $200 ore.

REPORTED rich strike in the Great Western quicksilver mine.

FRESH attractions are constantly added to Woodward's Gardens, among which is Prof. Gruber's great educator, the Zoographicon. Each department increases daily, and the Pavilion performances are more popular than ever. All new novelties find a place at this wonderful resort. Prices remain as usual.

EXAMINE the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.94. Lewis C. Grover, President; L Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

WE USE on our steam printing press superior machinery lubricating oil from the Phœnix Oil Works of Hutchings & Co., No. 517 Front street, San Francisco.

MODEL MAKER AND MACHINIST.—I. A. Heald, No 514 Commercial St., San Francisco, (fourth floor).

GENERAL MERCHANDISE.

[WHOLESALE.]

TUESDAY, November 26, 1878.

BAGS—Jobbing.
Eng Standard Wheat, 9 ⅌ 9½
Cal. Manufacture.
Hand Sewed, 22x36.. 9 @ 9½
24x36..... —@—
23x49..... 15½@—
Machine Swd, 22x36.. 9 @ 9½
Flour Sacks, halves... 9 @10½
Quarters..... 7½@ 7
Eighths..... 4½@ 4½
Hessian, 60 inch..... —@—
45 inch..... —@—
40 inch..... —@—
Wool Sacks,
Hand Sewed, 3½ lb..47½@50
4 lb do..... 52½@—
Machine Sewed.....50 @—
Standard Cunnies....13 @14
Bean Bags..... 8 @ 9

CANDLES.
Crystal Wax..... 17 @—
Eagle..... 12 @—
Patent Sperm..... 30@—

CANNED GOODS.
Assorted Pie Fruits,
2½ lb cans..... 3 00 @ —
Table do..... 3 00 @ —
Jams and Jellies..3 50 @ —
Pickles, hf gal.....3 15 @ —
Sardines, qr box..1 67½@1 90
Hf Boxes.....2 50 @2 75
Preserved Beef,
2 lb. doz.....4 00 @ —
do Beef, 4 lb.doz.6 50 @ —
Preserved Mutton,
2 lb. doz.....4 00 @ —
Beef Tongue.....6 50 @ —
Preserved Ham,
2 lb. doz.....6 50 @ —
Deviled Ham, 1 lb.
doz.....5 50 @ —
do Ham, ½ lb doz.3 00 @ —

COAL—Jobbing.
Australian, ton.. 8 00 @— —
Coos Bay..... 6 50 @ 7 00
Bellingham Bay. 6 50 @— —
Seattle..... 6 00 @ 6 50
Cumberland.....14 00 @— —
Mt. Diablo.....4 75 @ 6 00
Lehigh.....13 50 @— —
Liverpool..... 7 50 @ 8 00
West Hartley...10 50 @— —
Scotch.....10 50 @— —
Scranton.....11 50 @— —
Vancouver Id... 7 00 @— —
Charcoal, sack.. 75 @— —
Coke, bbl..... 60 @— —

COFFEE.
Sandwich Id, lb.. — @— —
Costa Rica..... 15 @ 16
Guatemala..... 15 @ 16
Java..... 23 @— 26
Manila..... 17 @— —
Ground, in cs... 25 @— —

FISH.
Sac'to Dry Cod.. 4½@ 5½
do in cases.. 5 @ 6
Eastern Cod....— @— —
Salmon, bbls.... 8 00 @ 9 00
Hf bbls..... 5 00 @ 5 50
1 lb cans..... 1 40 @ 1 45
Pkld Cod, bbls..22 00 @— —
Hf bbls.....11 00 @— —
Mackerel, No. 1.
Hf Bbls..... 9 50 @10 50
In Kits..... 1 85 @ 2 10
Ex Mess..... 3 25 @— —
Pkld Herring, hx 3 00 @ 3 50
Boston Smkd H'g 70 @— —

LIME, Etc.
Lime, Sta Cruz,
bbl..... 1 25 @ 1 50
Cement, Rosendale..... 2 00 @ 2 25
Portland..... 4 00 @— —
Plaster, Golden Gate Mills.... 3 00 @ 3 25
Land Plaster, in 10 00 @12 50

NAILS.
Assted sizes, keg 2 00 @ 3 00

OILS.
Pacific Glue Co's
Neatsfoot, No 1..1 00 @ 00
Castor, No 1.....1 10 @— —
do, No. 2.....1 05 @— —
Baker's A A.....1 25 @1 30
Olive, Flagniol...5 25 @5 75
Fossil.....4 75 @5 25
Palm, lb..... 9 @— —
Linseed, Raw, bbl. 72 @— —
Boiled..... 75 @— —
Cocoanut..... 55 @— —
China nut, cs..... 70 @ 72½
Sperm.....1 40 @— —
Coast Whales..... 40 @— —
Polar..... 45 @— —
Lard..... 90 @1 00
Oleophine..... 22 @ 23½
Devoe's Bril't..... 22 @ 23½
Photolite..... —@— —
Nonpareil..... 31 @ 32½
Eureka..... 18 @ 42½
Barrel kerosene.... 20 @— —
Downer Ker..... 37½@— —
Elaine..... 37½@— —

PAINTS.
Pure White Lead.. 8 @ 8½
Whiting..... 1½@— —
Putty..... 4 @ 5
Chalk..... 1½@— —
Paris White..... 2½@— —
Ochre..... 3½@— —
Venetian Red..... 3½@— —
Averill Mixed Paint, gal.
White & tints...2 00 @2 40
Green, Blue & Ch Yellow.....3 00 @3 50
Light Red.....3 00 @3 50
Metallic Roof...1 30 @1 60

RICE.
China, Mixed, lb.. 5 @ 5¾
Hawaiian..... 7 @ 7½

SALT.
Cal. Bay, ton....15 00 @22 50
Common.....10 00 @12 00
Carmen id.....12 00 @14 00
Liverpool fine...13 00 @— —

SOAP.
Castile, lb..... 10 @ 10½
Common brands.. 4½@ 6
Fancy brands..... 7 @ 8

SPICES.
Cloves, lb..... 45 @ 50
Cassia..... 22½@ 25
Nutmegs..... 85 @ 90
Pepper Cmin..... 15 @ 17
Pimento..... 15 @ 16
Mustard, Cal., ½ lb glass.....1 50 @— —

SUGAR, ETC.
Cal. Cubes, lb..... 11½@— —
Powdered..... 11½@— —
Fine crushed..... 11½@— —
Granulated..... 11 @— —
Golden C..... 9½@— —
Cal. Syrup, kgs... 70 @— —
Hawaiian Mol'sses 25 @ 30

TEAS.
Young Hyson, Moyune, etc.... 27 @ 33
Country pekd Cin-powder & Imporial..... 50 @ 60
Hyson..... 30 @ 35
Fooo-Chow O..... 35 @— —
Japan, 1st quality 40 @— —
2d quality..... 20 @ 25

METALS.

[WHOLESALE.

WEDNESDAY M., November 27, 1878.

IRON.—
American Pig, soft, ton... .....25 00 @26 00
Scotch Pig, ton.....25 50 @26 50
American White Pig, ton.....23 00 @— —
Oregon Pig, ton.....26 50 @— —
Refined Bar..... 2½@ 3
Horse Shoes, keg..... 5 00 @— —
Nail Rod..... —@ 7½
Norway, according to thickness..... 6½@ 7

COPPER.—
Sheathing, lb..... 34 @ 35
Sheathing, Yellow..... 19 @ 20
Sheathing, Old Yellow..... —@—

STEEL.—
English Cast, lb..... 16 @ 17
Black Diamond, ordinary sizes..... 16 @— —
Drill..... 16 @ 17
Flat Bar..... 16 @ 19
Plow Steel..... 8 @ 12½

TIN PLATES.—
10x14 I C Charcoal..... 8½@ 9
10x14 I C Coke..... 7 @ 7½
Banca Tin..... 18 @— 20
Australian..... 15½@ 17

ZINC.—
By the Cask..... 9 @— —
Zinc, Sheet 7x3 ft, 7 to 10, lb, less than cask.. 9½@— 10

NAILS.—
Assorted sizes..... 2 90@3 00

LEATHER.

[WHOLESALE.]

TUESDAY, November 26, 1878.

Sole Leather, heavy, lb..... 22 @ 23
Light..... 20 @ 24
Jodd Kip, doz..... 48 00@50 00
11 to 13 Kip..... 65 00 @76 00
14 to 19 Kip..... 80 00 @90 00
Second Choice, 11 to 16 Kip..... 55 00 @70 00
Cornellian, 12 to 16 Kip..... 57 00 @67 00
Females, 12 to 13 Kip..... 63 00 @67 00
14 to 16 Kip..... 71 00 @76 00
Simon Ullmo, Females, 12 to 13 Kip..... 58 00 @62 50
14 to 15 Kip..... 66 00 @70 00
16 to 17 Kip..... 72 00 @74 00
Simon, 18 Kip..... 61 00 @63 00
20 Kip..... 65 00 @67 00
24 Kip..... 72 00 @74 00
Robert Calf, 7 and 9 Kip..... 35 00 @40 00
Kips, French, lb..... 1 00 @ 1 35
Cal. doz..... 40 00 @60 00
French Sheep, all colors..... 8 00 @15 00
Eastern Calf for Backs, lb..... 1 00 @ 1 25
Sheep Roans for Topping, all colors, doz..... 9 00 @13 00
For Linings..... 5 50 @10 50
Cal. Russet Sheep Linings..... 1 75 @ 4 50
oot Legs, French Calf, pair..... 4 00 @— —
BGood French Calf..... 4 00 @4 75
Best Jodot Calf..... 5 00 @ 5 25
eather, Harness, lb..... 35 @ 38
LFair Bridle, doz..... 48 00 @72 00
Skirting, lb..... 33 @ 37
Welt, doz..... 30 00 @36 00
Buff, lb..... 18 @ 21
Wax Side..... 17 @ 60

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by SUTRO & Co.]

TUESDAY, November 26, 1878.

LEGAL TENDERS in S. F., 11 A. M., 99½@99.95. SILVER, 2 @1½. GOLD in New York, 110½.
GOLD BARS, 830@910. SILVER BARS, 8@22 ⅌ cent. dis count.
EXCHANGE on New York, ½, on London bankers, 49½@ 49¾. Commercial, 50; Paris, five francs ⅌ dollar; Mexican dollars, 89¼@90¾.
LONDON Consols, 96 1-16; Bonds, 106⅛.
QUICKSILVER in S. F., by the flask, ⅌ lb, 40@41c.

LUMBER.

TUESDAY, November 26, 1878

CARGO PRICES OF REDWOOD.

Rough, M.....13 00
Refuse..... 9 00
Clear.....23 00
Clear Refuse.....13 00
Rustic.....23 50
Refuse.....13 00
Surfaced.....20 00
Refuse.....14 00
Flooring.....20 00
Refuse.....12 00
Beaded Flooring.....23 00
Refuse.....13 00
Half-inch Siding.....16 00
Refuse.....14 00
Half-inch Surfaced.....20 00
Refuse.....14 00
Half-inch Battens.....16 00
Pickets, Rough.....11 00
Rough, Pointed.....12 50
Fancy, Pointed.....18 00
Battens, Uncal ft.....
Shingles.....1 75

PUGET SOUND PINE
RETAIL PRICE.

Rough, M.....18 00
Fencing.....18 00
Flooring and Step.....28 00
Narrow.....30 00
2d quality.....25 00
Laths.....3 50
Furring, Uncal ft.....

REDWOOD.
RETAIL PRICE.

Rough, M.....18 00
Refuse.....14 00
Pickets, Rough.....15 00
Pointed.....16 00
Fancy.....22 50
Siding.....29 50
Surfaced & Long Beaded30 00
Flooring.....30 00
Refuse.....22 50
Half-inch Surfaced.....30 00
Rustic, No. 1.....30 00
Battens, Uncal ft.....
Shingles M.....2 00

Signal Service Meteorological Report.

SAN FRANCISCO.—Week ending November 26, 1878.

HIGHEST AND LOWEST BAROMETER.

Nov 20	Nov 21	Nov 22	Nov 23	Nov 24	Nov 25	Nov 26
30.18	30.05	30.16	30.10	30.03	39.21	30.20
30.06	29.98	30.11	29.98	29.94	30.10	30.12

MAXIMUM AND MINIMUM THERMOMETER.

68	66.5	63.5	62	67	62	66
54.7	55	52	52.5	52.5	50.5	50.3

MEAN DAILY HUMIDITY.

73	72	88	81	42	62	75

PREVAILING WIND.

NW	NW	SW	NE	E	N	N

WIND—MILES TRAVELED.

75	154	173	98	97	105	106

STATE OF WEATHER.

Clear.	Clear.	Fair.	Clear.	Clear.	Clear.	Clear.

RAINFALL IN TWENTY-FOUR HOURS.

Total rain during the season, from July 1, 1878, 2.40 in

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the eame.

General Robert Allen Silver Mining Company.

—Location of principal place of business, San Francisco, California. Location of works, Pinal County, Arizona.

Notice is hereby given that at a meeting of the Board of Directors, held on the 29th day of October, 1878, an assessment of twenty-five (25) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin to the Secretary of the Company.

Any stock upon which this assessment shall remain unpaid on the second day of December, A. D., 1878, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the second day of January, 1879, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

M. C. SOUTHARD, Sec'y.

Office, No. 411½ California street, Room 11, San Francisco, California.

POSTPONEMENT.—The delinquent day of the above named assessment has been postponed until the seventh (7th) day of December, 1878. By order of the Board of Directors. M. C. SOUTHARD, Sec'y.

Land Purchasers' Association —Location

of principal place of business, San Francisco, California.

Notice is hereby given that at a meeting of the Board of Directors, held on the 5th day of November, 1878, an assessment of four (84) dollars per share (being a part of the 43d installment on the subscription to the stock) was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at No. 641 Sacramento street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 9th day of December, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before will be sold on Saturday, the fourth (4th) day of January, 1879, to pay the delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors. C. S. WRICHT, Sec'y.

No. 641 Sacramento St., San Francisco, Cal.

Mount Jefferson Milling and Mining Company.

—Location of principal place of business, San Francisco, California. Location of works, Garrote Mining District, Tuolumne County, Cal.

NOTICE.—There is delinquent upon the following described stock on account of assessment (No. 5) levied on the Seventeenth day of October, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate. OLD ISSUE.	No. Shares.	Amt.
E B Pond	44	80	$ 16 00
E A Richardson	69	100	20 00
E A Richardson	75	100	20 00
E A Richardson	77	100	20 00
E A Richardson	84	200	40 00
E A Richardson	89	50	10 00
E A Richardson	92	50	10 00
I H Nelson	15	100	20 00
Edward R Mundelins	118	50	10 00
Edward R Mundelins	119	50	10 00
	NEW ISSUE.		
A I Adams	19	2000	100 00
B F Baker	5	5000	250 00
F G Cleland	14	2000	100 00
F G Cleland	15	5000	250 00
G M Condee, Trustee	28	2000	100 00
G M Condee, Trustee	32	3000	150 00
G M Condee, Trustee	34	1000	50 00
N C Fassett	21	500	25 00
N C Fassett	22	500	25 00
N C Fassett, Trustee	7	500	25 00
N C Fassett, Trustee	8	500	25 00
D D Shattuck	23	10000	500 00
D D Shattuck	24	10000	500 00
D D Shattuck	25	10000	500 00
D D Shattuck	26	5000	250 00
D D Shattuck	35	10000	500 00

And in accordance with law, and an order of the Board of Directors, made on the seventeenth day of October, 1878, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of the said company, on Thursday, the seventeenth day of December, 1878, at the hour of two o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

J. W. CLARK, Secretary.

Office, 318 Pine street, Room 6, San Francisco, Cal.

Mineral Fork Mining and Smelting Company.

—Location of principal place of business, San Francisco, California. Location of works: Big Cottonwood District, Salt Lake County, Utah Territory.

Notice is hereby given, that at a meeting of the Directors held on the 31st day of October, 1878, an assessment (No. 1) of two (2) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, Room 20, Safe Deposit Building, No. 328 Montgomery street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the seventh day of December, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Monday, the 3 th day of December, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

OTTO METCHKE, Sec'y.

Office, Room 20, Safe Deposit Building, No. 328 Montgomery street, San Francisco, Cal.

Summit Mining Company —Location of

Principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 5,) levied on the 10th day of September, A. D., 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
C Lehmann, Trustee	200	5	$ 25
C Lehmann, Trustee	201	5	25
C Lehmann, Trustee	202	5	25
C Lehmann, Trustee	203	5	25
C Lehmann, Trustee	204	5	25
T Scotland	13	6,250	312 50
F B Whiting	28	200	10 00

And in accordance with law, and an order of the Board of Directors, made on the tenth day of September, A. D., 1878, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, on Tuesday, the nineteenth day of November, A. D., 1878, at the hour of two o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

J. W. CLARK, Sec'y.

Office, Room 6, No. 318 Pine Street, San Francisco, Cal.

The California Fruit Growing Association.

—Location of principal place of business, San Francisco, California. Locatiou of property, El Dorado County, California.

Notice is hereby given, that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 9) of three (83) dollars per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, No. 641 Sacramento street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 30th day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Monday, the 21st day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco, Cal.

POSTPONEMENT.—At a meeting of the Board of Directors of the California Fruit Growing Association, held September 23d, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till Saturday, the 26th day of October, 1878, and the day of sale of delinquent stock is hereby postponed to Friday, the 22d day of November, 1878. D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco.

POSTPONEMENT.—At a meeting of the Board of Directors held on the Nineteenth day of October, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till November 30th, 1878, and the day of sale of delinquent stock is hereby postponed to December 21st, 1878.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento Street, San Francisco, Cal.

Vigorit Powder Company.— Location of

principal place of business, City and County of San Francisco, California Location of works, California City, Marin County, State of California.

Notice.—There are delinquent upon the following described stock, on account of assessment (No 1) levied on the first day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. of Cert.	No. Shares	Amount
Louis McLane, Trustee	30	437½	$218 75
Louis McLane, Trustee	32	½ of 875	218 75
J W Grayson, Trustee	62	1312½	656 25
H H Shinn, Trustee	91	400	200 00
H H Shinn, Trustee	92	400	200 00
H H Shinn, Trustee	93	400	200 00
H H Shinn, Trustee	94	112½	50 25

And in accordance with law, and an order of the Board of Directors, made on the First day of August, 1878, so many shares of each parcel of stock as may be necessary will be sold at public auction, at the office of the Company, Room No. 1, 109 California street, on Wednesday, the second day of October, 1878, at the hour of 2 o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale. JAS. W. BAKER, Sec'y.

Office, No. 109 California street, Room 1, San Francisco, California.

POSTPONEMENT.—By an order of the Board of Directors made on the First day of October, 1878, the above sale is postponed until Monday, October 21st, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

POSTPONEMENT.—By an order of the Board of Directors made on the Eighteenth day of October, 1878, the above sale is postponed until Friday, November 1st, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

POSTPONEMENT.—By an order of the Board of Directors made on the first day of November, 1878, the above sale is postponed un il Monday, November 18th, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

POSTPONEMENT.—By an order of the Board of Directors made on the eighteenth day of November, 1878, the above sale is postponed until Monday, December 2d, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

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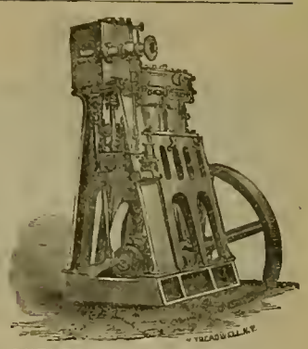

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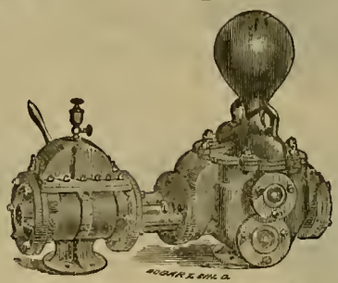

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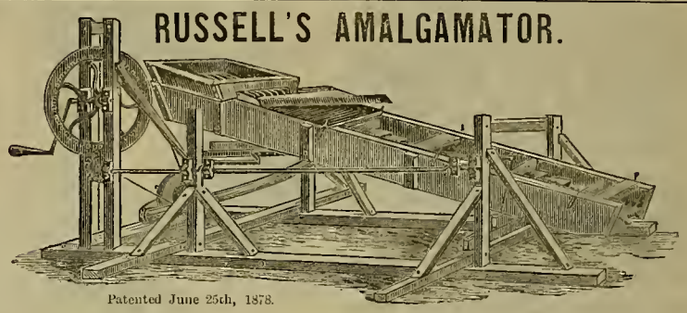

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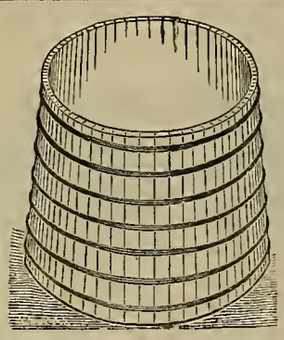

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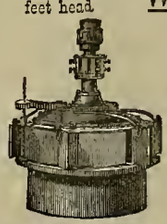

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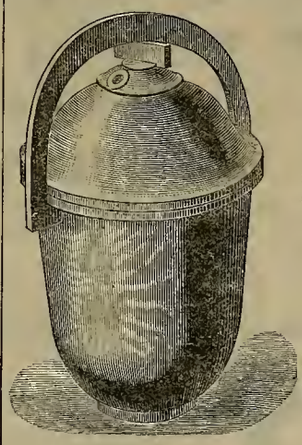

The advantage of this Retort over the OLD FLAT PATTERN is, that it can be filled full of Amalgam, thereby holding more than the old style, besides avoiding all danger of an explosion owing to the crown space in the cover which allows for the expansion. They are made extra heavy, WELL GROUND in the joints, and are furnished with a strong Norway clamp, having a wrought iron key which can be driven in or out of place by a sing stroke of a hammer.

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Number or Pints.....	1	2	3	4	5	6	10
Holds Pounds Quicksilver..	12½	25	38	50	63	75	125
Weight each.....10lbs	15	18	25	31	44	65	

Mortars and Pestles,

GROUND INSIDE.

Size—Quarts.....	½	1	2	4	6	8	12	16
Hight—Inches ...	3½	5	6	7½	8½	9	11	1
Weight—Pounds .	6½	9	16	22	37	43	72	86

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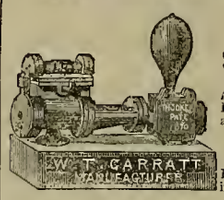
A General Assortment of Engineers' Findings.



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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Publishers. SAN FRANCISCO, SATURDAY, DECEMBER 7, 1878. VOLUME XXXVII Number 23

Artesian Wells.—No. 8.

The subject of artesian wells still continues to excite interest throughout the State. In another column will be noticed a communication from a gentleman in n county south of San Francisco. He complains of the exorbitant cost of well-boring. A private letter received a short time ago, from the San Joaquin valley, found great fault with the incompetence of men placed in charge of well-boring apparatus. Of these two points well contractors will find it to their interest to take immediate notice. There is no doubt that for cheap work there would be considerable demand. And careless work can never be cheap for any of the parties concerned.

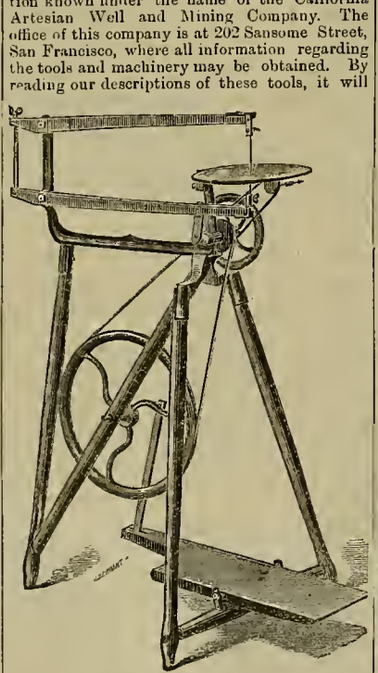
Wells About San Francisco Bay.

We have some account of quite a number of wells bored during the past 20 years or so in the neighborhood of the bay. Part of the information was obtained from an old well-borer, who furnished it from memory. Such cannot be depended upon in all points, but serves the purpose of showing where water can be obtained. At Encinal station, Alameda, is a well 250 feet deep. The water comes within 20 feet of the surface. At 250 feet, manzanita wood was struck; also river-washed gravel of granite, slate, trap rock and quartz. In a well at Fruit Vale, water was struck at 60 feet; further boring to a depth of 380 feet started, if we are rightly informed, no further supply. On the hills near Berkeley, by the mouth of the canyon that passes over to Lafayette, two artesian wells have been bored, respectively 67 and 76 feet deep, giving a good supply of water. Near Temescal is a well 165 feet deep. At San Leandro a well 180 feet deep has been bored. A 60-foot well at Union City flowed eight feet over the surface. A well at Alviso, 190 feet deep, flowed 18 feet. A curious fact may be remembered with regard to the Alviso and Santa Clara wells. The wells in Santa Clara and vicinity were bored first. They gave a magnificent flow of water; some of them do still. But afterwards Alviso men tapped the same strata, and refusing to cap their wells, drew so much from the Santa Clara supply that many wells of the latter place were very materially affected. Wells in San Jose have been affected by the rise and fall of the tide in the bay, a few miles distant. The artesian well which purports to be the first one bored in Santa Clara valley was at San Jose. It was made 90 feet deep. The water flowed 12 feet over the surface. At Menlo Park flowing wells have been obtained at a depth of about 180 feet. At Redwood City, wells 200 feet have been successful. At San Miguel a well 190 feet deep would not flow, but gave water. At the Industrial School, wells (not flowing) strike water at 80 feet and again at 120 feet. A noticeable feature here is that the lower down on the slope the well is bored, the deeper it must go to reach water. In Visitacion valley there have been many flowing wells varying in depth from 60 to over 100 feet. They were bored for Italian gardeners, who raised the water from sumps by means of chain-pumps. In the neighborhood of Bay View park and Hunter's point, flowing wells have been obtained at the depths of 80 and 180 feet.

This rough outline shows that wells may be successful all around the Bay of San Francisco, from Berkeley south to San Jose and thence north to San Francisco. The City Hall well in our city, may now be added to the list of San Francisco successes in this line, although its capacity is not yet known to us.

Well-Boring Tools and Machinery.

Perhaps some idea of the importance of artesian well boring on our coast can be gathered from the fact that quite a number of men in different parts of the State have devoted time to the invention of improved machines, and that Eastern companies are introducing their apparatus among us. Haas & Manning, of Stockton, have taken out several patents on artesian well-boring apparatus. Vaughn & Jackson, of the same city, have also made improvements in the same line. Joseph Bennerscheidt, of Anaheim, is patentee of a well boring machine, also John A. Woodhouse, of the same town. J. M. Creal, of Los Angeles, has invented apparatus for pressing the boring tool down and for revolving it. In another column will be noticed reference to a new large steam borer; the iron work of which is being prepared at the machine shop of Messrs. Thompson & Evans. The well-boring machines illustrated in the last two articles, of this series, are the the inventions of an Eastern man. They are now being introduced on this coast by a corporation known under the name of the California Artesian Well and Mining Company. The office of this company is at 202 Sansome Street, San Francisco, where all information regarding the tools and machinery may be obtained. By reading our descriptions of these tools, it will



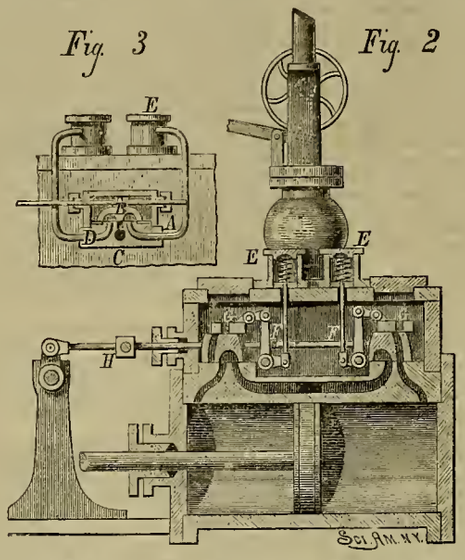
ROGERS' IMPROVED SAW.

be seen that they are certainly very ingenious and complete in appointments. We hope soon to be able to describe in this series, wells bored by these machines.

Since writing the above we have seen in the *Bulletin* an account of the testing of the City Hall well. While pumping at the rate of 2,800 gallons per hour, the water stands 20 feet below the surface in the well.

A Move in the Right Direction.

We learn from Mr. Ross Browne, that W. T. Garratt, the brass founder of San Francisco, has recently made a valuable and extremely useful donation to the University, in the way of various articles of machinery (of his manufacture). And he was kind enough to allow their selection



DINGLEY'S VARIABLE CUT-OFF. (See page 361.)

to be made with the view of making them serve as models for the students in the Department of Mechanical Drawing, thus giving the more advanced students an insight into the application of principles to the details of machine construction.

The articles donated consist of Hooker's double-action and force pump, Hooker's steam pump, an upright steam pump, a hydraulic ram, a steam injector, various steam syphons, whistles, gauges, valve cocks, etc., oil-cups, plain and double-acting valves, cocks, nozzles etc. There is besides a collection of numerous pipe fittings of all sizes. Mr. Garratt was thoughtful enough to append label with the technical name of each piece of apparatus, so that the student is enabled to learn by direct association the shop names as well as the nature of the articles themselves.

It gives us much pleasure to record this generous action, more especially as it shows the good feeling that exists among our practical technologists towards the University. There is no reason why the University should not thus come in personal contact with all the various branches of technology. This action and reaction of theory and practice, cannot fail to be beneficial to all parties concerned. We hope to record many more such donations from others as well in the future. There is no reason why

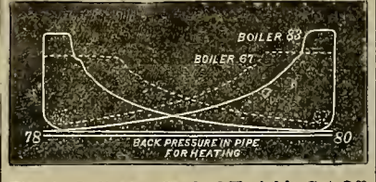


Fig. 4. Indicator Card of Variable Cut-Off

the University should not have a fine collection representing all the various devices of mining, metallurgical and other machinery, in which our coast is particularly rich. We would suggest also that models of furnaces, etc., such as have done service in applications for patents, in law-suits, etc., would be particularly useful, both as models for students, and as a means of comparative study and reference.

Machine-Shop Rambles.

A Visit to Thomson & Evans.

We were shown, this week, through the machine shop of Thomson & Evans. This firm make a specialty of steam pumps and engines, and of all machinery used in and about mines and mills. We were shown rubber tubing being prepared for use as suction hose. A stout wire coil is forced into the hose. This serves to counteract the tendency to collapse during suction. We noticed a stock of all sizes of gas and tube flanges. But the most interesting piece of work at present in the shop is a

New Well-Boring and Drilling Machine,

Being manufactured for a gentleman in this city. The machine is to be run by steam. It will bore, drill and put in pipe. The boring apparatus will be expanding, so that it can be worked under the end of the pipe. The raising and lowering of the tools will be accomplished by simple shifting of belts. The debris will be removed constantly by an endless chain arrangement passing down the bore to a point a short distance above the drill or auger. The iron work of the machine, now being constructed in the shop, will weigh about 2,000 pounds. The wooden frame will weigh about the same. It can be run by a 10-horse power engine; will bore wells of any size, from 6-inch to 16-inch, and in average material is expected to progress at the rate of *a foot a minute*.

The Thomson Patent Pump

Is manufactured at the shop. One of them is set up ready to exhibit to visitors its mode of operating. The eccentric is worked by a crank carried around by a yoke on the piston. The chief peculiarity is in the piston-rod, which is made in one piece, thus preventing all tendency to spring. The valve is a simple slide-valve. The pump is a favorite in the market. About 30 of them have been sold this year. They are used on steamboats, in mines, and for general pumping purposes. One has lately been shipped to the Gold Deposit mine, El Dorado county.

A Combined Air and Circulating Pump

Has just been made in this shop for the steamer *Mary Taylor*. This combination is not met with every day. Ordinarily, in the low pressure, steamboat engines, two separate pumps are required, one to pump the cold water into the condenser, and another to pump the condensed steam and the air out. In the present case but one machine accomplishes both. The dimensions of the pump are as follows: 8 inch steam cylinder; 8-inch air pump cylinder; 5½-inch water cylinder; 10-inch stroke. Total weight, from 2,500 to 3,000 pounds.

Other Work in Hand.

An upright stationary engine is now being made at the shop for experimental smelting works in the neighborhood of San Francisco. The repairing on some 25 steamers is done by Thomson & Evans. The *Constance* is at present being generally overhauled, new pistons, rods and valves being put in. The *Harriet*, the *Alpha* and the *Bouquet* are also on the list. Machine work for several of the Mount Diablo coal mines is also attended to by the firm.

Rogers' Saw.

Messrs. Dunham & Carrigan have furnished us with a description of the Rogers saw. This saw has a cast-iron frame, with all its running parts of iron and steel. The legs are turned wood, of dark finish. The iron table may be tilted for inlaying. A steel back is provided for the saw to run against. The drive wheel is 12 inches in diameter. The machine stands 32 inches high, and is furnished with adjustable clamps, drilling attachment, drill points and necessary wrenches. The total weight in box is 30 pounds.

The examination of applicants for State teachers' certificates has been postponed until December 11th, in consequence of the recent expose of the manner in which the documents have been heretofore obtained.

The attempt to stock the waters of Maryland with California salmon is said to have been completely successful.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—EDS.

Cost of Artesian Wells.

EDITORS PRESS :—Some of the most deeply interested amongst the many readers of your valuable information about artesian wells, may probably feel a laudable curiosity to know something of the probable cost of boring, etc.

I beg to convey a seemingly practical estimate I received a few days since.

If such prices are, as they profess to be, cheap, I fear flowing wells are likely to remain a luxury slightly above the reach of small or struggling farmers—a serious loss to California: "50 feet, $250; 150 feet, $900; 250 feet, $1,600; 350 feet, $2,400; 450 feet, $3,300; 550 feet, $4,300. Including galvanized 11-inch inside pipe and block iron, 13-inch outside pipe to clay bed."

N. B. Hard rock, *extra*.

DRYASDUST.

["Dryasdust" writes from a place within a few hours travel of San Francisco, by rail or water. The prices should not be much above city rates, especially if the borings are made by local well-borers. A San Francisco contractor, says that he would bore the 50-foot well, and drive pipes of the above materials and dimensions (provided he had no rock to drill through) for $4 per foot. For each increase in depth of 50 feet, he would charge at the rate of 50 cents more per foot. The wells above enumerated would cost respectively, $200, $675, $1,250, $1,925, $2,700 and $3,575. These are San Francisco prices. The contractor would charge more if he left the city. But, as hinted above, a local well-borer would not have the same excuse for doing so. The New City Hall well is 180 feet deep, the pipes are 14-inch black, and 12-inch galvanized. The well itself, will cost the city only about $700. We have the contract figures of some other wells that have been bored here. A well 140 feet deep, outer pipe 10 inches, inner, 8 inches, $3 per foot. An 8-inch well, 110 feet deep, $3 per foot. A well about 170 feet deep, 12-inch pipe outside, 10-inch inside, $7.50 per foot, Well 174 feet deep, with pipes same as preceding, $8 per foot. Another well, the depth of which we do not certainly know, but think it was in the neighborhood of 160 feet, pipes 7-inch and 6-inch respectively, was contracted for at the rate of $1.70 per foot. By referring to the PRESS of Nov. 9th, the cost of pipe may be ascertained.

There are well-borers and well-borers. And, as we have suggested on a previous occasion, the best thing for those wishing wells to do, is to club together, buy their own apparatus and material and bore for themselves.—EDS.]

Gravel Deposit.

We have before us advance sheets of the third edition of J. S. Phillips' "Explorers', Miners' and Metallurgists' Companion." From them we extract the following, relating to a subject of great interest to practical miners and to scientists. Theories advanced here will, no doubt, challenge debate :

Gold-bearing and tin-bearing gravel deposits have been accredited to the ancient water-washed bottoms of rivers, but I will endeavor to give reasons for placing many of them, at least, to the account of the more comprehensive disintegrations of debris as caused and concentrated under tidal actions and the surging waves of receding oceans.

It will be admitted by all close observers of mountain formations, that in many places of even extreme altitude water-washed pebbles and salt water shells expose every necessary evidence that the ocean has, at some remote period, overrun such portions of land, and therefore it would be absurd to suppose that the effects of its disintegration and concentrations of the harder rocks would not remain upon the slowly vacated declivities, intervening such high and dry portions and the present ocean.

The principal changes produced by such receding waters would be the breaking up and distribution of enormous quantities of the surface rocks of mountains by the dash of waves upon the shores, which the tides would naturally and continually convey to fill the creeks, basins, and plains at lower positions beneath the water, near the sinuous coast. During this extensive crushing an almost complete separation of the harder stones from the softer portions of the original bedrock would be accomplished, and the former, notwithstanding the water's crushing force, would remain at, and near the shore as gravel beds, while the latter, being softer and more impalpable, would be held in mechanical suspension, and pass far away in the water to precipitate and re-form into much more extensive deposits of secondary rocks. The gold and tin oxide, with platinum and similar metals, being heavy and permanent, would, under such agitation, soon settle to the bottom beneath the hard but much reduced boulders and pebbles of blue and white quartz.

Similar effects would be produced as the water front, with much of its gravel, receded to the transverse spurs and foothills of the mountains, and filled the submerged creeks and inlets with its debris.

Whilst this was being accomplished the various mountain streams would be also discharging gravel, sand and mud into the ocean, which would be distributed along its shore by the surf, in somewhat parallel lines to the mountain itself; but as the water still receded over the almost level plain, this gravel would not follow it any further, because so very flat, and therefore, excepting the small quantity transferred by the mountain rivers, the gravel of this outlying and more remote bed must have been produced closer to where it now lies.

It will be most interesting to notice those natural and extensive parallels to artificial methods for concentration and collection of gold and tin for assay, as seen in the heavy water-worn washings from the alluvially-formed gold and tin deposits of the world. The gold fields of California, which mostly lie upon the lower portions of the western declivities of the Sierra Nevada, may be taken as an example to show the general principle on which all others have been formed and washed into position; as every illustration can be seen here of such formations. This extensive, much distorted and corrugated frontage was once entirely submerged by the Pacific Ocean, and subsequently invaded in a somewhat irregular manner by various elevating and depressing intermittent movements of certain portions of the whole, by the powers created by nearer approach of subterranean fusion and irregularities from the earth's contraction.

Now, we will suppose that the first upward motions were intermittent, and that a few thousand feet only of general elevation of the country changed hight at once, whilst great variations of elevation would occur at some places as compared with others; and that, during this period of uplift the gold had been formed. During the long periods of comparative stability of the country, the rivers flowing from the higher grounds would, by disintegrating the various strata, wash the nuggets of gold thoroughly clean, and which, being much heavier than all the other debris, would be thereby concentrated, and remain on the front beaches or in the hollows and bends of the inlets, ravines and rivers until found and extracted by man.

Whilst this disintegration and concentration was being effected by rains, rivulets and rivers, another not insignificant action was being accomplished by the powerful wash of the ocean on the ancient, but now elevated shore, as urged by innumerable gales, the breaking waves expended their gigantic strength on the crumbling strata, and which released the still remaining gold, boulders, pebbles and sands.

Another uplift would form a second line of auriferous, pebbled shore; as would a third, fourth, etc.; and, lastly, that of the present hour.

The rivers that washed the gravel into the transverse courses towards these now terraced beaches and the ocean, would be much less liable, than such which were governed by hight, to materially change their courses or positions, unless compelled to do so by sudden intrusions of igneous overflowings, which doubtless sometimes prevailed.

If the ocean should again recede from the western slope of the Sierra Nevada, the Sacramento river would still flow through the "Golden Gate," or present river's mouth, in its prolonged course to the new embouchure into the ocean; but the Seal Rocks and serpentine beaches on either side, would be elevated to high and dry ocular demonstrations of such change of level; which, however, would not be so clearly recognized if again buried by alluvium from ocean waters under repetitions of submergence and emergency.

All of these ancient beaches, inlets, ravines and rivers must have been, at a subsequent period, again overrun by the ocean for a very long time, and then more regularly elevated; for the whole labyrinth is now covered with varying, and in some places great depths of alluvium, that could not have been formed in any other manner.

The Sierra Nevada extends for some 400 miles in length, and has an average hight of not less than 6,000 feet, opposite which these gravel deposits lie, and run in a north-northwesterly direction, through several large counties, at about 150 miles distant from and parallel with it and the sea coast. The greatest breadths and depths of this belt of gravel lie opposite the largest areas of mountain wash, and it does not extend much beyond either end, as a river would have certainly deposited it.

It may be well to notice here, that during the ages when these formations were being washed into position, "tidal" waves, caused by subaqueous volcanoes and sudden subsidence of the ocean bed, would be much more frequent and powerful than now, and may have played a very important part in forming and distributing the gravel over the extensive flat ground, between the ocean and the mountain, as these terrific waves swept forward and backward over the shallow waters.

Too much has been credited to river bottoms, and crossings of the one over the other, with intervening alluvions, and too little to the more natural water-washed and weather-beaten sinuous shore of capes, bays, gulfs and creeks, across the ancient beaches of which the modern rivers flow into the ocean.

Transverse terraces of such are found not only here but in many other parts of the world where neither ancient nor modern river beds exist.

The general average north-northwesterly parallel bearing, and close proximity to the Sierra Nevada, the great length, breadth and depth, and consequently vast quantity of the gravel deposits of California greatly favor the idea of its being rather the mighty work of the ocean than a river.

The enormous gravel deposits fronting the mountains of nearly the whole of the North Pacific country, from Lower California to Alaska, and across the continent to the Atlantic, show that they cannot have been deposited by any river or rivers.

The gradual flowing or ebbing of ocean waters will also distribute gold or tin stone over the whole surface of a country, and leave those unmistakable evidences of such works in the shape of innumerable boulders and pebbles, amidst the auriferous and stanniferous sands.

Thus far, the ancient ocean waters had been disintegrating, rounding and distributing these deposits; but at some less remote period, volcanic fire played a no less important part, and disgorged an enormous amount of molten lava over a vast region extending for hundreds of miles in all directions from the eastern part of the State of Oregon. This startling outflow of lava must have proceeded from a vast fissure, as the quantity is almost beyond credence and volcanic cones are scarcely seen.

It appears that this molten lava must have run southerly just in front of the ocean, guided on the one side by the higher shore, and restricted on the other by the cooling effect of the water, and thus directed, it extended over the top of nearly all the gravel claims of California, as it is invariably present, either as a covering cap or amongst the disturbed gravel.

At a still more subsequent period the modern streams from the mountains have cut their seaward ways transversely through these beds of gravel and lava, and in many instances eroded channels, hundreds of feet deep, into the original underlying bedrock, thoroughly exposing the various layers of lava, gravel and rock, for the miner's examination.

These fast running streams have formed, and are still forming and conveying, what may be generally termed, secondary right angled, or present rivers, auriferous bottoms, which are being profitably worked by different suitable methods.

It is probable that this ocean beach auriferous gravel alluded to was in position before many, if not all, of the quartz veins were fractured and filled, for reasons given in previous chapters, and that most of its gold never resulted from the veins.

Placer gold is found either lying on the surface or slightly covered by earth or gravel in higher positions than those deposits described, frequently on high benches, and even on the very tops of considerable hills, where it would be simply absurd to suppose that it had originated from veins.

For the above reasons, and the facts that veins are mostly absent, and do not contain the same kind, shape, or quality, or anything like a sufficient quantity of gold, for supplying that in the gravel, whilst platinum, and other infusible metals, also soluble in chlorine, are found in gravel deposits and never in veins, I think that most of this gold was either washed out from the mountains during disintegration, or has been precipitated from its chloride solution by sulphate of iron or some organic substance to aggregate upon the surface, and get rounded during the subsequent agitation of the gravel.

The alluvial "tin streams" of Cornwall, England, differ from the "gold fields" of California, in having very much less quantity and depth of gravel. The oxide of tin from this source is always pure and very different from vein-tin, which contains impurities of sulphur, arsenic, etc. It is remarkable that tin is also soluble in chloriue, and is found in the alluvial deposits of Banca, where veins are not supposed to be present in the mountains.

Hints on Superintending Well-Work.

Ernest Spon, in his "Practice of Sinking and Boring Wells," gives the following practical hints under the above heading:

The engineer who has to superinteud the construction of a well should be ever on the watch to see whether, in the course of the work, the strata become so modified as to overthrow conclusions previously arrived at, and on account of which the well has been undertaken.

A journal of everything connected with the work should be carefully made, and if this one point alone is attended to it will be found of great service both for present and future references.

Before commencing a well a wooden box should be provided, divided by a number of partitions into small boxes; these serve to keep specimens of the strata, which should be numbered consecutively and described against corresponding numbers in the journal. At each change of character in the strata, as well as every time the boring rods are drawn to surface, the soil should be carefully examined, and at each change a small quantity placed in one of the divisions of the core box, noting the depth at which it was obtained, with other necessary particulars. A note should be made of all the different water levels passed through, the hight of the well above the river near which it is situated, as well as its hight above the sea. The memoranda in the journal relating to accidents should be especially clear and distinct; it is necessary to describe the effects of each tool used in the search for, or recovery of, broken tools in a borehole, in order to suit the case with the proper appliances, for without precaution we may seek for a tool indefinitely without being sure of touching it, and may, perhaps, aggravate the evil instead of remedying it. It is by no means a bad plan to make rough notes of all immediate remarks or impressions in such a manner as to form a full and detailed account of any incidents which may occur, either in raising or lowering the tools. At the time of an accident a well-kept journal is a precious resource, and at a given moment all previous observations, trivial as they may often have seemed, will form a valuable clue to explain difficulties, without this aid, perfectly inexplicable.

When an engineer has a certain latitude allowed him in the choice of the position for a well, he should not, other things being equal, neglect the advantages which will be derived from the proximity of a road for the transport of his supplies; of a well, if not a brook, from which to obtain the water necessary for the cleansing of the tools; and of a neighboring dwelling, to facilitate his active supervision. This supervision, having often to be carried on day and night, should be the object of particular study; well carried out it may be effective, while, at the same time, allowing a great amount of liberty; badly carried out, however fatiguing it may be, it will be incomplete.

Barriers to the Coast Sands.

We have from time to time given paragraphs concerning the erection of barriers to the shifting sands of the seashore, as this is a problem which interests many of our coast readers. As has been stated before, the best results have been attained by securing a growth of shrub or tree, but even to accomplish this there has been found a need for artificial aids while the trees are getting their start. In Europe and on the Atlantic shore, good success has been attained by planting the maritime pine, but whether this or some tree indigenous to our coast should be employed, the process of planting and protecting could be similar. Official reports say that under the patronage of the French government, the planting of the maritime pine along the Atlantic coast of Gascony, has for many years been perseveringly continued, and now cover over 100,000 acres in the single district between the rivers Adour and Gironde. Not only has this wide area been reclaimed and made productive soil, but a still greater extent of fertile land has been rescued from the destruction threatened by the advancing sand hills.

In planting the dunes, a barrier along the shore was found necessary at first to protect the young trees from the rolling sands, which otherwise would bury them. A double line of paling was erected parallel to the shore, and at 100 meters from high-water mark—the second line being a 100 meters further inland. This paling is made of planks, sharpened at the lower end, and driven into the sand. Spaces enough to pass through to bank up equally on both sides, and relieve somewhat the force of the wind by allowing it to pass through these openings. As the paling is covered by the sands the planks are raised one at a time. A movable frame with a long lever, and mounted on runners, so that it can be slid along the top of the fence, and having pinchers and a chain, is easily carried and operated by one man.

The total cost of planting and protecting the pines has sometimes been as much as $40 per acre. The timber of this plantation has long been a source of profit, affording both resin and wood. France now draws an annual revenue of 130,000 francs from the resinous products of these forests. But in this case the greater profit comes from the consequent protection of the adjoining country from the encroaching sands, which had formerly sterilized fertile regions and buried thriving villages. M. Samonas says that "in all France nearly 1,000,000 acres (400,000 hectares) of desolate lands, supposed to be doomed to everlasting sterility, have been reclaimed, and these savage deserts are now stocked with maritime pines which will become for the country a fruitful source of wealth, and supply some day the wants of the whole of France."

A BLOW AT SCIENCE.—Mr. Lewis Swift, the Rochester astronomer, who is a hardware merchant in that city, was standing in his shop the other day, when several pillars with shelves attached, loaded with iron bars and other pieces of hardware, fell over. A blade of a grain cradle struck his hand, inflicting a painful though not dangerous wound. He was standing so that he could see the falling mass coming toward him or he must have been killed. Mr. Swift's friends have bought for him in Boston, a telescope with a 9-inch aperture, costing $3,000. Mr. Swift has become known by many published observations, the latest being the sight of an intra-mercurial planet during the late solar eclipse.

THE Bald Mountain gravel mine at Forest City, Sierra county, has eight miles of drifts and over 250 men employed. It has paid $664,000 in dividends during the last six years, $1,300,000 in gold having been extracted.

THE condition of the iron and coal trades in the South Staffordshire district, England, is growing worse, and the closing of the works and the reduction of wages are noticed.

MECHANICAL PROGRESS.

The Brake and the Rudder.

A speaker at a recent meeting of an English mechanical society pushed the problem of braking railway cars and the steering of ships beyond the realm of present devices. He said: Just as the question of the best brake is now found to lie beyond the mere means of applying it, so the best steering apparatus may be found to involve more than the mere means of turning the rudder. It may be that the whole power of the engines of a ship will be brought to bear in bringing her round. Indeed, this has been already done in the instance of twin screws; and certain recent inventions are said to apply this power at still greater advantage. As regards the turning power of ships, therefore, it is clear that although there doubtless is a limit, yet, owing primarily to ignorance as to what the turning powers of our screw-steamers really are, and also to the insufficient power now applied to turn the rudders, we are far from having reached the limit; and we may fairly hope that the risk at present attending the navigation of screw-steamers will, inasmuch as it depends on want of turning power, be considerably reduced. That we shall eventually develop to the utmost the powers of stopping and turning, whether on railways or on ships, and make use of all our scientific knowledge to discover those methods, may, I think, well be argued from the progress of late years.

A NEW UNICYCLE.—A Danish inventor has invented a single wheel where is arranged a seat for the traveler who is to propel it. The wheel has one central rim, and to this are fixed the arms, which are (say) six or eight in number, half of them swelled, extended, or bellied out to one side, and half of them similarly to the other side, each set of arms being fixed to a nave or boss; these arms are bent out so far and the naves are so far apart that the traveler when in the sitting posture finds room in the wheel between them. The arms are by preference not arranged opposite to one another on the two sides but intermediately. The naves carry each a crank, and these cranks are by connecting rods jointed to two bell-crank levers having one arm placed about upright in a position convenient to the traveler to take hold of for working them backward and forward alternately. Each bell-crank lever has its fulcrum in the seat for the traveler, which seat is hung from the naves or axles of the wheel. The seat is by preference made in scroll form, of light open worked steel plate or wirework, or partly so, and may have a part extending overhead to carry an awning to protect against dirt thrown up, and against rain. From each nave there may be hung a leg serving to steady the velocipede while entering the same, but which can be thrown up out of the way when traveling. The wheel, arms and the rim may be fitted with stiffeners or diagonals to distribute the weight or strain over the rim as much as possible. The velocipede may be eight feet and upwards in diameter, and is said to be very successful in its operation.

LIGHTING AND EXTINGUISHING STREET LAMPS. An English device for accomplishing this work is described as follows: Pipes were suspended so as to connect a group of 15 public lamps. These connecting pipes are really small pneumatic tubes which, if the system were extended, would be carried under the ground and so applied to the lamps as to extinguish the gas at will by means of a vacuum caused by the suction of a pumping engine kept at any center from which the apparatus might be worked. In order to save the labor of going round to relight the lamps each night, a tiny branch, protected by a perforated shield, is placed close to the usual jet, and this is intended to remain lighted all day, ready to ignite the ordinary jet upon the gas being again turned on full in the evening. Obviously this would necessitate a small additional consumption of gas by day, but the inventor states that this is far more than counterbalanced by the quantity saved through simultaneously extinguishing the lamps, and also by making it possible to dispense with the services of lamplighters. He thinks it possible, however, that even the supplementary little jet might be saved by the application of electricity in relighting the gas lamps.

NOTES ON CAR WHEELS.—From an article on the Pennsylvania railroad in the *Polytechnic* we glean the following points: The wheels are made upon the now well-established process—the invention of W. G. Hamilton—of combining cast-steel with the very best grades of charcoal iron. In this manner a metal is produced which it is almost impossible to break. Although the form of the axles is probably as perfect as any that have ever been produced, yet the greater claim to excellence lies in the quality of the metal used in their construction. They are made from soft crucible steel out of Swedish charcoal iron; are carefully turned to the proper size throughout; and, before accepting them from the maker, are subjected to the following test: From every lot of 50 axles one is taken at random, and tested under a drop, weighing 1,840 pounds. The axle is placed upon supports three feet apart and struck in the center. If the axle bears five blows, of 25 feet each, without breaking, the lot is accepted.

COMPRESSION IN CASTING STEEL.—In some recent French experiments it was noticed that when a lid of cast iron was placed upon a mold after casting, the ingot produced generally showed a zone of blow-holes near the surface and on all sides, while within it the block was entirely sound. Whenever the mold was not covered the entire mass contained blow-holes. This, it was argued, was due to the pressure of the gases, and consequently experiments were made by Bounard with more than 100 tons of steel, which proved that a pressure of 6 to 10 atmospheres acting upon the interior of the ingot would make the metal solid. The mold is covered with a lid in which there is a central casting opening. It has a pipe through which steam may be introduced. The steel is cast through the central orifice, which is closed, and then steam is admitted. A copper wire is used for packing the lid. The work must be rapidly done and the mold be previously heated. In order to make the action of the pressure affect the interior of the ingot the chilling of the surfaces must be prevented, which is done by heating, before casting, the fire-brick lining of the inner surface of the lid. The ingot thus cast shows a depression on its upper surface. It was found that in using steel for cannon the number of compressed ingots rejected was only one-third of the number of ordinary cast ingots. Experiments made to apply the same principle to steel castings showed that although the application was more difficult the result was the same.

A STREET CAR STARTER.—Appliances for street car starting have been brought forward by Pacific coast inventors and described in these columns. They are also proposed abroad. We read of an English apparatus which consists of a couple of clutch bevel pinions upon the axle of an ordinary pair of car wheels, the teeth of the pinions facing each other, and the pinions having in connection with them a horizontal bevel wheel, which is always in gear. This wheel is in a piece, with a drum on which a chain can be wound from either side, according to the direction of travel of the vehicle. The chain is attached to a rod leading from a saddle plate, which is free to slide upon two hollow bars or tubes to compress helical springs which are upon them. The clutch pinions are fitted loosely upon the axle, and these can be caused to turn by clutch boxes which are keyed upon the axle, when a lever, which is within reach of the driver, is acted upon in the proper direction by him. A lever is fitted at each end of the vehicle to suit the two clutch boxes, and these are connected by a transverse tie bar, so that the release of the clutch from either end can take place when desired. The transverse tie bar is attached by rods to foot plates—one at each end of the vehicle—so that the apparatus can be released by the conductor at the tail of the car, or by the driver at the head or front as occasion may require.

LIFE PRESERVING BULWARKS.—At a recent meeting of the Manchester (England) Mechanical Society, Mr. Gadd proposed to form the upper portion of the bulwarks of ships of loose sections composed chiefly of hollow thin metallic tubes divided into compartments by diaphragms, the sections to be about 12 feet long, each to be divided into a number of compartments of any suitable form, and provided with projections on their under sides so as to be fitted on to the place of the top rail of the bulwarks and to be a substitute therefor. These sections when immersed in the water would form so many pontoons, and would be provided with cords and loops along their sides, and in the event of the ship going down would be lifted out of their place by the action of the water. He would also construct the whole of the seats on the deck in the same manner, and underneath every seat, and along the entire length of the bulwarks and lying on the deck, other floating tubes could be provided. In the case of sea-going vessels, he would fit the bulwark tubes with holes, rings or slots, so that in case of foundering they could be jointed together either before or after taking to the water. The great advantage of this arrangement would be that it would be in perpetual readiness for any sudden emergency, and there was no doubt that vessels could be readily fitted in this manner.

A NEW SIGNAL OF WARNING FOR DANGEROUS COASTS.—A foreign journal, translated by the *Iron Age*, describes a new method of giving signals of warning at sea that has recently been perfected, and is now employed with success at one of the most dangerous points on the coast of Bretagne. The signals consist of sounds, which are repeated at short intervals, and can be heard, even against the wind, at a distance of six kilometers. The apparatus by which these sounds are produced is self-acting and very simple. It consists of a hollow cylinder, a few centimeters in diameter and three or four meters long, closed at the lower end and secured by an anchor to the bottom of the sea. In this cylinder is found a pump which sucks in the air, compresses it and sends it out through a whistle, and this pump is worked by a huge fagot, floating on the surface of the sea, and whose movements, rising and falling with the waves, furnish the sufficient force. This apparatus is said to have been invented by an American.

SCIENTIFIC PROGRESS.

The Carbon Button.

This invention of Mr. Edison, upon which depends so much of his success in telephony, is described by Prof. G. F. Barker as follows: It was the nucleus of a whole crowd of inventions of Mr. Edison. It arose out of a long series of experiments, and had been brought to perfection only within the present year. It consists simply of a certain variety of lamp-black, which is compressed by a screw press in steel dies, to form a disc about one sixteenth of an inch long and over half an inch in diameter. In experimenting all forms and varieties of carbon and all conditions of condensation were used. It was found that the smoke of a mixture of kerosene oil and petroleum naphtha, in equal proportions, burned in an ordinary petroleum lamp, the wick being turned so that the smoke formed upon the chimney, which was collected, furnished the best material for the purpose. A quantity of lamp-black, exactly as it was taken from the lamp chimney, was exhibited in a bottle by Prof. Barker. The peculiarities of this material, he went on to say, are twofold. (1) It is the finest variety of lamp-black which can be artificially produced. (2) Its great conductivity; it is quite as good a conductor as spongy copper. A certain quantity is weighed out carefully and placed in a steel die, and is subjected to a pressure of 1,200 pounds to the square inch. This constitutes the carbon button. It can be used as a portion of an electric circuit, as an electrical resistance, first, on account of the conductivity of the lamp-black, and, secondly, with the pressure which is exerted upon it. This electrical resistance varies in accord with sonorous vibrations. In practice it is placed in a small case, into which is dropped a little disc faced with platinum. Contact is made at the top and bottom with wire. It may be adjusted to any resistance within the range of its own limit which may be chosen. The limits may be varied also by the pressure employed in making the carbon button. If the pressure is increased the sensitiveness of the button is very materially increased.

DREDGING IN THE GULF OF MEXICO.—Further dredgings were carried on in the Florida channel by Mr. Agassiz and the officers of the United States Coast Survey steamer *Blake*, during March and April last. Large numbers of Pentacrinus were obtained—20 perfect specimens in all. The Marquesas islands were found to have been formed in the same manner as the great Alacran reef—*i. e.*, it is an atoll. It was found that the deep-water fauna on the western slops of the great Florida bank corresponds with that of similar depths on the eastern slope of the Bank of Yucatan, and that this deep-water fauna extends over the bottom of the Gulf of Mexico, until the line running from the 100-fatham line in the latitude of Tampa bay toward New Orleans strikes the Mississippi river slope. Here, owing to the presence of dark, rich mud, the former was very different; while the hauls in still deeper water off the Mississippi yielded no specimens of importance. Throughout the cruise below 500 fathoms forms characteristic of deep water in all the deeper basins of the ocean were obtained, while the species characterizing different local faunæ occurred at a lesser depth.

GAS TURNING THE CRANK FOR ELECTRICITY.—A report from Philadelphia of a lecture by Prof. Barker on the 13th ult. on the electric light gives some statements concerning the economy of the light as compared with gaslight, which, if true, are the most astonishing of anything we have yet seen. The *American Manufacturer* says: In the course of the lecturer's experiments, a Schleicher gas engine was used to drive the dynamo-machine. It is stated that the engine did its work well, and its operation was peculiarly interesting from the fact that the gas used in driving the engine was the ordinary illuminating gas. Of this there was consumed in driving the engine about what would be consumed by four five-foot burners—say a quantity of gas that would give light equivalent to that which would be emitted from 80 to 100 sperm candles; but this quantity of gas, after being first turned into power, the power being next turned into electricity, and the electricity being turned into light, emitted light equal to that of about a thousand candles. The gas, by these transformations, was made to yield an electric light about 10 times its own light-giving power.

AT THE NORTH.—We lately mentioned the return of the unsuccessful Howgate polar expedition, under Captain Tyson. It seems, however, that they made some interesting observations. The most extreme cold, as recorded by Mr. Sherman, the meteorologist, was experienced Jan. 21st, when the thermometer fell to minus 52 degrees. The warmest day was the 8th of June, when the temperature rose to 55½° F. The longest sustained period of cold was from March 5th to 18th, when the thermometer ranged 40 degrees below zero. Rapid changes of temperature were noticeable, amounting often to 6 or 8 degrees in an hour. Some very curious specimens of uncivilized art, in the nature of Esquimaux drawing, were brought, illustrating the various native pursuits, such as hunting the deer, seal and whale.

Electricity in Thunder Storms.

Mr. Elisha Foote lately read a paper before the Philosophical Society of Washington upon the cause of electricity in thunder storms, in which he strongly endorsed the views of Armstrong and Patterson that condensation was the real cause, instead of friction as claimed by Farraday. At the valve Farraday found no electricity, as he shows, but Patterson and Armstrong found it at a distance of five or six feet, and that, too, in sufficient abundance to prove the same conclusively. Friction could not under these circumstances have produced the sparks, but all the facts point to condensation. The tops of the mountains surrounding Pike's Peak are covered with perpetual snow. During the summer months the snow line gradually recedes up the mountains, and large quantities of water are poured out on the plains below. This produces moisture and the winds from the prairie carry this moisture up the mountain to the frozen regions above. About noon of each day large masses of heavy black cloud concentrate about the tops of the mountains and soon pour forth floods of rain. While this occurs flashes of lightning are incessant, and it is said by those who have witnessed it that the peals of thunder are so terrific that they seem to shake the very mountains themselves. Here, certainly, is no friction, but on the other hand a striking case of condensation, which is attended with effects similar to those observed in the condensation of steam from the boiler. Volcanoes in emitting clouds of flame and smoke are attended with flashes of lightning, but these flashes of electricity are found in all directions, far from the sides of the mouth of the crater where the steam meets with colder air and is condensed. Were it due to friction it would be found at the mouth of the volcano.

FOR THE POLE OVERLAND.—We read in an Eastern exchange that a party of enterprising explorers in search of the North Pole left Indianapolis on the 7th ult. They are even hopeful that in the extreme northern regions they may be able to find some traces of the long-lost explorer and navigator, Sir John Franklin and his followers. The party will proceed to the Red River of the North and descend said river as far as Pembina. From the latter place a small steamer will carry the exploring party as far north as navigation will permit. They will then proceed as best they can to Fort York, on the west side of Hudson bay, in about 58° north latitude. At this point they will put their boats together, carried in sections, *a la* Stanley, and launch them and push as far north as 80° before going into winter quarters. We understand that the Governor-General of Canada has received instructions from the home government in Great Britian to aid and assist the expedition in every possible way. A band of 50 tried Esquimaux trappers and fishermen are engaged to accompany the explorers. The Esquimaux are thoroughly equipped for the voyage and provided with trained dogs, sledges, reindeer, etc., and can travel at a rapid pace.

LIFE ON MARS.—According to the *Iron Age*, Prof. Lockyer is of the opinion that human life on the planet Mars may be very much like life on the earth, the light cannot be so bright, but the organs of sight may be so much more susceptible as to make the vision quite as good; the heat is probably less, as the polar snows certainly extend further, but by no means less in proportion to the lessened power of the solar rays. He agrees with others, that several very remarkable seas, including inland seas, some of them connected and some not connected by straits with still larger seas, are now definable in the southern hemisphere, in which, as is the case also with the earth, water seems to be much more widely spread than in the northern hemisphere. There is, for example, a southern sea exceedingly like the Baltic in shape; and there is another and still more remarkable sea, now defined by the observations of many astronomers, one near the equator, a long straggling arm, twisting, almost in the shape of an S laid on its back, from east to west, at least a thousand miles in length and a hundred in breadth.

A NEW METAL.—M. Delafontaine announces the discovery of philippium, a new metal. He has obtained from gadolinite an oxide of a really new metal, to which he gives the name of "Philippium" (Pp.), in honor of M. Philippe Plantamour, of Geneva, the friend and student of Berzelius. Supposing "philippine" to be a protoxide, its approximate equivalent is between 90 and 95. M. Delafontaine describes in the *Comptes Rendus* some properties of its formiate, sulphate, nitrate, etc. "Philippium" gives well-marked characteristic bands in the spectroscope.

THE AZTECS IN NEW YORK.—Mr. William L. Stone advances the opinion that a race not as yet classified, but probably of Aztec origin, once occupied certain portions of central and eastern New York. He founds this belief upon sundry pipes, copper and bronze spear heads and spears which have been found within the last year or two near Seneca Falls and Saratoga Springs. The terra-cotta pipe is wrought with the Egyptian or Sphinx-like cast of features, so different from any of the rough earthenwork of the American Indian, but not at all unlike the discoveries made in some of the Ohio mounds.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending Nov. 14.	Week Ending Nov. 21.	Week Ending Nov. 27.	Week Ending Dec. 5.
Alpha	14 13⅜	11 6	11¾ 9¼	10⅝ 8⅜
Alta	13¼ 11	14½ 9¼	9 7¼	7¼ 5½
Andes	1.05 90c	1 50c	75c 50c	75c 40c
Alpa				30c
Argenta	5⅜ 4¼	4¼ 3⅜	4¼ 3	3⅜ 2.90
Atlantic	1.30 1.20	1.20		
Aurora Tunnel	80c 70c	75c 50c		50c
Baltimore Con	3⅜ 3	2.60 2¼	1¾	1¾
Belcher	9¼ 7¼	8¼ 6	4¼ 3	5 4
Belmont	2¼ 1¾	1¾ 5c	1.10 60c	50c 30c
Best & Belcher	25¼ 20¾	23 15	17¾ 16	21¾ 17
Bullion	13⅜ 11⅝	13 6¼	7¾ 6	6¾ 4.40
Bechtel	85c 60c	80c 50c	65c 50c	65c 30c
Belle Isle	45c 30c	40c 30c	30c	40c
Bodie	17¼ 16¼	19 16	17 16¾	16¾ 16
Benton	7 6	6¾ 2	5 3	3¾ 2
Bulwer	16 13	16 13	16 15	16¼ 16
Boyle				
Black Hawk	1.05 1	1	50c	1 50c
Belvidere	1¼ 1.40	1	1¼	90c 50c
Booker	1¼ 1.10	1¼ 75c	1 50c	75c 55c
Caledonia	4.90 4	4.65 2¾	3¾ 2.60	2¾ 2
California	12¾ 8¾	10 8	9¼ 8¼	10¾ 9
Challenge	1.60 1.60	2 1.40	1.35 1	1¼ 90c
Chollar-Potosi	59 50	54 30	41 36	39¼ 35¾
Comanche				
Confidence	11¾	10¾ 6¼	6¾ 5	5 4¾
Con Imperial	1.30 1.10	1.10 70c	85c 75c	80c 55c
Con Virginia	13¾ 8¾	9¼ 8	8¼ 7	8¼ 7
Crown Point	10¾ 9	8¾ 5	6¼ 5	5¼ 4
Con Washoe	3.10 3	3.45	3.05	3.05 1
Champion	75c 40c	60c 40c	45c 40c	40c 15c
Concordia	1 50c			
Dayton				
DeFrees	15c 10c	10c	25c 5c	25c 10c
Daney				
Day	50c 40c	45c 25c	35c 30c	35c 20c
Eureka Con	36 30	36 32	35 33	37 36
Exchequer	7¾ 6¼	7¼ 3	5¼ 4	4¼ 3¼
Endowment	60c 45c	45c 30c	50c 30c	40c 25c
Gen Thomas				
Grand Prize	8¾ 7¾	8¼ 8	11 9¼	10¼ 8¼
Gila	40c 35c	25c 20c	25c 20c	10c
Golden Chariot	25c	25c 20c		
Golden Terra	4¼	4½ 5		
Goodshaw	65c 50c	55c 45c	50c 35c	45c 30c
Gould & Curry	18¾ 15¾	17¾ 8¾	9¼ 8¼	9¼ 7¾
Hale & Norcross	22¼ 17¼	16¾ 9	13¾ 12¼	13¾ 10
Hillside	4 3¾	4 3¼	3¾ 3¼	3.60 3.40
Highridge	2.30 2	2.60 2	2.25 2	2 2¼
Homestake	12	1¼	1¾	
Hussey	60c 45c	50c 40c	40c 30c	45c 30c
Independence	2¼ 1¼	1.95 1	1¼ 1¼	1¼ 1.40
Julia	8 4¼	5 2	3¼ 2¼	3.60 2¼
Justice	8¼ 6¾	7¼ 4¾	6 4.40	5 4
Jackson	8¾ 8	7¾ 6¼	6¾ 5¾	6 6¼
Joe Scates				
K K Con			1	1¾ 1
Kentuck	7¾ 6	7 4	5 4¾	5¼ 4
Kossuth	30c 25c	30c 25c		25c 15c
Keystone				
Lady Bryan	3 2¼	3¼ 1.40	2¼ 1.30	2 1.10
Lady Wash	2¼ 2	2 1	1¼ 1	1¼ 1
Leopard	75c 60c	1.10 1	1.05 1	1¼ 1.15
Leviathan	85c 50c	65c 45c	50c 45c	50c 30c
Leeds	1¼ 1.20	1¼ 1	1¼ 1	1¼ 1.20
Loe				
May Belle	75c 50c	70c 60c	75c	60c
Modoc	60c 50c	30c 15c	30c 20c	20c 10c
Manhattan	4.60 3¼	4.80 3.90	1.60 4	4¼ 4
Martin White	9¼ 8¼	9¼ 8	8¼ 8	8¼ 8¼
McClinton	75c 60c	75c 50c	55c 50c	60c 75c 40c
Meadow Valley	4 3¼	4	3¼	
Mexican	74 65	75 35	39¼ 30	35 23¾
Mides			1¼	
Morning Star	5¼ 5	4¼		3 2
North Con Virginia	12 10	12 6¼	8 5	7¼ 4¼
New York	1.60 1	1¼ 50c	90c 60c	70c 50c
Northern Belle	11 10	10¾ 10	10¼ 9¼	9¼ 9¼
New Coso	10c 5c	25c 5c	25c	40c 25c
Navajo	75c 60c	50c 40c	50c 40c	75c 40c
Occidental			75c	
Ophir	58 49	57¼ 37¾	43¼ 35	43¼ 34
Oriental	1 65c	75c 45c	45c 25c	45c 40c
Overman	26¼ 22¾	23¾ 12¼	13¾ 11¼	13 9¼
Panther				
Phenix		2¾	2¾	
Phil Sheridan	1.10 95c	1 50c	75c 55c	75c 50c
Prospect	20c			
Raymond & Ely	8¼ 7	6¾ 6	6¼ 7	10¼ 9
Richer	1	1 75c	80c	
Rock Island				
Rye Patch				
Rough & Ready	2 1¼			
Savage	20¾ 15¾	17 9¼	11¾ 10	11¾ 9
Segbelcher		30	26 17	28 20
Sierra Nevada	194 183	197 60	65 39	55 38
Silver Hill	3 2¼	2¾ 1¼	2 1¼	1¾ 1¼
Silver King	16¼ 16	17 15	15	15
Silver Prize	5c	5c		
Succor	1¼	1¼ 60c	80c	40c 1 75c
Summit	1 90c	1	1.30 85c	1.60 1
Scorpion	2¾ 2¼	4 2	1.60 1	1.65 1
Solid Silver	1.10 1	1.10 1	65c	50c 70c 50c
South Bodie	65c 50c	54c	55c	50c 50c
South Standard	50c 30c	30c 25c	10c 5c	10c 5c
Star	60c 55c	60c 50c	50c	45c 25c
St. Louis	1 40c	75c	65c	
Syndicate				
Tioga Con	2¼ 1.90	2¼ 1.80	1.80 1¼	2 1¼
Tiptop	1¼ 1¼	1¼ 1¼	1¼ 1¼	1¼ 1¼
Trojan	55c 10c	40c 30c	30c 25c	30c 25c
Union Con	59 42	55 55	65 43	54 37½
Utah	43 40	42¼ 22	22¼ 17	23 13
Vermont Con				
Ward	1.30 1	1.10 75c	80c 70c	75c 50c
Wells-Fargo	70c 50c	65c 20c	40c 20c	60c 25c
Woodville	75c	40c	30c 25c	25c
White Cloud				
Yellow Jacket	24¼ 20	22¼ 14¼	17¼ 14¾	15 11¾

Sales at S. F. Stock Exchange.

Friday A. M., Nov. 29.

590 Alta 7¼@7
90 Alpha 9¼@9¼
200 Andes 60c
570 Best & Belcher 17¼@17¾
615 Bullion 6¾@6½
550 Belcher 4¼@4
340 Bentou 3½
300 Baltimore Con 1¾
1330 Challenge 1¼@1.30
810 Con Virginia 7¾@7¾
725 California 8@8¼
75 Chollar 36
520 Crown Point 5@4.80
1110 Con Imperial 75c@55c
700 Caledonia 2.40@2¼
90 Confidence 1.50
350 Con Washoe 2.95@3
595 Exchequer 4.15@4¼
545 Flowery 50c
425 Gould & Curry 8@7¾
365 Hale & Nor 12¼@12½
455 Justice 4½@4
1265 Julia 2½@2¼
200 Kossuth 25c
415 Kentuck 4¼
335 Lady Bryan 1¾@1.80
370 Leviathan 40c@45c
930 Leopard 1.20@1.30
305 Overman 12¾@12½
845 Ophir 40@39¾
620 Phil Sheridan 55c@50c
95 Senator 25c
600 Succor 80@30c
1715 Sierra Nevada 45@44¾
435 Savage 10½@10¾
150 Scorpion 1¼
1050 Solid Silver 7c
20 Seg Belcher 25
205 Silver Hill 1.60@1¾
800 Trojan 25c
1930 Union Con 56@57¼
145 Utah 18@18¼
310 Summit 1.80@1¾
500 Sitting Bull 30c
2100 Star 25@40c
175 San Xavier 1¼
650 Tiptop 1¼@1.30
110 Tioga Con 1.60@1¾

Saturday A.M., Nov. 30.

235 Alpha 9¼@9¾
660 Alta 7¼@7
1600 Argenta 3¼@3.40
470 Belmont 40@30c
1045 Best & Belcher 20@20¼
790 Bullion 6¼@6¾
580 Belcher 4@4.85
220 Bodie 16¼@1
220 Benton 3@3½
155 Bulwer 16@16½
50 Bechtel 6.5c
2435 Con Virginia 7¾@7¾
1305 California 9¼@10
210 Confidence 7¼@7½
115 Chollar 39@38¾
1135 Crown Point 5¼@4.
640 Caledonia 2¾@2.6
940 Con Imperial 70@75c
150 Challenge 1.20@1.
300 Con Washoe 3.0
300 DeFrees 20
2 20 Day 20
2065 Exchequer 4.40@4
45 Eureka 35
800 Endowment 25c
525 Flowery 60@65c
1330 Gould & Curry 8¼@8
920 Grand Prize 9¾@9
50 Gila 20
590 H & Norcross 12¾@13
520 Highbridge 2.10@2
75 Hillside 3
500 Hussey 35@30c
145 Independence 1.30@1.4
330 Justice 4¼@4
1840 Julia 2¾@4
110 Jackson 5¼@
560 Kentuck 4.90@5
150 Kossuth 2
545 L Bryan 1¼@1.6
1420 Lady Wash 1
250 Leviathan 45
1135 Mexican 33@34
30 Manhattan 1
60 McClinton 50
320 New York 60
300 N Con Vir 7¼@6
120 N Sierra Nevada 15
1530 N Bonanza 1¼@
1420 Navajo 65c@70
500 New Coso 30@35
458 Ophir 43@42
150 Overman 13@12
400 Paradise 35c
300 Plutus 1
75 Phil Sheridan 55
180 Raymond & E 9¼@
670 Savage 11¾@11
25 Seg Belcher 23
1720 Sierra Nevada 50@49
300 Succor 80
375 Silver Hill 1¼@1
100 Senator 25
300 Santiago 1
65 Scorpion 1.65@1
750 Solid Silver 6
1150 Summit 1¼@1.5
100 Trojan 2
860 Union Con 63@6
320 Utah 22@21
250 Ward 60@66.
300 Wells-Fargo 2
440 Yellow Jacket 14¾@
Monday A. M., Dec. 2.
410 Alta 7¼@7
205 Alpha 9¾@
300 Andes 75@7
310 Best & Belcher 20¼@2
580 Belcher 5@4.
735 Bullion 6¼@
900 Baltimore Con 1
50 Benton 3
490 California 10
90 Chollar 39@3
680 Con Virginia 8¼@
235 Crown Point 5¼@
1520 Con Imperial 80
200 Con Washoe 3
55 Challenge 1¼@
180 Caledonia 2¾@2.6
735 Exchequer 4¼@4.1
785 Flowery 70@60.
1170 Gould & Curry 8¼@
505 Hale & Nor 13@12
180 Justice 4¼@
160 Julia 3¼@3.6
425 Kentuck 4¼@
100 Kossuth 15
1830 Lady Bryan 2@1.6
230 Lady Wash 1
930 Mexican 34¼@3
2070 N Sierra Nevada 10
25 North Con Vir 7
2070 N Bonanza 2@1.3
1900 New York 60@50c
690 Ophir 42¼@43
205 Overman 12¾@12¼
100 Plutus 1
1.00 Phil Sheridan 60@75
1240 Solid Silver 65
270 Scorpion 1¼@1
110 Senator 25
230 Savage 11@10¾
1485 Sierra Nevada 54@5
350 Succor 85c@
370 Silver Hill 1.60@1
200 Sitting Bull 20
15 Seg Belcher 24
100 Trojan 30
490 Utah 21@20
1470 Union Con 57@55
400 Ward 60@65
1830 Wells Fargo 25@50
200 Woodville 25
610 Yellow Jacket 14¾@14.

AFTERNOON SESSION.

1580 Argenta 3¼@3.6
100 Aurora T 30c
150 Bodie 16¼@16.
270 Bulwer 16¾@1
600 Belmont 40@50
2125 Booker
250 Belvidere
150 Black Hawk
70 Bechtel 65@60
375 Champion 25
480 C Pacific 2¼@
450 Caledonia (B H) 1¼
300 Dudley
1700 Day 25@30
145 Eureka Con 37@3
700 Endowment 40@35
1640 Grand Prize 9¼@9
300 Goodshaw 40
310 Hussey 40
2 0 Hillside 3¼@3.6
35 Highbridge 2.1
420 Independence 1.30@1.4
50 Jackson 5
15 Leopard 1
400 Leeds 1.20@1
1275 Modoc 20@10
110 Manhattan 4
510 Mono 5¼@
250 Martin White 9¼@9¾
300 McClinton 40
1300 New Coso 40c
365 Northern Belle 10@3
3660 Navajo 60@40c
500 Oriental 40@45c
1400 Paradise 2@2.1
1450 Raymond & Ely 8@8¼
50 S Bodie 50c
1470 Summit 1.30@1.40
200 Sitting Bull 70c
200 Star 45c
950 South Standard 10c
30 Silver King 15
600 Tuscarora 5c
700 Tiptop 1.30@1¼
Tuesday A. M., Dec. 3.
55 Alpha 9¼@9¾
260 Alta 7¼@7¾
260 Andes 65@60c
560 Best & Belcher 19@18¾
280 Belcher 4¾@4¼
1380 Bullion 6¼@6¾
245 Benton 3¼@3
300 Baltimore Con 1¼
1375 California 10@10¾
335 California 2¼@2.60
580 Con Virginia 7¾@7¾
1240 Con Imperial 80@75c
490 Chollar 37½@36
450 Crown Point 4.90@4.80
145 Confidence 6¼@7
600 Exchequer 4@3.90
1570 Flowery 80@70
535 Gould & Curry 8¼@8¾
420 Hale & Nor 11¾@12¼
65 Justice 4¼
1645 Julia 3¾@3¼
450 Kentuck 4¼
100 Kossuth 15c
2100 Lady Bryan 1.90@2
130 Lady Wash 1¼@1¼
450 Leviathan 50c
1520 Mexican 31@32
1425 Manhattan 2¼@1.95
300 Senator 2.0
965 Sierra Nevada 45@47
30 Savage 10¼@10½
5 Seg Belcher 20
1500 Solid Silver 65@60c
240 Scorpion 1¼@1¼
405 Silver Hill 1¼@1.80
480 Succor 95@80c
60 Trojan 30c
130 Utah 17¾@17¼
1800 Union Con 49¾@4
900 Woodville 25c
420 Yellow Jacket 12¾

AFTERNOON SESSION.

340 Argenta 3¼
300 Aurora T 5c
1 5 Bodie 10¼
180 Belmont 50@45c
50 C Pacific 2¼
350 DeFrees 20c
90 Day 35c
425 Dudley 90@2
135 Eureka Con 35
50 Endowment 30c
100 Gila 20c
525 Grand Prize 9¼@8
100 Goodshaw 45@30c
250 Hillside 3¼@3.60
100 Highbridge 2
165 Hussey 40@30c
240 Independence 1¼@1.3
305 Jackson 6¼@5¾
140 Leopard 1¼
50 Leeds 1¼
30 Mono 6
125 Manhattan 4
240 McClinton 50@40c
85 M White 9¼@9
100 Northern Belle 10
40 Navajo 40@45c
40 Oriental 40c
300 Paradise 2.20@2.10
265 Raymond & Ely 9¼@9¾
50 Red Cloud 2
375 Summit 1.60@1¼
300 Sitting Bull 65c
300 S Standard 10c
370 Tiptop 1¼
300 Tioga Con 2

Wed'sday A. M., Dec. 4.

50 Alpha 9¼@9
1000 Alta 7¼@7
235 Andes 65c@60
50 Belcher 4¼@4
50 Bullion 6¼@6
200 Caledonia 2¾
390 Con Imperial 70@65c
15 Confidence 6¼@6
250 Challenge 1.40@1
330 Exchequer 4@3.80
120 Flowery 75c@85c
765 Gould & Curry 8¼@7¾
215 Hale & Nor 11@10¾
1000 Justice 4¼@4
945 Julia 3
40 Kentuck 4¼@4¼
685 Lady Bryan 2@1¾
70 Lady Wash 1¼@1¼
350 Leviathan 40c
340 Mexican 27@27¾
270 Morning Star 3@2
350 N Bonanza 2.10@2
745 New York 60@50c
160 North Con Vir 6@6½
100 N Sierra Nevada 15c
330 Overman 12¾@13
580 Ophir 3¾@3¼
100 Phil Sheridan 60@55c
10 Seg Belcher 20
375 Succor 90c
500 Solid Silver 60
1000 Sierra Nevada 1.40
220 Scorpion 10¼@1
420 Savage 10¼@10¼
850 S Nevada 44@46
275 Silver Hill 1¼@1.65
50 Senator 30c
600 Endowment 25@30
65 Utah 17@16
590 Union 47@45
200 Woodville 25c
600 Wells-Fargo 35@30c
1 0 Ward 70@75c
385 Yellow Jacket 12¾@12

AFTERNOON SESSION.

400 Aurora T 50c
1210 Argenta 3@2.90
100 Alpa 30c
200 Alpha 9¼@9
100 Belmont 40c
145 Bodie 16
160 Bulwer 1
600 Bechtel 30@40c
100 Belvidere 1
300 Booker 40
650 Champion 25c
230 C Pacific 2.65@2¼
800 Caledonia (B H) 1¼
150 Dudley 1
470 DeFrees 10@11
3 0 Day 35c
540 Eureka Con 36¼@3
100 Endowment 25c
65 Grand Prize 8¾
135 Goodshaw 35c
1300 Gold n Terra 3
100 Hussey 30c
430 Hillside 3¼@3.50
900 Highb idge 2.10@2.20
900 Hamburg 1¼
440 Independence 1¼@1.3
215 Hamburg 1@1¼
245 Leopard 1.15@1¼
200 Leeds 1.20
50 Martin White 6¼
630 Modoc 20c
200 Manhattan 4¼@4
555 McClinton 50c
40 Mono 6
400 New Coso 35@40c
330 Northern Belle 10
90 Navajo 40c
1145 Raymond & Ely 10¼@9¾
150 Red Cloud 2.15
900 Summit 1@1.40
500 S Standard 10@5c

SALES OF LAST WEEK AND THIS COMPARED

Wed'sday A.M., Nov. 27. Thursd'y A. M., Dec. 5.

310 Alta 7¼@7
235 Alpha 9¼@9¾
560 Best & Belcher 17¼@17
2555 Bullion 6¾@7
1935 Belcher 4@4¼
530 Caledonia 2¼@2.60
955 Con Imperial 75@80c
1770 California 8¼@8¾
1250 Con Virginia 7¾@7¾
120 Confidence 6@5¾
225 Chollar 38@40
1655 Con Imperial 75@80c
1060 Exchequer 4.15@4¼
730 Gould & Curry 8@8¼
310 Hale & Nor 12¼@13
870 Justice 4.40@4¼
1075 Julia 2¼@3
580 Kentuck 4¼
755 L Bryan 1¼@2
3340 Mexican 33@35
2130 Ophir 39¼@43¾
235 Overman 12¼@12¾
2530 Sierra Nevada 47@50
1240 Savage 10@11¼
30 Seg Belcher 17
100 Succor 80c
3195 Union Con 53@60
670 Utah 20@21
900 Yellow Jacket 15

Thursd'y A. M., Dec. 5.

80 Alpha 8¾
1315 Alta 7¼@7¾
600 Andes 40@50c
440 Best & Belcher 17¼@17¾
870 Belcher 4.15@4¼
725 Bullion 4.40@4¾
2585 Benton 2@2¼
500 California 9¼@9¾
940 Con Virginia 7¾@7¾
725 Crown Point 4@4.15
150 Chollar 35¼@3
1655 Con Imperial 55@60c
265 Confidence 5
855 Caledonia 2
300 Con Washoe 1
340 Chall nge 90c@
100 C P Ravine 25c
690 Exchequer 3¼@3
750 Flowery 50@60c
710 Gould & Curry 7¾@7¾
840 Hale & Nor 10@10
650 Justice 4@4.1
735 Julia 2.6@2¼
335 Kentuck 4@4.10
140 Lady Wash 1
1140 Lady Bryan 1.10@1¼
400 Leviathan 30c
1795 Mexican 23¼@24
470 New York 50@60c
1340 N Bonanza 1.65@1¼
250 North Con Vir 4@3
100 N Sierra Nevada 10c
1435 Ophir 34@35
530 Overman 9¼@10¼
100 Orig Gold Hill 2
1765 Sierra Nevada 35@40
575 Savage 9¾@9¼
670 Succor 75@90c
70 Seg Belcher 20
750 Silver Hill 1.30@1¼
140 Scorpion 1¼
450 Solid Silver 50c
1160 Trojan 25c
810 Union Con 37¼@38
505 Utah 13@13¾
200 Woodville 25c
1400 Wells-Fargo 25@30c
735 Ward 50@60c
940 Yellow Jacket 11¾@11¾

AFTERNOON SESSION.

1200 Argenta 2¼
50 Aurora T 50c
300 Belmont 40c
60 Bulwer 16
200 Bodie 14¾@16
600 Bechtel 30@40c
100 Booker 40c
400 Champion 25c
230 C Pacific 2.60@2¼
4 0 Booker 90c@1
200 Black Hawk 75c
1 0 Bodie 14¾@16
830 Flowery 50c@6c
180 Grand Prize 10¼@1
500 Gila 20c
300 Goodshaw 30@4
934 Belle Isle 15@25c
50 Champion 15
70 C Pacific 2¼
50 Caledonia (B H) 1¼
50 Day 25c
25 Dudley 50c
350 DeFrees 20c
370 Endowment 25@30
80 Eureka Con 35@35¼
610 Grand Prize 8¼@8¾
530 Gila 20c
300 Hamburg 1
60 Hillside 3.20@3¼
400 Highbridge 2

655 New York 55@50c
640 North Con Vir 7¼@6
1125 N Bonanza 1@1¼
200 N Sierra Nev 15c
100 Oriental 45@40c
250 Paradise 2.15
95 Phil Sheridan 55@60c
680 Raymond & Ely 8¾@9
50 Red Cloud 3
350 McClinton 60c
50 St Louis 2 c
250 Summit 1¼@2
100 S Standard 5c
190 Scorpion 1¼@2
810 Silver Hill 1¼@1.60
100 Sitting Bull 30c
1250 Paradise 2@1.90
955 Solid Silver 65c
100 S L Bryan 45c
120 Tioga 1¼@1.40
1630 Tiptop 1¼@1.40
350 Trojan 30c
500 Tuscarora 5c
300 University 1¼@50c
600 Woodville 20@2
300 Ward 75c
1350 Wells-Fargo 35@40c
200 Independence 1¼@1.30
80 Jackson 5½@6
1125 N Bonanza 1@1¼
200 Leopard 1
100 Leeds 1
540 Mono 5@5½
105 Manhattan 4¼@4
9 0 M White 8
700 Modoc 15@20c
350 McClinton 60c
200 New Coso 30c
1020 Navajo 40@45c
160 Northern Belle 9¾
175 Oriental 35c
125 Phil Sheridan 55@60c
1250 Paradise 2@1.90
270 Raymond & Ely 9@9¼
100 Rustler 5
1020 South Standard 10@5c
100 Summit 1
100 Star 40c
2400 Sitting Bull 50c
225 S Xavier 1¼
845 Tiptop 1.30@1.45
1250 Tioga Con 1.20
50 University 1

Pacific Board—Latest Sales.

Wed'sday A. M., Dec. 4.

100 Alta 6¼@6½
45 Alpha 9¾
420 Best & Belcher 18@17½
170 Belcher 4½
210 Alpha 9¼@9
10 Crown Point 4.70
50 Cou Imperial 70c
100 Con Virginia 7¾
90 Caledonia 2¼@2.45
130 Exchequer 4@3.95
300 Gould & Curry 8¼
80 Hale & Nor 11¼@11¾
220 Julia 3@3.05
35 Justice 4¼
200 Mexican 28¼@27¾
30 Mackey 1¾
25 Leopard 1¼
230 New York 55c
200 N Bonanza 2.05@2
100 Ophir 37¾@38
20 Overman 12¾
70 Phil Sheridan 60c
300 Savage 10¾@10¾
20 Sierra Nevada 46¼@47
40 Silver Hill 1¾
200 Solid Silver 60c

300 S Utah 10c
30 Utah 16¾@17
70 Yellow Jacket 12¾

AFTERNOON SESSION.

20 Alta 5¾
10 Alpha 9¼
75 Bullion 5
20 Best & Belcher 17¾
110 California 10@9¾
95 Con Virginia 7¾@7¾
300 Champion 25c
60 Chollar 36¼
20 Eureka Con 36
175 Exchequer 3.85@3.80
50 Gould & Curry 7¾
70 Julia 3
25 Leopard 1¼
50 Mexican 25c
60 N Bonanza 2.05@2
240 Ophir 35¼@3
170 Raymond & Ely 9¼
40 Savage 10
75 Sierra Nevada 45¾@43
10 Union Con 44
10 Utah 15
10 Yellow Jacket 11¾

California Board—Latest Sales.

Wed'sday A. M., Dec. 4.

60 Alexander 11¾
350 Alanta 50@5
60 Alpha 9¼@9
65 Alta 6¾@6¾
250 Andes 60c
60 Benton 3
60 Belcher 4¼@4
75 Best & Belcher 18¾@18¾
65 Bullion 5¼@5¾
140 Caledonia 2
70 Con Virginia 7¾@7¾
330 Alta 7¼@7¾
60 Alpha 9¼@9
100 Belcher 4¼@4
250 Bullion 5
50 Lady Bryan 2
60 Mexican 29@28¾
100 Ophir 3¾@3¾
30 Union 3¾
230 Savage 10¼@10¾

70 Crown Point 4.85@4.60
400 Coso Con 9c
60 Gould & Curry 8¼@8¾
330 Julia 3@3.05
90 Hale & Norcross 11¾@11¾
150 Julia 3@3.05
50 Lady Bryan 2
60 Mexican 29@28¾
100 Mackey 1¾
50 Ophir 3¾@3¾
10 Union Con 44
100 Yellow Jacket 11¾

40	Sierra Nevada	47@47½	
250	S Utah	10c	
240	Silver Hill	1¢	
100	Trojan	2¢	
70	Union	48@47½	
3500	Union Flag	2@3c	
60	Yellow Jacket	12½@12½	
	AFTERNOON SESSION.		
275	Atlanta	50c	
40	Alexander	11¢	
93	Alta	5½@5¾	
700	Ana	15@12½	
70	Belcher	4.80@4¾	
100	Best & Belcher	18@17½	
90	Bullion	5@5½	
60	Crown Point	4½@4¾	
200	Caledonia	2¢	
60	California	10@10½	
45	Con Virginia	7¢	
40	Chollar	36¢	
200	Con Imperial	70c	
200	Coso Con	15c	
55	Exchequer	3.90	
50	Gould & Curry	8½@8¾	
50	Hale & Nor	11@11½	
145	Julia	3@3.05	
65	Justice	4½@4¾	
20	Mexican	26¢	
400	Mansfield	37½c	
100	N Sierra Nevada	9c	
215	New York	60@50c	
200	N Scorpion	75c	
50	Ophir	39@39½	
100	Phil Sheridan	55c	
90	Savage	10½@10½	
65	Sierra Nevada	4½@4¾	
200	Santiago	1	
200	Trojan	2¢	
150	Tiger	10c	
500	U Flag	2c	
60	Union Con	47@46½	
95	Yellow Jacket	12½@12	

Mining Share Market.

The market has been extremely dull for the past week, not having recovered from the crash. Sierra Nevada seems to have fallen entirely out of sight—that is, as a leader of the market. The fluctuations along the whole line have been comparatively light during the week. This has been the case with Bodie and Eureka Con., as well as with the Comstock. Eureka Con. has shown great vitality. The stock has been as high as $37.

Report comes of a Nevada mine that has been compelled to shut down on account of the heavy discount on its bullion. Another mine in Ward district will soon, it is hoped, become a regular bullion-producer—may be a dividend-producer. On the Comstock, the Julia drift of the Sutro tunnel is encountering great heat, so great that the shifts have been shortened to six hours. This difficulty of high temperatures at great depths on the big lode looks, at present, more serious than it probably really is. The tunnel, when connection has been made with more mines, can hardly fail to accomplish one of the grentest aims of its projector.

Bullion Shipments.

Since our last issue, we have noticed the following shipments of bullion:

California.—Bodie, Nov. 25th, $8 500; Nov. 29th, $9 622 26; Extra, Nov. 14th, $1 732; Nov. 19 h, $3,818; Oriental Con., Nov. 28th, $5 000; Standard, Nov. 17th, $19,714 11; total for Oct., $87,401.62; Nov. 23d, $16 116.25; Nov. 25th, $15,725.91; Nov. 28th, $17,055.09; Dec. 1st, $17 209.

Nevada.—Belmont, Nov. 18th, $3,568; Nov. 23d, $1,892; California, Nov. 23d, $141,545 25; total to date, $319.986 29; Nov. 30th, $152,400.45; Grand Prize, Dec. 2d, $28,000; Hillside, Nov. 29th, $5,600; Dec. 1st, $5.378; Dec. 3d, $5 200; Hussey, Nov. 19th, $3,100; Independence, Nov. 29th, $15,500; Indian Queen, Nov. 18th, $3,967.11; Nov. 25th, $3,620.83; Jefferson, Nov. 18th, $1,412.65; Nov. 25th, $1 846.29; Nov. 26th, $1,850; Nov. 29th, $1,984.24; Leopard, Dec. 3d, $5,800; Manhattan, Nov. 21st, $11,758.21; Nov. 25th, $10,800; Nov. 26th, $11,500; Dec. 1st, $11,100. Navajo, Nov. 25th, $6,000; Dec. 2d, $5,600. Northern Belle, Nov. 18th, $3,893 38; Nov. 20th, $3,435.84; Nov. 23d, $4,667.77; Nov. 25th, $3,227.23; Nov. 28th, $3,015.35; Nov. 30th, $3,580.46. Raymond & Ely, Nov. 20th, $7,205.76; Nov. 26th, $6,772.61. Starr & Grove, Dec. 3d, $6,000. Manhattan, Dec. 4th, $11,300.

Idaho.—Black Jack, $11,080.90. Mouarch, $1,500.

Utah.—Christy Con., Nov. 25th, $5,392.

PACIFIC COAST POSTAL CHANGES.—Pacific Coast Postal changes for the week ending Saturday, November 30th: Offices established—Gasquet, Del Norte county, Cal., Horace Gasquet, Postmaster. Ely, White Pine county, Nev., James A. Rokohe, Postmaster. Williams' Creek, Jackson county, O., John T. Layton, Postmaster. Willoughby, Wasco county, O., Archibald Wilson, Postmaster. Name changed—Scotts, Wasco county, O., to Rockville, Thomas S. Laus, Postmaster. Postmasters appointed—A. P. Moor, Clairville, Sonoma county; J. M. Single, Ætna Mills, Siskiyou county, Cal. Jacob D. Smith, Carlton, Yamhill county, Oregon.

RESTAURANT RE-OPENED.—The Palace restauraut on Sansome street, ncar California, has been re-opened by the experienced caterers, Horst & Toedter, and lower prices than ever before are visible on the hill of fare. We are glad of the re-opening. The Palace was long our noonday resort, and we trust the now proprietors will succeed in their enterprise.

WASHOE SUMMARY.—Up to the hour of going to press our usual summary of Washoe mining matters had not arrived.

THE Committee of the Constitutional Convention on mining interests are satisfied to have things remain as they are.

A COMPANY has been incorporated to work the Crosscut claims, Humbug district, Arizona.

THE McCracken M. Co. have recently discovered a large and rich body of ore.

WORK is to be resumed on the South Wellington coal mine.

MEXICAN miners are doing pretty well in and near Antelope and Woaver creeks, Arizona.

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

CALIFORNIA.

AMADOR.

PLYMOUTH.—*Ledger*, Nov. 30th: The Phœnix mine, it is reported, has changed owners, a New York company being the purchaser. Report says the price is $8,000,000. Henceforth the mine will be known as the Empire, so called after the Empire State. Timbers are now floating through the ditch in large quantities. The ditch is running nearly full of water, but not enough to run 80 stamps. The rock has become very hard of late, but has suffered no diminution of value. If anything, it is richer than before. The Burleigh drill is working day and night. W. Sargent, formerly an employe of the Phœnix, has charge of the Centennial mill. He is quite an expert in the business. The sulphurets are looking rich. The stock has advanced a little. Fair prospects for a paying mine. The hoisting of ore has not commenced as yet.

VOLCANO.—*Ledger*: Downs' mine continues to look favorable. The north tunnel is in 41 feet, with a 4-foot ledge at the breast. The south tunnel extends 28 feet, with an average width of the ore body of two feet. The ore maintains its quality. It is confidently expected that all of the quartz now being extracted is fully as rich as that of the last crushing, which yielded $45 per ton. W. W. Downs, cousin of the owner, is foreman of the works. Moyle's mining works at Volcano Flat will consume in the neighborhood of 100,000 feet of lumber. Stewart's mill at Volcano will be all ready to start up again some time next week. A parcel of quartz from Jones & Robinson's claim will be the first operated upon. Wash. Porter has charge of the mill. He has been identified with the mining interests of Volcano district for 25 years. The machinery for the Moore mill is being placed in position. In the mine everything looks healthy.

SUTTER CREEK.—At the Amador Con. mine Sunday work has been suspended for the present. The increased size of the ore body enables the miners in six days to get out enough rock to keep the mill going the whole week.

CALAVERAS.

COPPEROPOLIS.—*Chronicle*, Nov. 30: Copperopolis is beginning to show some signs of new life. A Mr. Hicks, of Boston, has lately arrived and assumed full charge of the Union mines. From all appearances he seems to mean business. He is having everything about the mines overhauled and put in shape for work. He has also on the ground a new engine intended for the Moonlight shaft. By spring no doubt things will be "booming" here once more. Hendsch Bros. have been doing considerable prospecting lately for both gold and copper. Their gold mine is five miles southeast from Copperopolis; ore averages about $23 per ton; width of vein, 14 inches; depth of shaft, 35 feet; tunnel from bottom, 18 feet; walls, slate. This location is called "Lucky Bill." A short distance south they have an excellent copper location, which they call "Idlewild." Width of vein, 4 feet; depth of shaft, 25 feet; slate walls. Three miles southeast from Copperopolis, where they are at present taking some nice copper ore, there is a gigantic mine. It crops out on the surface over 45 feet in width. Can be traced some distance. This location is called the "Opulent." This mine is advantageously situated near the main road to Sonora and Milton, and has an abundance of both wood and water.

PINE LOG MINE.—*Citizen*, Nov. 30: This mine is situated about three miles below Copperopolis, and is known as the Boucher mine. A five-stamp mill has been erected and is kept constantly at work on ore from this mine. They have two shafts sunk on the lead, one to the depth of 160 feet, and the other 60. The lead will average two feet and a half in width, and prospects well. We learn that five more stamps are soon to be added to the mill, which will necessitate the employment of hands.

GARIBALDA.—This mine, owned by L. J. Lewis & Co., has been opened by a tunnel 150 feet in length, crosscutting the vein at 100 feet deep. Vein over 10 feet wide, of ore valued from $10 to $12 per ton. Ore highly sulphureted. Sulphrets assay over $200 per ton. Drift on the vein 90 feet, exposing over 5,000 tons ore to view. The property has a water power sufficient to carry 80 stamps. The vein is opened in several places, and shows ore in great abundance, and all the property now needs to make it very remunerative, is a good and substantial mill.

CONTRA COSTA.

BLACK DIAMOND COAL. A correspondent of the *Gazette*, writes thus: Last winter and spring the company sank the Mount Hope counter slope some 300 feet deeper, so that the present depth from the surface is nearly 1,000 feet. Since the new slope has been in operation the company are shipping the best coal ever shipped from this county, or any other part of the Pacific coast, for steam purposes. The experienced steamboat men of the Sacramento and the San Joaquin rivers say that there is nothing equal to it on the coast, if any superior in the world, for generating steam. It is quick, and as durable as almost any in the market. Last week we had a conversation with the owner of several boats about the merits of different kind of coals for steam purposes. "We have tried different kinds of coal on our boats, but we prefer the Mount Hope coal as better and cheaper for us than any other in the market."

MONO

MONTEZUMA.—*Standard*, Nov. 27: Arrangements have been made to continue the working in the new shaft during the winter. Busy sinking, and the ledge looks finely as progress is made. The ore is said to assay well.

AMEER—Sinking the shaft in favorable-looking ledge matter. Prospects very flattering. The mine is situated in the immediate vicinity of first-class mines. Owners propose soon to incorporate.

QUEEN BEE.—Houses and buildings completed and machinery at work. Everything running well. Shaft will be completed on Wednesday next, when sinking will be resumed until the 250 level is reached. The vein will then be opened up, ore extracted and hoisted to the surface.

ALICE G.—Ledge is three feet in width in the bottom of the shaft. Down 55 feet. Character of ore improving as progress is made. The mine will be placed on the market in a short time. It adjoins the Ida and just east of the Blackhawk.

MONO & CROSS.—The shaft has now been timbered to a depth of 150 feet. The timbering is now below the water line, so that no difficulty is experienced from that source. Since last report the ground has become much harder, the material in the bottom being a mixture of quartz, porphyry and clay.

WEST PACIFIC.—Messrs. Vernou & Goodshaw are still engaged in sinking on the ledge, which increases in width as depth is attained. Work will be continued during the winter months, as all the necessary preparations have been made to carry on successful operations. This mine promises something rich, and is one of the most encouraging prospects in this district.

BODIE CHIEF.—This fine property is owned by a New York city company. Gen. Vernon, the Superintendent, informs us that the mine will be worked all winter. The prospects are exceedingly encouraging for a first-class mine. The shaft (which is 8x5½) is being sunk rapidly, as the rock is not as hard as heretofore. Assays excellent.

CONCORDIA.—New shaft down 49 feet, following the ledge, which is 2½ feet in thickness, pitching east.

THE OTHER MINES.—Water is being baled from the California, preparatory to active work. Preparations for hoisting ore, in the Bulwer. W. A. Skidmore reports a 2½-foot vein in the Rustler, with distinct walls—prospects most encouraging. Rock taken from the bottom of Sitting Bull will work $200 per ton. W. A. Skidmore has been appointed superintendent of the Summit. The ledge in this mine is 3 feet wide, of fair ore. Vigorous work in the Bechtel.

Everything about the South Bodie looks well and promising. Both ledge faces in the Spaulding look well. Shaft and crosscuts of the Blackhawk are advancing. Favorable indications in the South Bulwer. The Dudley shaft is down 228 feet, still sinking. Blue prophyry mixed with quartz in the bottom of the Relief Con. shaft. Republic Con. has indications of near presence of a large ore body. Scarcity of lumber has closed the Orient for a short time. The ore shaft is being enlarged. Syndicate advancing. Mill still busy on Bodie ore. No particular change in the White Cloud. Sinking recommenced on the South Standard. Signs of a rich development in Maybelle. The main shaft of the South Belvidere has reached the depth of 50 feet. The face of Bodie tunnel is in good working ground. Three shafts at work on the Silver Hill tunnel. The Noonday ledge is two feet wide; the dump ore will mill high. In the east drift of the Goodshaw there are strong, well-defined veins of clay, mixed with pebbly quartz which is said to assay well in gold. The Con. Pacific bonanza widens with progress. The Maryland Con. has lately been incorporated by Col. J. C. Dunn. The stopes in the Standard continue to have their usual good appearance. The Bruce and Gildea ledge in the Bodie have run together. The ledge in the face is looking well, and is about four feet wide. The character of the rock in the face of the west crosscut from the north drift of the Red Cloud ledge, in the 250 level, indicate the approach of the Packard & Morton vein. A contract has been let to run 100 feet on the Bullion vein. Arrangements are to be made for developing Weir district at once.

COAL.—The *Standard* speaks thus of the coal "find" 3½ miles south of Bodie: Situated in close proximity to extensive reefs of sandstone were high croppings in the shape of boulders of black conglomerate rock, which on inspection were found to contain lignite of sufficient quantity to warrant further exploration. The substance is capable of producing flame and selected pieces will make gas when pounded up and put into an amateur gas factory, consisting of a clay pipe, the bowl of which is filled and the top covered over with clay to prevent air escaping, then subjected to the heat of a fire when the jet, made from the stem, can be lighted. The appearance of the ground and the croppings found would go to indicate a valuable deposit some where under the surface. We have talked with men who profess to have been raised in the coal regions of Pennsylvania and have made the subject a study, all of whom concur in the opinion that coal must exist where such indications are found. The locators of the property have taken up 320 acres of land under the United States law, governing such cases, and intend to at once commence the sinking of a shaft, following the vein to sufficient depth to demonstrate the presence or absence of a coal body.

PLACER.

OLIVER'S CRUSHER.—*Herald*, Nov. 30: Since he discovered several years ago his fissure of quartz, talc and porphyry below Volcano canyon, on the Middle Fork of the American river, Mr. Allen Oliver has not been idle. The character of the rock being soft, and where it was to be milled being then almost inaccessible to heavy machinery, the process of stamp crushing was deemed too slow and expensive. Under these unfavorable conditions the discoverer set himself to work to devise a new process of crushing, which would be cheap, simple of construction, and expeditious in performing its allotted work. After three years of close study and hard work he has succeeded in inventing and perfecting a new mode of crushing, which is admirably adapted for the purpose intended. It is now at the station awaiting shipment to its destination, and can be seen and inspected by those who wish. The crushing force is horizontal and works on the principle of a rocker. Ordinary crushing capacity, 100 tons in 24 hours, with adjustable weights and levers to increase or decrease reduction, according to power; when we see it at work, may have more to say about it. [This crusher consists of a mortar shaped like the segment of a circle in which a pestle, pivoted above at the center, works backward and forward around the circumference. —EDS.]

SAN BERNARDINO.

COLTON MARBLE.—*Index*, Nov. 29: There is no longer any room for doubt that our neighboring town of Colton has in her immediate vicinity a mine of wealth piled up in the rugged form of Slover mountain. This mountain is a huge mass of stone, which, upon thorough examination by men well versed in the business, proves to be fine marble, of a quality not inferior, if not superior, to the best Italian marble. Recently, however, a new interest has been awakened in this valuable enterprise, and steps have been taken which promise an early development of this industry which has so long been suffered to lie unimproved. A company has recently been organized for the purpose of working this quarry, and arrangements are being made for commencing operations with a full force and improved machinery early in the spring. The Slover mountain marble can be laid down in San Francisco at a cost not exceeding that of the Italian marble, outside of the question of a 20% duty on the latter.

SIERRA.

PLIOCENE.—Downieville *Messenger*, Nov. 30: The Pliocene shaft is down 215 feet, and probably within about six feet of pipe clay. The rock for the last eight or ten feet has been harder, necessitating blasting. The water has decreased to 28 inches. About one foot per day is being made.

EXTENSION.—The B. M. E. Co.'s tunnel is now fairly begun. Most of the outside work is completed and by the time summer comes again the contract of 1,000 feet will probably be about finished. The company has just finished housing in the B. M. Co.'s flume so that it will not be injured by dirt from the tunnel.

ARIZONA.

GLOBE DISTRICT.—*Silver Belt*, Nov. 21: Next week will see 18 stamps pounding away on ore in this district. The Tidwell 3-stamp mill at McMillen will commence operations next Monday, under the management of Fred Medler. The Metamora shaft is nearly 120 feet deep. The vein matter is changing for the better. At this depth the ledge is well-defined and 7 feet wide. The richest ore from the Hannibal mine, is taken from the 100 level. The Lee M. Co. intend to go to work at once to sink a 1000-foot shaft on the mine of that name. Hoisting machinery of the most approved pattern has been ordered. The Miami mill may again be set in motion. The Telfair shaft is 35 feet deep. Another "stringer" of promising quartz has made its appearance near the bottom, its inclination being to the northwest. It is expected that the Haskin mill will soon begin running steadily on Isabella ore. Four teams are now engaged in hauling ore from the mines. The Silver Queen drift has been run into the hill northwesterly of the shaft for 40 feet. Several veins of ore-bearing rock have been cut, one of them three feet thick, assaying satisfactorily. When the drift has been extended some distance further sinking in the shaft will be resumed. The Silver Era mine, the property of Milner & Watson, looks well in both the shaft and the tunnel. The shaft is down 50 feet and the tunnel in 100 feet. The tunnel will be run 60 feet farther, so as to connect with the shaft at a depth of 75 feet. The tunnel is running along the lode, showing good metal the entire distance. The ledge is about three feet between walls, with vein matter the entire width. There are about 125 tons of ore on the dump, which is being assorted so that it will average between $600 and $700 per ton. Recent developments on the Stonewall Jackson lode add largely to the value of that immense property. The main shaft reached the footwall at the depth of 172 feet after having passed through six feet of fine ore. A drift carried 13 feet along the vein at this depth was the whole distance in ore that

Continued on page 364.

Mines and Works of Almaden.—No. 12.

[Translated for the PRESS from "ANNALES DES MINES."]

Mechanical Preparation.

In the actual state of things, all the ore which comes from the mine is charged upon carts drawn hy oxen, and thus conducted to the works of distillatiou, where it is subjected to a rough classification, only in the neighborhood of the furnace for which it is designed. It is divided according to its appearauce into three classes: Superior ore, medium ore, aud poor ore.

The superior ore, called ordinarily metal, takes the name of ciunabar, when it is very rich, aud when of a grain fine enough to be worked; it is then employed for the manufac- of small objects of oruament, as inkstands, paper weights, etc.; from a metallurgical poiut of view it is convenient to make a distiuction for this variety, otherwise quite rare. The *metal* contains, ordinarily, on an average 25% of mercury; it forms nearly 16.14% of the entire mass of the ore which comes in lumps.

The medium ore, called *china* when it is in pieces of 100 to 200 cubic centimeters, aud *requiebro* when it forms larger masses. The conteuts of the china is also very variable. Thcy made of it iu 1869, at the time of the assays of M. Monasterio, of which we shall speak by and by, seven distinct classes, according to its decreasing richuess. The division was made by simple observation, according to the appearance of the ore and its color, varying from red to grayish violet. The final assays have, neverthcless, showu the perfect reliability of this classification; there is ouly a certain experience necessary, which the workmen promptly acquire.

The following are the proportions of the ores of this class wbich are obtaiued:

	Proportion in 100 parts of the Ore of all classes.	Contents in Mercury.
China, 1st c'ass	2.35	25.00
" 2d "	8.03	17.06
" 3d "	7.32	14.66
" 4th "	2.77	8.88
" 5th "	3.93	4.99
" 6th "	4.74	2.46
" 7th "	29.41	1.05

The first class of *china* has then the same contents as the superior ore. If we uuite them we have 18.49% of the eutire ore, which contains 25% of mercury. The division of the *china* in 7 classes, necessary for taking of assays, according to the experience of M. Monasterio, is no longer done to-day. All the classes of *china*, from the second to the seventh, are then reunited and foim about 57.30% of the lump ore, which is designated hy the name *medium ore;* and of wbich the conteuts in mercury is 6.08%.

The poor orc, designated under the name of *solera pobre*, or *solera negra*, is formed of great blocks of black quartzite, presenting only spots of cinnabar; also of tolerably large pieces of schiste, slightly impregnated. It constitutes about 24.21% of the lump ore; its average contents is 0.80% of mercury.

When all the ore which comes from the mine has heen sorted, according to size, into *metal*, *china* or *solera pobre*, there remains the dust and fragments, mixed with a great quantity of stcrile schiste, and debris of differeut natures, such as fragments of brick and of wood. To this residue is given the name of *bacisco;* a screen retains the pieces whose volume passes 40 cubic centimeters; the remaining matter is moistened, and roughly agglomerated in such a way as to form bricks shaped like a truncated pyramid, to which have been improperly given the name of balls of *bacisco*.

The *bacisco*, that is to say, the short, the debris, forms about one-fourth of the coarse ore. As to its coutents, one may say that it has something like an average richness, as it is formed from the debris of pieces of all grades of richness. There is obtaiued from the fragments screened from the fine stuff a little less than a fourth of the latter. In recapitulating, the different classes of ore divide themselves in somewbat the following manner:

Ore.	Contents.	Proportion of the total of Ore.
Metal	25.00%	14.792%
China	6.08%	45.840%
Solera pobre	0.80%	19.368%
Bacisco	"	20.000%

This gives for the whole of the orc a mean contents of 8.30%.

This figure is far from being at all absolute—we do not pretend to give it as an average; they have never made assaya during a period of any length. Also, another assay has given for the contents and proportions of the different classes the followiug figures:

Ore.	Contents.	Proportion.
Metal	21.50%	16.60%
China	7.40%	56.66%
Solera	0.32%	21.50%
Bacisco	7.00%	6.24%

Average contents, 8.15%.

As also they treat iu the works all the ore wbich is taken from the mines, one can easily understand without more explanations that the average contents of the ore should necessarily vary; one may reckon that it contains between 7.50% and 9%.

Important improvements will soon he applied to the classification of the ore at Almaden, which is to-day much too primitive. They have already conuected the mine with the works by an inclined road upon which wagons should descend from above hy weight only; only they have given to the road au insufficient inclination. It is the inteution to supplement this hy establishing upon the inclined plane a system of mechaniral traction hy means of a steam engine placed at its lower extremity. Two small wagons will then he placed upon a track, and will in a few moments traverse the 500 meters. which is accomplished at present hy the heavy and expensive ox teams.

At the foot of the road, the cars will arrive at the upper part of the establishmeut for classification; they will he emptied upon a system of fire grates or screens, placed the one above the other, of which the first two are fixed and the three lower ones are movable, in such a manner as to receive oscillations which will facilitate the fall of the ore.

The largest pieces which remain upon tbe first two grates will he passed to an American crusher, aud then he returned to the screens. All the apparatus will be put in motion by a 15-horse power Corliss engine.

There will he obtained in this manner five classes of ore, according to size. Each of these classes will fall upon a revolving table, or be classed by hand according to its richness. This classification, according to color, can give, with experienced and careful workmen, excellent results; also by reducing to powder ore of a richness of from 10% to 1%, a scale of colors may he obtained, running from bright red to gray or violet, and from this scale may he determined, nearly to a half of a per cent., the contents of a heap of ore, provided, of course, that one can conveniently determiue their assay value.

Excellent results are justly expected from tbis establishment for classification, which will hegin operation when the incliue road is completed. But we must be contented for the present with a sorting somewhat coarser, or with that which we have previously described. Or, in other words, in four description of the treatment of the ore in the works for distillation, we shall consider the ore as separated into metal, china, solera and bacisco.

THIRD PART.

Metallurgy of Mercury at Almaden.

The metallurgical processes actually in use at Almaden were introduced there, tbe one in 1648, the other in 1806. They have been in use until the last few years, without any knowledge of their exact value; it is admitted in Spain and out of Spain, that they are extremcly defective. The loss of mercury was generally estimated at 50% of the whole; a memoir printed iu 1860, by royal authority, estimated it even at 53.40% and 49.82% for the two methods of treatment.

The researches made at Idria with improved apparatus indicated a loss there varying from 27% to 40%. It is not then astonishing that they believed in a still greater loss at Almadcn, with a very simple apparatus for distillation aud an ancient mcthod of treatment, in which they did not eveu take account of the contents of the ore; neglecting, besides, the difference between the nature of the ores of Almadeu and those of Idria, they had concluded to accept, with a sort of passive resignation, the idea of a loss of half or at least a third of the mercury contained in the ore.

They were happily far from the truth. Upon the proposal of a French engineer, M. Pellet, for the introduction of a new furnace, it was decided to make serious and exact assays during the year 1869; these assays were repeated in 1872, and proved, with entire certainty, that the losses attributed to the old processes were absolutely imaginery. It was ascertained that the real loss of mercury, till then estimated by guess, because they had not until then dcter-mined the average contents of the ore, was not greater than six per cent. of the mercury which it contained; in short, that the metallurgy of mercury at Almaden had arrived solely as a result of long practice, and on account of the nature of the ore, at such a condition as could be rightly regarded as very satisfactory.

The publication of these assays, which have led to this remarkable result, would add some interest to the present; it is, however, far from heing complete. The experiments of 1869 are, in effect, the only ones whose details and results have heen made public in a report addressed to the Minister of Finance by M. Jose de Monasterio, aud printed in 1870.

The assays of 1872, under the direction of MM. Luis de la Escosura and Federico Botilla, the former, inspector-general, the second, engineer-in-chief of the mines, have not yet heen made public, and I have not heen able to have access except to their essential results. All the documents which relate to it are in the hands of D. Luis de la Escosura, and they should form an important part of the work which this engineer proposes to publish, upon the metallurgy of mercury, a subject proposed hy the Council of the School of Mines for a competitiou open to all engineers, Spanish or foreign, and to which ia attached a considerable prize.*

Regretting strongly this circumstance, which has deprived us of heiug able to present a series of documents which would be of great interest, we will contcnt ourselves now with the announcement of the most characteristic results.

These results, in any case, deservedly call the attention to the works of Almaden and the methods there employed. We divide this third part into three chapters:

I. Description of the works of Almaden. Of what tbey consist.

II. Treatment of ore in the Bustamente furnace and in the Idria furnace.

III. Losses of mercury; attempts to reduce them.

*At the last moment we learn that the prize has been awarded to M. Luis de la Escosura, July 14th, 1877. We believe that the work has not yet been published.

Relative Cost of Phosphorus and Manganese in Alloys of Copper.

[By Dr. C. ROESSLER, Darmstadt. Translated for the PRESS from BERG-UND HUELLENMAENNISCHE ZEITUNG.

The heneficial effect with regard to the density, consistency, toughness, etc., of copper alloys in general, produced by the addition to them of phosphorous, depends, as is known, chiefly upon the removal of the oxide absorhed during the meeting. This oxide, consisting principally of Cu^2O (red oxide of copper), combines with the phosphorous in such a manner that the metallic copper and phosphate of copper result, appearing upon the surface of the molten metal in the form of an easily fusible slag.

The phosphate of copper contains one atom of Cu^2O (red oxide of copper), and one atom of phosphoric acid. By a simple calculation, it is seen, then, that 0.686 parts of phosphorous are necessary to effect the separation of one part of oxygen.

Phosphorous is introduced into the melted metal in the form of phosphor-copper, a brand of which, containing from 15% to 16% of phosphorus is produced in large quantities by the firm of W. G. Otto, in Darmstadt, and placed upon the market at seven marks per kilogramme, (about 75 cents per pound). This phosphor-copper is of a bright steel gray color, shows upon fracture, a coarse crystalline structure, and is so brittle that it cau he easily rnhbed in the mortar to the finest powder.

Another material, serving a like purpose, is an alloy of maugancse and copper, known by the name of cupromangan. According to E. W. L. Biermaun, in Hanover, this alloy occurs now in the market with 25% of manganese, and at a price of from six to five marks per kilogramme, (from 60 to 50 cents a pound).

The effect of the manganese is similar to that of the phosphorous, though according to Biermann it is more complete and energetic on account of the fact that at the melting point of copper manganese is unaffected, while phosphorous is, on the contrary, in great part, volatilized. Although it must he acknowledged that, on the introductiou of free phosphorous into the melted metal, a not inconsiderahle part of the former volatilizes or hurns way, and so escapes its destination, yet, on the other hand, it is not easy to uuderstand how this can influence the intensity of its effect. But it can be determined by experiment, that in the application of phosphor-copper, or of phosphor-tin, which may he used for the same purpose, a similar loss proves scarcely worthy of notice. It may perhaps he accepted with certainty that the oxide which separates from aud rises to the top of the melted metal after the iutroduction of mangan-copper, is the red oxide of manganese-hausmannite (Mn^3O^4). In this case 2.585 parts of manganese will be required for the separatiou of one part of oxygen. It will be remembered that the same amount of oxygen demands only 0.646 parts of phosphorous, so it is clear that the reduciug power of phosphorous is four times that of manganese. So the expenditure necessary for obtaining a given effect, is—upon the hasis of the above-mentioned prices—nearly twice as great when mangan-copper is used as it is when phosphor-copper is employed.

FRENCH IMITATION BRONZE.—Foreign journals contain accounts of a French inventiou for manufacturing articles in hollow hardened india-ruhher, coppered hy electro metallurgy, so as to imitate bronze, and capable of being gilded, nickeled, silvered, bronzed, or otherwise decorated. They commence hy molding the article of supple india-rubber to the desired form by ordinary means, and after that they harden it completely hy any of the processes usually employed for the purpose. The article so molded and hardened is tben fettled, polished, and even chiseled, if ita natnre allows it; it is then scraped, if needed, so as to give it an even surface, and then coated with black lead or other process, as is ordinarily done in electro-metallurgy, so as to render it a conductor, and consequently able to receive the galvanic deposit. The article is placed in the bath where it is galvanized, and a deposit, of copper or hrass more or less thick is obtained on its whole surface, or even in proceeding by fractions of its surface some parts may be obtained with a red deposit and some with a yellow deposit, according to the nature of the article. It can then be hronzed by the usual processes, and a perfect imitation of the articles in bronze will be thus obtained. It is also ornamented or decorated by any of the ordinary processes of nickling, silvering, gilding, hronzing, and the like. The articles so made have quite the appearance of hronze nickeled, gilded, or ailvered, and they have also the advantage of heing very light and of a very low price. They are strong, and sufficiently elastic to support repeated shocks without being bruised or deuted.

SUIT has been brought in the Fifteenth District Court by the Bank of California against the El Dorado Deep Water Gravel M. Co. to recover $165,046.93 on two promissory notes for $50,000 each, with interest, and a previous iudebteduess of $64,209.36.

R. M. WEEKS iuforms the *Idaho World* that the Black Jack is the richest mine in Owyhee.

ON NOV. 21st an explosiou of gas took place in a Sullivan, Pa., coal mine, killing 13 men.

THE ENGINEER.

The Shape of Tramway Rails.

We read that quite a large hook has been published in England on "tramways; their construction and working," hy D. Kinnear Clark, an English engineer. As of special interest to many of our readers we quote a paragraph concerning the shape of the tramway rail: Iu many of the examples of rails, it may be noted that the sides of the groove are formed with a greater degree of splay inwards than outward, from the wheel than under the wheel. The motive for the greater splay has been, in some instances, to economize metal; but the economy thus affected is simply insignificant. By other designers a low slope has heen adopted, with a view to the more facile extrusion of dried mud and other detritus from the groove by the wedging action of the passing wheel flanges, than is likely to take place when the sides are vertical. There is incurred a much greater resistance to traction, when the groove is occupied by hard deposit than when it is clear; since it is inevitable that the mud and small stones or gravel, which find a lodgment in the groove, mnst be either expelled or trodden upon by the flanges of the wheels. It is a matter of common observation that the resistance is much increased uuder such conditions, and the principal reason is not far to seek: the wheels run at the same time upon two circumferencea of different radii—those of the tread and the flange. Now, a square groove, by its form, resists the expulsion of detritus; and it may happen, and does frequently happen, that the resistance of the car over choked-up grooves is so much increased, that it amounts to as much as that of wheels running on common roads. In the section of the American grooved rails, and particularly Mr. Light's section, it is obvious that the advantage of a widely sloping berme was appreciated by the designera of those sections. The motive of the extremely contracted grooves which have been practiced—some of them not exceeding an inch in width—and which, when clear, provided little more than clearance for wheel flanges, was the fear of the entanglement of the narrow-tyred wheels of cabs and carriages in the grooves. But it is known that the derangement of common road vehicles is almost wholly cansed by the girding of their wheels against the outer sides of the rails, when the surface of the pavement is permitted to sink below the proper level—a oause of disorder with which the groove is not concerned. It is further to be uoted that, by the occasional grounding of the wheel flanges over the bottom of the groove, by the intervention of mud, dust or stones, the metal at that, the weakest point, is heavily stressed. The flanges may also grouud directly on the bottom, where the table of the rail is reduced by wear, when a similar effect may he produced. It is found, in fact, that old thin rails subject to such action are spread laterally, and are occasionally split through the hottom of the groove. The form of the groove, then, is a point of importance, and the best form is that in which the side next the rolling surface is vertical, and the whole of the slope is given to the inner side.

RAISING AN IRON BRIDGE.—A Pennsylvania paper gives an account of raising an iron bridge of the Pennsylvania railroad which spans the Conemaugh at Johnstown. Hydraulic jacks of immense lifting power were used, and slowly but surely the superstructure was raised, span hy span, just 13 inches. The spans were not disconnected at the piers, and the trains which crossed during the forenoon passed along in safety, although the western half of the bridge was so much lower than the eastern section, which had heen taken up to its proper hight. The task was a delicate as well as a difficult one, hut everything moved along like clockwork, and the ponderous weight was at last adjusted to the proper level. The object in making this change of elevation is for the purpose of removing the stringers upon which the raila now rest, and replacing the track on the crossties. It is conteuded hy civil engineers of the road that the bridge is less liable to get out of repair iu the latter case, as there is less danger of lateral motion and of awagging. When the string timbers are taken out, new crose-aleepers of oak will be laid, and on these the rails will he securely spiked. To overcome the difference of the thickness of the stringers, it was necessary to either change the grade approaching the bridge at the east and west ends, or raise the bridge to correspond with the present grade. It was thought best to pursue the latter course, and the work has been satisfactorily carried out. All the bridgea on the division will be changed hy the removal of string timhers from under the rails, the snme as has boen done with the Johnstown hridge.

AN ENGINEERING PLUM.—A Washington diapatch states that Colonel W. Milnor Roberts, late engineer of the Northern Pacific railroad, has heen appointed hy Dom Pedro, Emperor of Brazil, the superintending engineer of efforts about to be made for the improvement of the water-ways of that empire, and that he is to receive a salary of $20,000 per annum for three years, or a compensation at the rate of $25 000 per annum if his services should be required for a less term than three yeara.

Note on Narrow-Gauge Construction.

At the recent Narrow-Gauge Convention, which we mentioned in a late issue, a report of a committee on construction was adopted, from which we quote as follows: The same requirements necessary in the location are necessary in the construction of narrow or broad gauge roads, that is, adaptation to the future traffic and work of the road. If heavy trains are to be run over the road, rail, ties and ballast must be in proportion. If trains are to run at a fast rate, and more stability is required, cross ties must be longer and ballast wider and deeper. If for passenger travel it requires a better finished and wider road bed than for a purely freight traffic, because passengers form their estimate of the safety of a road from the general appearance of it. It is not surprising to your committee that there should be so many of the traveling public averse to riding on narrow-gauge roads when they call to mind these characteristics of some of the roads: No ballast, ties laid down in the mud, joints in all shapes, embankments so narrow that the ties project; cuts not ditched, and almost rubbing the cars; tracks not aligned, etc., the consequence being that the train runs at about eight to ten miles per hour, swinging and swaying like a ship at sea. This is not calculated to soothe the timid passenger, and the worst of it is that, instead of the engineer or contractor getting the blame, the "system" obtains it all.

The location of a narrow-gauge road should be a matter of as much care and require the same engineering ability as the location of a broad-gauge road. Indeed, the location of the narrow-gauge, if anything, requires the most care and attention, as with the change in gauge new problems are introduced, resistance due to curvatures are changed, proportions of paying to dead weight are altered, requiring or admitting of different grades and curves from those in use on broad-gauge roads suited to the same traffic.

THE ST. GOTHARD TUNNEL.—Two years from this time, says the *Iron Age*, the great St Gothard tunnel through the Alps, uniting Switzerland and Italy, must either be completed or the contractor, Mr. Favre, will have a heavy penalty to pay. Under the terms he must pay $1,000 for every day later than October 1st, 1880, on which it remains unfinished. If six months afterward it is still uncompleted he loses $2,000 per day, and if 12 months go past without it being turned over, he forfeits everything, including his bond of $1,600,000. The undertaking is a gigantic one, and some engineers doubt if Favre is not badly beaten at last. The main tunnel is over 29,000 feet long, and the work on it is only prosecuted under tremendous difficulties. All the power used in drilling is furnished by compressed air, which is prepared outside by powerful pumps and stored up in vast tanks. The locomotives which draw from the tunnel the blasted rocks are also run by compressed air, as the use of steam in such a hole would be impossible. As it is, the men at work often suffer excessively from the foul vapors, partly natural and partly produced by the explosions of dynamite, which are so constant that an observer compares them to cannon firing in a battle. These gases would collect and be fatal, except that the exhaust air from the drills is employed to drive them toward the mouth of the excavation. Favre is laboring with splendid energy, and the working force is as large as can be put on. It is vastly to his interest to hurry, for he will receive a bonus of $1,000 for each day previous to October 1st, 1880, on which he has his task finished. The tunnel will cost about $55,000,000, although when it was first undertaken the estimates were some twenty millions less than the above figures.

A GULF PROJECT.—Major Charles Mahon, of the United States Engineers, has been interested with the active management of the survey of the long projected inland water-way along the Gulf coast, from New Orleans to Florida. It is believed that a ship canal across Florida, in connection with such a route, would permit the delivery of western grain on the Atlantic coast without breaking bulk.

NORTHERN PACIFIC.—The heavy traffic on the 140 miles of the Northern Pacific railroad, between Brainerd and Fargo, is already beginning to tell on the iron rails laid down in 1872, and the directors have decided to commence replacing them with steel. An instalment of 500 tons is now being manufactured at Chicago. The pattern adopted weighs 56 pounds per yard, is four and a half inches high, and four inches base.

ECONOMY IN WEALTH.—The French work people are saving, as everyone knows. Guizot gives the following as the cause of the prosperity of the nation: "Habits of prudence have penetrated all classes. There are very few families, even among the lower classes, that spend all their income. A single manufacturer in my town of Sisieux puts by, and has long been doing so, 600,000 francs a year. The wealth of France has at least doubled during 50 years; and, as the population has augmented during that time by only one-teuth, it is obvious that the comfort of the people has increased enormously.

CAPT. WILLIAM IRELAN, of the Ruby Gravel mine, has commenced a tunnel which he expects to run in 1,000 feet by next May.

USEFUL INFORMATION.

Cement by Continuous Burning.

Our cement makers may be interested in an account which we read of a combined arrangement of kilns for burning cement which has lately been devised by an Englishman. His claim is that by keeping the kiln continuously working and utilizing its waste heat he is enabled to economize fuel and labor. For this purpose he arranges two or more flue chambers symmetrically in relation to the kiln in close proximity to it, and forming passages for the hot gases and products of combustion from the kiln to a common chimney, or it may be to separate chimneys. The lower part of each of these chimneys is floored over with removable plates, which are preferable of iron, but which may be tile or other like slabs, the floor forming in each case the cover of the flue through which the hot gases pass. He also roofs over the chamber, and the hot gases after passing through the lower flue may be made to return along the chamber between the floor and the roof, this being a convenient arrangement when it is desired to employ a central chimney or shaft for all the flues. Each of the said flues and flue chambers is provided with suitable valves or dampers, so that the hot gases may be partially or wholly shut off from one and directed into another of them. The kiln being in action its hot gaseous products are directed into one of the flues, the floor over which has been by pumping or otherwise charged with slurry, which thus becomes dried. When this charge is dried the hot products of the kiln are shut off from this flue chamber, and directed into another ready charged with slurry, and while the latter is being dried the dried slurry of the chamber formerly mentioned is stripped and taken to the upper part of the kiln to be burnt; thus in succession the several chambers are charged with slurry, and have their contents dried by the waste heat, then discharged into the kilu which is kept continuously working, the cement burned in it being removed from time to time in quantities taken from the bottom.

PREVENTING RADIATION OF HEAT.—A French journal says that a firm of manufacturers at Boulogne, adopt the following plan to prevent the loss of heat in the steam-pipes, generator domes, machine cylinders, etc., of their workshops. They simply cover the surfaces with sawdust mixed with flour paste. If the paste is very liquid, if the mixture is taken in the form of a stiff dough, and if the surfaces have been well cleaned from grease, the adhesion is perfect and free from cracks. They cover their apparatus with five successive layers of five millimeters each, or a total thickness of 25 millimeters (9·84 inches), which gives them a much better result than 50 millimeters of any of the other materials which are usually employed. The cost is almost nothing; with 50 kilogrammes (110·23 lbs.) of farina at an expense of about 20 fr. ($3 00), they obtain the same result as with 1,000 fr. ($200.00), expended for other materials. The paste is composed of farina, without the addition of starch. The mixture can be applied by a trowel with the greatest facility, either internally or externally. If there is much exposure, two or three coatings of coal-tar render it impermeable to water. If the tubes are of copper, two or three light coats of a hot liquid solution of clay should be first applied, in order to increase the adhesion of the sawdust.

CORROSION IN SOIL PIPES.—The *Canadian Mechanics Magazine* says: Cases of corrosion in lead soil pipes are common in the experience of every plumber. Sections of a drain will be found fairly honeycombed with holes, varying from the size of a pin-head to a quarter of a dollar. They are almost invariably located on the upper side of the pipe, and hence are difficult to detect, as there is no fluid leakage from them. Their origin has been laid to the overuse of disinfectants, particularly carbolic acid, but chemical analysis shows that sewer gas alone is sufficient to cause such corrosion in unventilated lead pipe. Proper ventilation will undoubtedly guard against the evil by carrying off the gas before it can do harm.

TRAIN STOPPAGES IN TEXAS.—The *Railway Age* says: A Texas law requires the conductor of every passenger train "to stop his train at each and every wayside station not less than five minutes," and the court of appeals has just affirmed the constitutionality of the law. Texas legislators evidently are not in favor of fast express trains. It is difficult to see, however, how the State will be benefited by compelling all trains to stand steaming for five minutes at every lonely wood pile and water tank designated as a station, and it certainly will not promote good temper in the impatient traveler.

PAPER FROM WOOD.—The *Iron Age* notes that Mr. Albert Ungerer, of Pforzheim, Germany, has a new method for making paper stock from wood by chemical means. His method consists of putting the ground wood into a vessel in which it is exposed to a gradually increasing steam pressure and correspondingly increasing temperature, and the action of a solution of heated caustic soda, which, though weak only, completely pulps the wood and bleaches it. For pine he uses a 5% to 6% solution and a pressure of six atmospheres as a maximum.

LOSS OF IRON BY RUSTING.—Interesting observations have been made recently on the Cologne Minden road, Prussia, on the rusting of iron rails. A pile of rails of odd lengths were laid on sleepers over a bed of gravel early in 1870, and remained undisturbed until the fall of 1877, there being no use for them. It was then found that they were covered with a layer of rust 12 100 inch thick, which had to be removed by striking the rail with a hammer. The cleaned rail weighed only 398 2-10 pounds, while its original weight was 419 1-10 pounds, showing that five per cent. of the rail had been destroyed by rust, which covered the rail quite uniformly. This confirms the observation often made, that rails stacked away are much more liable to rust than those laid down in a track.

LINING FOR BOILERS.—Mr. Franz Buettgenback gives the following recipe for the preparation of a coating for the inner surface of boilers to prevent the formation of scale. We quote from the *Manufacturer and Builder:* Gradually dissolve 5 pounds of a mixture of 25 parts of colophonium, 2½ parts of graphite, and 2½ parts of lampblack, in 40 pounds of boiling gas tar, adding about one pound of tallow. The solution is diluted with about 50% of the petroleum and applied in a warm state. It has a pungent smell and should be put on rapidly, the precaution of using closed lanterns being necessary. Its effect is to cause the scale to come off in large flakes when picked.

GOOD HEALTH.

Treatment for Intermittent Fever.

Perhaps some of our readers in malarial districts may profit by the following treatment described in the *Sanitarian* by Dr. J. R. Black. He says an orthodox doctor is very apt to treat a chronic intermittent thus: A mercurial cathartic to clean out the abdominal viscera, then quinine in large doses, and if this does not succeed, then in larger and yet larger, to destroy or neutralize the hypothetical malaria in the system. Cases have I seen by the score who had received such treatment for weeks and months unavailingly, who had taken quinine and iron until they were, as they expressed it, almost blind and deaf, and yet the disease persisted, with very brief cessations. As a hygienic therapentist, and as one who has had a large experience with chronic intermittents, I unhesitatingly affirm of this latitude that scarcely a case of intermittent fever need ever become chronic, and that even when so, proper management will hold the symptoms under control until the tendency is wholly overcome. The outline of the method is as follows: Inquire carefully into the history of the case, and whether acclimated or not, directing special attention to each of the abdominal organs, and, if much deranged, administer the best active corrective at once. Then anticipate the next paroxysm with 12 grains of quinine, divided into three doses, beginning its administration 18 hours before the time of the expected chill. Repeat this amount of quinine every seventh day for four consecutive weeks, but at no other time, except when the patient's indiscretion brings on an irregular paroxysm. During the intervals administer daily gentle remedies appropriate to correct the functions that show the most derangement. These remedies should be such as will keep the organs mainly at fault up as near as possible to the standard of healthy action, and no more, never allowing the secretions or excretions of any organ to sink far below the healthy standard, nor causing them to rise much above it. The diet should be strictly hygienic, and so also of the exercise, not permitting the vital energy to be spent in toil that should be devoted to recuperation. To guard against external variations of temperature, especially in the unacclimated, flannel should be worn next the skin. The grand condition of success lies in the method and means for keeping all the abdominal organs during every day, and for several weeks, up to the standard of healthy action, and thus triumphantly raise the health above the ague point. Quinine is invaluable for the arrest of periodicity, but nothing more. By these means my success in treatment has been immediate and invariable, even in those cases in whom improper management had led to serious derangement of the liver.

The Prime of Life.

Between the ages of 45 to 60 a man who has properly regulated himself may be considered in the prime of life. His matured strength of constitution renders him almost impervious to an attack of disease, and experience has given soundness to his judgment. His mind is resolute, firm and equal; all his functions are in the highest order; he assumes mastery over his business; builds up a competence on the foundation he has laid in early manhood, and passes through a period of life attended by many gratifications. Having gone over a year or two over 60 he arrives at a standstill. But athwart this is the viaduct called the turn of life, which, if crossed in safety, leads to the valley of "old age," round which the river winds, and then beyond, without boat or causeway, to effect his passage. The bridge is, however, constructed of fragile material, and it depends how it is trodden whether it bend or break. Gout and apoplexy are also in the vicinity to waylay the traveler, and thrust him from the pass; but let him gird up his loins and provide himself with a fitter staff, and he may trudge on in safety and with perfect composure. To quit metaphor, "the turn of life" is a turn either into a prolonged walk, or into the grave. The system and powers having reached the utmost expansion, now begin either to close like a flower at sunset or break down at once. One injudicious stimulant, a single fatal excitement, may force it beyond its strength, whilst a careful supply of props and the withdrawal of all that tends to force a plant will sustain it in beauty and vigor until night has entirely set in.

DANGER OF FLIES IN THE EAR.—Dr. A. J. Pedlor, of Truckee, Cal., writes to the *Pacific Medical and Surgical Reporter* a description of a case which fortunately is of rare occurrence. He says: On the 11th of June, I was consulted by John R., a stock drover, who complained of excessive pain and violent noise in his left ear. He said, "A fly entered my ear five days ago, but I got it out in *two minutes.*" Ten hours after removing the insect, pain set in and rapidly increased. The old-time remedies of filling the ear with warm water, oil, etc., failed to remove anything, and gave no relief. Inserting a speculum, and illuminating the ear with a Troeltsch mirror, the cause of his suffering was plainly visible. A number of moving worms, or maggots, were seen imbedded in the canel, close to the drum. Careful use of the syringe for ons hour resulted in removing one maggot, about three lines in length. The ear was then filled with carbolized almond oil, containing morphia sulph. A cotten plug being inserted, the patient went to bed. During the night, four more maggots were dislodged, and the following morning I removed the sixth and last one by aid of the syringe. This last one was fully six lines in length. Three came away dead—the effect of the carbolized oil. These wriggling usurpers were evidently hatched from eggs deposited by the "fly," during its brief sojourn in the ear. The drum was intact, though intensely hyperemic. Daily use of astringent drops, and protection from the air, speedily restored the parts to health.

HYGIENIC BISCUITS.—An exchange gives a recipe for making a biscuit which shall accord with advanced hygienic ideas concerning the composition of flour, etc. On a baking board put two pounds of oat meal and two pounds whole wheaten flour, ten ounces of good salt butter, one-half ounce carbonate of soda, one-fourth ounce tartaric acid, and four ounces of sugar. All should be weighed carefully; the butter should be the best that can be procured, and the soda should never be used without the acid. Mix all together. When the butter has been well rubbed into the flour, add buttermilk, mixing with the hand till of a pasty consistency. Knead just as little as possible, to keep the dough light. Roll out; cut with biscuit-stamp to the required size, prick with marker, and fire in a moderately quick oven. In the absence of a stamp cut with a lid; and if no marker is at hand use a common fork. In rolling out the biscuits little or no fresh flour should be used; otherwise the brownish color of the biscuit will be lost. When firing in the oven, biscuit trays should be used. Any wireworker will make one. If these directions are followed, a most palatable, agreeable, and nutritious bread will be produced. If cooled in an open basket, and afterward stored away in tins, these biscuits keep sweet and short for a considerable period.

TREATMENT FOR A SPRAINED ANKLE.—Dr. Erasmus Wilson says: "We all know that there is nothing more painful than a sprain of an ankle; it will lay a man up longer than the fracture of a bone, and he may recover with a very weakened joint. Accompanying a country medical man in his rounds, he told me he had made a great discovery in the treat of sprains. 'The way I cure a sprain,' he said, 'is this: I take some lard; I warm it, and rub it into the sprain half or three quarters of an hour. I then take some cotton wool and wrap around the joint and put on a light bandage. The sprain, which would have taken many months to get well, gets well in a few days—certainly in a few weeks—without any ill effects or after consequences.'" Wilson adds: "I tried this treatment and found that it succeeded admirably."

DAILY BATHS.—As a rule people doing hard physical labor do not bathe as much as they should. The daily bath is to them quite as important as to any class. It requires but a few moments to take it, and when followed by friction it fortifies the skin against colds and rheumatism more than almost anything else can do. A rubber mat which turns up at the edges to catch the water, a couple of quarts of pure water, a common sheet large enough to envelop the whole body, and plenty of friction are all that is necessary. One room in every farm-house should be kept for a bath-room and supplied with heat and these simple conveniences. Proper bathing keeps the muscles supple and lastic.

OZONE IN DISEASE.—Dr. Reiter, in his essay on diphtheria, referring to the rapid rusting of iron in the open air as an indication of the presence of ozone, says: "When I have a patient recovering from a severe illness, on whom organic mischief seems to have been spared, but the recuperative force appears held down by humidity and a clouded sky, my first sight of the rails of our railways reddened with oxide fills me with a hopeful expectation of recovery where life has been trembling in the balance, that has rarely been disappointed."

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The Week.

Congress has met, and the President's message has been telegraphed throughout the country. The points in it that bear special interest to mining communities relate to the currency. The President advises Congress to leave unchanged the currency laws, and not even meddle with the coinage of silver; in short, "to try a year of rest in financial legislation." The policy of Sherman with regard to silver bullion has excited considerable opposition among sellers. But it seems to us that he has the good of the nation at heart, and that his method will be best. It is, to be sure, a fact that mines have been threatened with stoppage on account of the low price of their product—some have indeed been shut down. But at the present moment it is unfair to condemn a policy, simply because it creates a momentary pressure upon one class of the population. Congress may well turn attention to the defects of the mining law, and can do no harm by discussing again a subject which has been brought before it on a former occasion, viz.: the establishment of a fund for the encouragement of invention, in the direction of the better working of those refractory ores which all over the mining part of the country still continue to defy the metallurgist. We suggest the debate of such questions, as tending to good results, even though the plan of royalties may be unwise in principle.

We call special attention to the account of the Garibaldi Gold mine, of Calaveras county, found in the Mining Summary of this issue.

We return thanks for an invitation just received from Roman & Co., to their Christmas reception, from December 4th to January 1st.

The Electric Light—Comfort for the Gas Companies.

"Who is Mr. Edison?" asks the London *Mining World*, and the question is no doubt echoed by numberless gas-stock holders in both Europe and America. There is a temptation to answer the Europeans, that Mr. Edison is the product of a country whose political institutions are such that her statesmen will not put their hands to the shaft of any triumphal car, and who refuse to ride in any triumphal car drawn by fellow citizens. But however pleased Americans may be over the achievements of their country, there is found on either side the Atlantic not a gas-stockholder who may be consoled, no, not one. And some stronger passion than patriotism, must be called forth to comfort the disconsolate.

There is little satisfaction to be derived by any one from the croak, that the substitution of the electric light for gas, is as yet far from being an accomplished fact. The whole genius of the age in which we live, points to the overthrow of every obstacle to the accomplishment of the plans of Edison and his numerous co-inventors. The electric light is to succeed the gas light. That is a certainty. If the gas companies want comfort, they must find other uses for their product, or discard it altogether, and cast about for the least sacrifice in the way of disposing of their works and immense systems of pipes.

A contemporary has suggested that gas be used now for the purpose of cooking and heating, being delivered as at present from central sources through main and branch pipes. But we think there is a much cheaper and altogether better plan for achieving this very same end. Water is cheaper than coal, and water gas is cheaper than coal gas. Steam will heat and cook as well as gas. Why not use it; and with the same systems of pipes now owned by the gas companies?

This will involve the erection of boilers over the gas retorts, and the covering of these boilers and all the pipes with the most perfect non-conductors of heat. If such non-conductors can be obtained at a sufficiently low rate, the operation of applying them will cost comparatively little. Such cheap and perfect non-conductors being given, the plan to be carried out is as follows. But first, let it be said that the plan is by no means new and untried. It has been successfully tried in Lockport, New York, and is now to be introduced in Springfield Massachusetts.

This is the plan. Large central heaters are established at well-selected points. From them main-pipes lead out all over the city. From the main pipes, smaller, branch and supply pipes are led to wherever the heating or expansive power of the steam is to be used. In short, a complete gas-supply system—only boilers, pipes, everything, must be carefully covered with the non-conductor, to prevent condensation. If a man has a printing press, or a furnace blower, or a pump that he wants to run by steam, he need have no boiler and need build no fires. All that he is required to do is to connect his engine cylinder with the main steam-pipe in the street. The cylinder, too, must be covered with the non-conductor. When the engine is to be started, the steam is turned on. When the engine is to be stopped, the steam is turned off. Not a bit of heat has been wasted, and a meter on the supply-pipe tells the man just how much steam he has used and is to pay for. So in heating buildings. So in cooking. So wherever heat or steam-power is to be used. This is a very convenient arrangement, certainly. And gas companies, that, in the course of a few years, will be no longer great lights, may perhaps find it to their advantage to consider this plan for utilizing their pipes.

The chief object of interest in this connection is, of course, the non-conducting substance. And here is where San Francisco is perhaps to have her share of this gas-question pie. Two gentlemen of this city, Messrs. Hopper & Evans, claim to have invented a compound that combines the requisite cheapness, convenience and non-conducting property. The constituents we will not publish. But that the compound is certainly a non-conductor of the first rank, is proved by a test made in a boiler-making establishment in this city. In the center of a ball three and one-half inches in diameter, composed of this compound, was deposited a piece of ordinary paper. The ball was then placed immediately opposite the blast in a forge. Against the ball and at the side of the blast was rested a bar of wrought iron, four and one-half inches broad by one inch thick. About 100 pounds of best English coal was used in the forge, and a heat was obtained sufficient to melt the bar of iron. The ball was heated for 15 minutes after the iron was melted, and then allowed to cool. Although the surface of the ball had been red-hot, the paper on the inside was found *unscorched.*

Besides possessing this non-conducting property, the compound is said to be easily molded and may be made to take the appearance and polish of marble. Pipes can easily be coated with it. For cooking purposes it is proposed to make stoves of the same material.

However, this question does not hinge upon the success of any one compound. The system of distributing heat and steam power to great distances is already demonstrated to be entirely practicable. It is very cheap and very convenient. Should it not receive more attention than it has?

California Academy of Sciences.

An Exceptionally Interesting Meeting.

On the evening of December 2d the Academy held a regular meeting. Donations to the cabinet were received as follows: Gold quartz in greenstone, assaying $20 per ton, from 300 level of the Bunker Hill mine; slate from the same mine; gold quartz, $20 per ton, from 600 level; iron sulphurets, $50 per ton, from hanging wall in 700 level; black clay slate, in which the above specimens were found; three crystals of iron pyrites, washed out of decomposed slate and worked for gold—from the Hite mine, Fiddletown. All eight of these specimens are from Amador county. Six specimens of gold quartz, $50 per ton, from a true vein in greenstone, in the Niswander mine, near Murphy's, Calaveras county; nine specimens of ozocerite, fossil wax, from the Ozocerite mine, near the railroad, just east of the Nevada line, in Utah. All of these 23 specimens were donated to the Academy by R. H. Stretch.

Mr. J. G. Lemmon presented specimens of a new species of plants, collected by him in Cholame valley, Monterey county, in 1878. The species has been named *Hollisteria lanata*, in honor of Col. Hollister, of Santa Barbara. Other five species were presented.

Mr. John M. Stillman, of the University of California, then read an interesting and instructive paper on

The Relation of Organic to Inorganic Chemistry.

"Just 50 years ago this year marks one of the most important events in the whole history of chemistry, and one which has given the impetus to the most interesting and wonderful discoveries which the science of chemistry has to exhibit.

"As the general subject of organic chemistry is one which is, unfortunately, but little attended to in this country, and its achievements but little known even among the majority of chemists of this country, I have thought that it would be of interest to notice on this 50th anniversary of the first organic synthesis in the true sense of the term, a few of the more important of the *organic syntheses*, and show what immense progress has been made in this direction in the last 50 years.

"Allow me first however to glance briefly at the development of the ideas of organic chemistry. Among the ancient chemists the facts and phenomena of chemistry were so little known, and so utterly uncomprehended, that no attempt to draw a dividing line was made, and indeed none could be drawn, from the existing state of knowledge at the time, between inorganic and organic compounds. During the middle ages the representative chemists of the time were diverted from any pursuit of a systematic science of chemistry, by searching for the philosophers's stone, and the transmutation of the baser metals into gold.

"At a later period, the development of chemistry was entirely directed toward medicinal preparations, and all classification was made on this basis, without regard as to whether the drugs or simples were organic or inorganic.

"Gradually the study of chemistry assumed more and more a scientific aspect, and in 1675 a French chemist, Lomery, first made the division into animal, vegetable and mineral compounds; and this division remained in force until the beginning of the present century, and in 1827 Berzelius first made what seemed to be a thoroughly philosophical and scientific division into organic and inorganic. According to his definition, organic compounds were such as were produced only under the action of *vital force* in plants and animal organisms, or such products as could be obtained from these by chemical processes. This apparently classical definition was accepted universally as a true and scientific distinction between organic and inorganic compounds. In the very next year, however, in 1828, the year which I take this opportunity to commemorate, Prof. Wœhler, of Germany, one of the most celebrated of Germany's chemists, and who is yet living and active at an age of nearly 80 years, overthrew by a simple experiment the beautiful distinction drawn by Berzelius. The compound *Urea*, is essentially a product of organic life or vital-force. It is found only in the animal organism, and chiefly among mammalia, and occurs as an essential constituent of the urine of these animals. It is then, according to Berzelius' distinction, an organic compound.

"Prof. Wœhler found that by heating the cyanite of ammonium it could be changed into urea. Now the cyanite of ammonium was known to be obtained from inorganic constituents, and hence was itself inorganic according to Berzelius.

The wall between the organic and inorganic was thus breached by a bomb-shell in the shape of a solid fact, and from that day to this a rattling fire has been kept up which has reduced the wall to a mass of ruins."

The lecturer proposed to mention some of the more striking examples of the discoveries of organic chemistry, in which the products of nature have been produced by the hands of the chemist. He waived all reference to the immense number of compounds which organic chemistry has prepared which have not been discovered in animal or vegetable organisms, many of which, as the aniline dyes, have given rise to industries valued at millions of dollars. As preliminary he acknowledged that the artificial production of products of vital force is sometimes more expensive than the natural. But this is not always so; besides, in this connection it is to be remembered that there is always a prospect of new methods and new information, giving a cheaper product than nature can produce.

Commencing with the simpler compounds, the lecturer first took up formic acid. This was first obtained by distilling the bodies of ants in water. In the laboratory it can be obtained by the action of carbonic oxide and potassic hydrate, which give formic acid in combination with potassium, which compound, treated with dilute sulphuric acid, gives free formic acid, identical in all properties, physical and chemical, with the formic acid derived from the ants themselves—is in fact the same compound.

The lecturer went on to show how alcohol, acetic acid, glycerine, oil of mustard, alizarine (the coloring material of the madder root), oil of bitter almonds, oil of cinnamon, winter-green oil, camphor (according to Oppenheim), and finally, indigo blue—all of them *organic* compounds according to the definition of Berzelius, may be obtained in the laboratory by the manipulation of purely *inorganic* materials.

"The history of the syntheses in organic chemistry is by no means completed by these few selected examples, they have been selected as representing some of the most familiar and best known of such substances which are *commonly* found only formed by the vital functions of animal and vegetable organisms."

"It will be seen, however, what an immense stride has been made in the progress of chemical synthesis, since the time when Wœhler 50 years ago first broke ground for this new road for chemical activity."

"From this beginning, for as such it can only be considered, it may also be seen what an immense field of activity is open for the future to develop, and what an interesting field is left open for discovery and study in the domain of organic chemistry. It is to be regretted that more opportunities are not furnished in our own country for the study of this branch of chemistry, which in the not distant future will be one of the most practical and profitable as well as the most interesting of all branches of chemical industry."

The Zoological Section.

W. N. Lockington, the President of the Zoological Section of the Academy, delivered an inaugural address in which he advocated the claims of zoology to an honored place among the sciences, and pointed out the necessity of its more exhaustive and systematic study, in order to the prosperity of many of our most important industries on this coast. The destroyers of our wharves and shipping, the despoilers of our fisheries, the deadly enemies to our vines and trees, demand and *must have* more attention.

At the conclusion of Mr. Lockington's remarks, the Hon. Alex. Del Mar delivered an address on the subject of

Insanity and Crime in Mining Countries.

The question treated is a novel one, and the paper furnishes an important addition to the works of social science, though it may in some points challenge debate. It being impossible, in the short space of a report, to give the paper merited notice, we will present it in full in the next issue of the Press. The paper aroused some little discussion, in which several gentlemen who can remember experiences of the early days of California, took part. Among them was B. B. Redding, who was in the placer mines from '50 to '53. He objected to the unhappy picture which had been presented of the condition of the miners. In his experience he had seen no insanity among the miners, and no suffering from destitution. Prices were high, to be sure. An onion was sometimes sold for a dollar. But as a general thing labor was in demand, the wages averaging $7.50 a day. If a miner was not satisfied with his wages, he could go and pan out for himself. If his independent venture did not succeed, he could return and get good wages. There was a good deal of sickness, but the sick ones were carefully taken care of. There was no stealing. There was no insanity. Food was plenty and work was plenty.

Here Mr. Del Mar pulled the *argumentum ad hominem* upon Mr. Redding by reminding him that he himself had stated that an onion cost a dollar; but retired on Mr. Redding's intimating that the miners did not attempt to live on onions. The meeting adjourned.

Judson Powder.—On last Friday a blast of 25,200 pounds of Judson powder was exploded in the Dardanellee Consolidated mining claim, at Forest Hill, Placer county. The Nevada *Transcript* describes the blast and its effect: "It was in three different drifts and 12 chambers, the powder line being 85 feet back of the face of the bank. The bank was about 200 feet high. The force of the explosion moved the entire mass, and so pulverized and threw it that a person can now walk directly over the face of it in any direction. A careful survey shows that 13 cubic yards of dirt was broken to each pound of powder used." On Saturday another blast of the same powder was fired in the Big Bonanza gravel mine, at Gold Run. According to the same authority, 17,500 pounds was used, and 166,000 cubic yards of dirt put in readiness for washing.

The steamer *Cocopah* brought into Yuma from Ehrenberg on the 28th, ult., 45 bars of base bullion and 25 tons of galena ore.

Improved Variable Automatic Cut-Off.

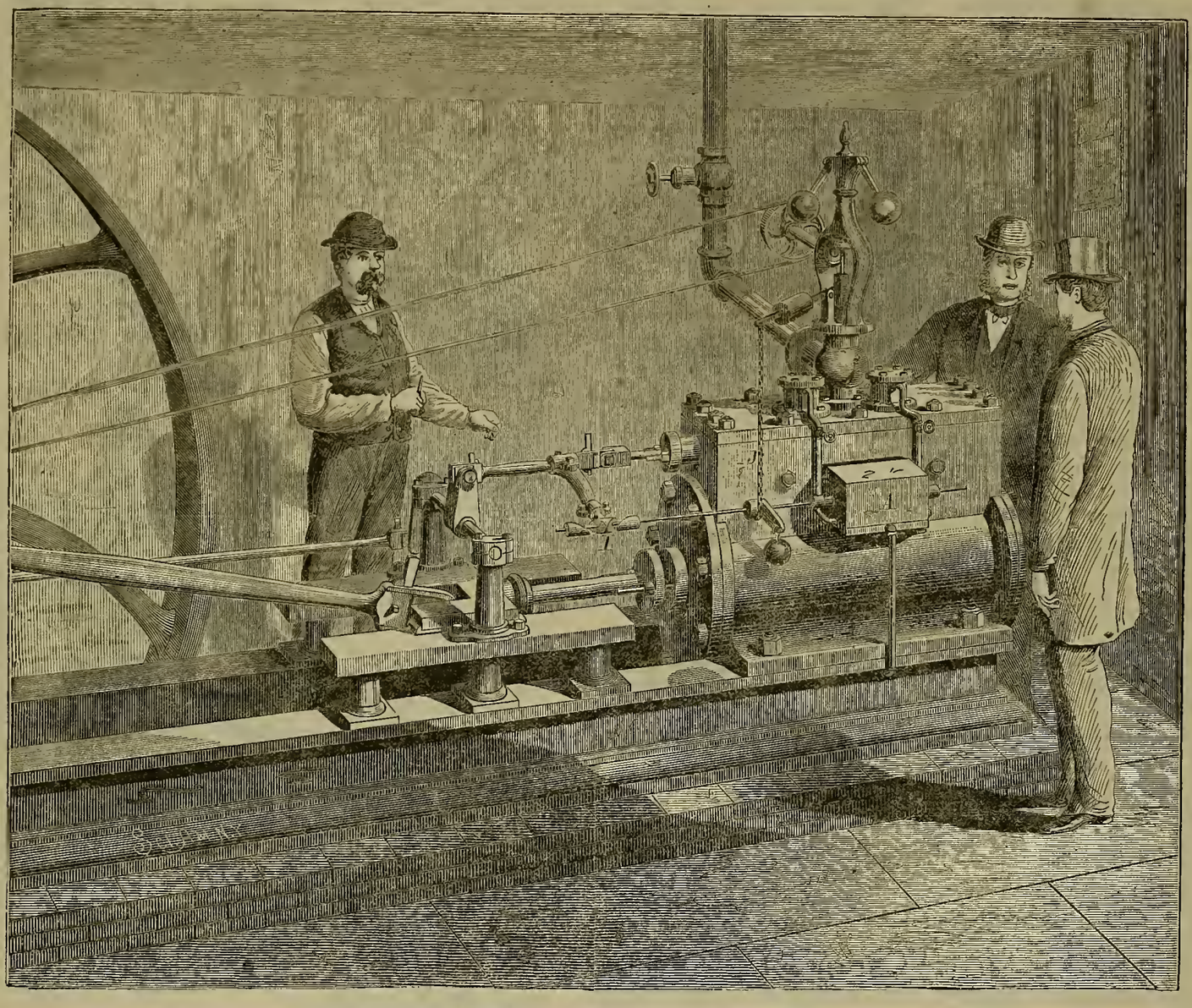
In the device herewith illustrated the inventor has aimed to provide a variable automatic cut-off gear which may be applied to plain slide valve engines, and render the working of the same fully as economical as if they had been specially constructed in connection with an improved apparatus of the kind.

A general view of the apparatus is given in Fig. 1, and the details will be understood from Figs. 2 and 3, (see first page). It is so constructed that should the motion of the engine become too rapid, it will cut off the steam automatically at each stroke of the piston until the engine has been slowed down to the proper speed. Beside the valve chest is a secondary chest, *A*, Fig. 3, in which is the valve, *B*. This chest has an exhaust port, *C*, and ports, *D*, leading to the cylinders, *E*, attached to the top of the main valve chest. The chest, *A*, is connected to the main chest by a passage, so that the pressure may always be the same in both chests. In the cylinders, *E*, are spiral springs which rest upon steam-tight pistons, to which are attached rods which pass down into the main valve chest and are attached to elbow levers, *F*. The holes in the chest through which the rods pass are made larger than the rods, so that the steam may have free passage. The elbow levers communicate, as shown, with plates, *G*, placed on top of the slide valves. These plates have ports through which the steam passes in its traverse through the ports of the slide valve to the main cylinder ports. When the engine is running at ordinary speed the plates, *G*, are in such a position that their ports may be directly over the main ports. To the valve stem, *H*, is attached an arm which carries a wedge-shaped head, *I* (see Fig. 1), and through this passes the valve steam from the secondary chest. On the last mentioned stem are adjustable collars, and also connected to the stem is a chain, *J*, which carries a weight, and which, after making one or two turns around the stem, communicates with a lever which is connected with the governor.

With this construction, as the speed of the engine increases, the outward movement of the governor balls causes the lever to be depressed and the valve stem to be turned, so that the head on the arm will strike the collars on the stem and thus move the valve, *B*, on its seat. As this valve moves it connects one of the ports, *D*, with the exhaust, *C*, so that steam may escape from the upper part of the cylinder, *E*, with which said port is connected. This allows the steam pressure of the main valve chest to raise the piston in said cylinder, *E*, and hence to move the plate, *G*, with a positive motion to shut off steam. This happens at each stroke of the main piston until the speed of the engine has been reduced to its ordinary amount.

The cost of attaching is small, comparatively, as all of the old parts of the engine are utilized, except the old slide valves and governor valve, which are laid aside.

We give indicator diagrams from an engine fitted with this cut-off, in Fig. 4, (see first page). The valve has been for nearly a year in successful operation in New York. The inventor, Mr. E. R. Dingley, may be addressed at 112 Wooster street, New York, for further particulars.



DINGLEY'S PATENT VARIABLE AUTOMATIC CUT-OFF.

The Bodie Fire Engine.—The Bodieites have made a formal trial of the Babcock engine, of which we had occasion to speak a few weeks ago. The engine was run about 1,000 feet, the hose run out and the fire extinguished, all in the space of five minutes. Only one cylinder of the engine was used. The fire was in a pile of dry-goods boxes, prepared for the occasion by saturation with kerosene. The citizens are suited with the Babcock. The engine was purchased from Messrs. Parke & Lacy, 417 Market street, S. F.

The Acting Commissioner of the General Land Office has rendered a decision in the case of the San Andreas M. Co. vs Adam Lanig, ordering that the agricultural entry and undelivered patent of Lanig be held for cancellation.

Breathitt county, Ky., is in a complete state of anarchy, the county seat being in possession of desperadoes, and several persons having been killed and wounded.

Foundry Notes.

Work at the foundries is not particularly brisk at present, this being usually one of the dullest months of the year in this line of business. All the shops, of course, have a certain amount of work on hand, but most of the smaller ones are rather slack.

The Fulton Iron Works

Yet continue busy, having still as much work as at any time during the summer, and are employing about 160 men. They are building a ten-stamp mill for the Tombstone Mining Co., Tombstone district, Arizona, and with it go four 5-foot combination pans, two 9-foot settlers, retorts, clean-up pans, etc. This machinery is to be run by a 25-inch American turbine wheel. They are also building a mill for the McMillan mine, Arizona, with two 5-ft. combination pans, a 9-ft. settler, clean-up pans, retorts and complete outfit. A 12x24 engine, and 48-inch by 16 ft. boiler accompanies this order. Quite a number of boilers are being built in the boiler shops belonging to the works. The largest among them is for a new freight steamer for the South Pacific Coast R. R. Co.—the narrow-gauge Dumbarton route. This boiler is similar to that in the steamer *Newark*, belonging to the same company. The boat is to run between this city and the slips in Oakland creek. The boiler is 11 feet in diameter, 25 feet long, and weighs about 50 tons. They are making a lot of heavy shafting, water-wheels, etc., for the Merrifield mine, Nevada county, and doing considerable mining and general work.

At the Pacific Iron Works

The largest work on hand is the outfit for a mill of 20 stamps capacity for the Gunsight mine, Resting Springs district, California. This outfit consists of engine, boilers, pans, settlers, etc., complete. The crushing machinery will consist of the newly invented Davis pulverizers, a rotary pulverizer consisting of a central disk on which are the shoes, revolving in a case containing peculiarly-shaped dies. They are also building a five-stamp mill for the Hanover mine, Calaveras county, and a large boiler and lot of sugar machinery for a Honolulu firm. They have recently completed several Howell-White furnaces, one of them for the Highbridge mine, Belmont, Nev. They are at work on two more, one of them for the Mary Bean mine, Arizona, and the other for the Montezuma mine, Nevada. They recently shipped a 60-ton melting furnace to the Richmond Consolidated mine, Eureka, Nevada; and a lot of machinery to the Park mine, Park district, Utah, the latter being mostly repair work on the mill. The works are also engaged on considerable repair and small general work.

Rotary Hydraulic Engine.—We were shown this week by the inventor, Mr. R. J. Cartmel, of Santa Rosa, a model of a rotary hydraulic engine. The cylinder is arranged in the segment of a circle and is made square interually. On the periphery of a wheel are arranged the wedge-shaped wickets or pistons which travel through the cylinder. Water is admitted to one end of the cylinder under pressure, and as the pistons enter the cylinder, each one opens the double valves which close with a spring behind them. The valves are made double and independent, so as to ensure against leakage as the pistons enter the cylinder. As the pistons emerge from the end of the cylinder the waste water is led off in a sluice. On the shaft of the central wheel in which the pistons are secured, is a spur, which is geared down so as to furnish the requisite speed to a driving wheel. The inventor claims that this wheel will work up to 95%. It is intended for running any kind of machinery, large or small, and is compact and neat in appearance.

We call attention to the differential pumping engines, for mining, town water supply, irrigation, etc., advertised in this issue by the Risdon Iron and Locomotive Works.

It is reported that the controlling interest in the Niagara mine has been sold to a New York company, and that the papers were sent East last Thursday.

The Sherman mine, Globe district, Arizona is developing unusually rich ore.

Spenceville and her copper mine are developing.

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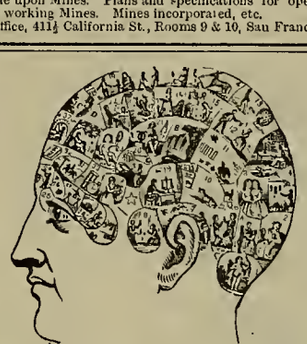

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Consulting Physician,

Professor of Phrenology and Mental Hygiene.

Proprietor of the Smithsonian Medical and Phrenological Institute, 635 California Street, above Kearny.

This Institute, by combining medical hygiene with the various Water Cure treatments and the most powerful Electrized Horseshoe Magnet in the world, claims to cure speedily and permanently all forms of acute or chronic nervo-vital derangements, Brain, Spinal and Heart diseases, St. Vitus Dance, Palsy, Epilepsy and all Rheumatic Liver and Kidney troubles. The institution has for the past 20 years made a specialty of treating all forms of weaknesses and diseases peculiar to males and females. By the use of hygienic remedies and electro-motorpathy the worst forms of impotency and seminal weakness in males and sterility in females are speedily and permanently overcome. Hygienic board, with or without rooms. Terms moderate. Electro-thermal, Russo-Turkish and Medicated Baths given daily.

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DR. SMITH has practiced Phrenology the past 30 years, and during the last 20 years has been constantly using the science connected with Physiognomy, in examining or diagnosing disease in this city, and claims to have made discoveries in the SCIENCE of Phrenology that enables him, by an examination of the head, even blindfolded, to determine the disease to which the person is constitutionally subject, or whether the disease at the time afflicting the person, is the result of accident or hereditary weakness; whether CONSUMPTIVE, DYSPEPTIC, RHEUMATIC, APOPLECTIC, NEURALGIC, LEUCORRHEAL, or SEMINAL. Especially does the form of the head indicate the strength of the uterine, genital or reproductive system. The head is also an index of the natural length of the lungs, heart, stomach, liver, kidneys, spleen, back or vertebra, and it determines the power of the system in warding off and overcoming disease of all kinds.

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And all persons who are in any way out of health, who desire to know the nature and causes of their disease, may avail themselves of an examination through phrenology in regard to health free of charge, between the hours of 9 A. M. and 8 P. M. Sundays from 9 A. M. to 12 M.

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Fig. 1 shows he application t the device, nd Fig. 2 shows he construction. A is a metal tube of suitable length, the foot of which may be serrated as shown, so that the points will engage with the wood when the tube is pushed or driven against it. The rod or driver, C, has a recess or cavity, D, at the lower end so as to rest on top of the nail or spike shown in Fig. 2. Where the tube, A, is pushed against the timber in the desired position, the spike or nail is dropped in at the upper end and slides down against the timber. The rod, C, is then slid down on top of the nail, and by alternately drawing out and forcing the rod into the tube, the rod serves as a driver; or by hammering on the upper end of the rod the nail is driven into the wood. The tube answers both as a guide for the nail and driving rod. The tube can also answer as a guide for a screw-driving device on the end of the rod, by which lag screws may be put in place under water as well as nails. Of course the tube may be set in any position desired, so that nails may be driven at an angle if necessary. The appliance, as simple as it is, will be found very useful in many cases for bridge building or similar purposes. Address,

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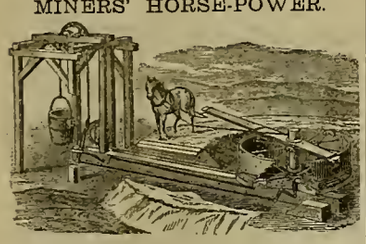

This Power is especially adapted to working mines, hoisting coal or hulling material, etc. It will do the work of a Steam Engine with one-tenth the expense. One Horse can easily hoist over 1,000 pounds at a depth of 500 feet.

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To Hydraulic Miners.

The public generally and Hydraulic Miners especially are hereby notified that any parties making or using the contrivance known as the HOSKIN DEFLECTOR will be prosecuted to the full extent of the law, said machine having been declared by the U. S. Circuit Court an infringement upon my patent, the

Bloomfield Deflecting Nozzle.

The public are also cautioned against using the Hoskin Deflector because of its danger to life and limb, this device having already occasioned several deaths and other serious accidents. The BLOOMFIELD DEFLECTOR is entirely safe, its two and a half years use without accident, as well as its construction, proves it to be a reliable contrivance.

Any parties wishing to purchase the right to use these Deflectors can do so by applying to the undersigned,

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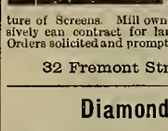

Several first premiums received for Quartz Mill Screens, and Perforated Sheet Metals of every description. I would call special attention to my SLOT CUT and SLOT PUNCHED SCREENS, which are attracting much attention and giving universal satisfaction. This is the only establishment on the coast devoted exclusively to the manufacture of Screens. Mill owners using Battery Screens extensively can contract for large supplies at favorable rates. Orders solicited and promptly attended to.

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Diamond Drill Co.

The undersigned, owners of LESCHOT'S PATENT for DIAMOND POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING AND TUNNELING DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

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Plans furnished for the most suitable process for working Ores.

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We would call the special attention of Assayers, Chemists, Mining Companies, Milling Companies, Prospectors, etc., to our stock of Clay Crucibles, Muffles, Dry Cups, etc., manufactured by the Patent Plumbago Crucible Co., of London, England, for which we have been made *Sole Agents for the Pacific Coast.* Circulars with prices will be sent upon application.

Also, to our large and well adapted stock of

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Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.

☞Our Gold and Silver Tables, showing the value per ounce Troy at different degrees of fineness, and valuable tables for computation of assays in grains and grammes, will be sent free upon application.

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Refiners of Borax, Alum, Nitrate of Soda, Saltpeter, Potash, Etc.

Sampling, Assaying or Analyzing of Minerals, small lots of ores bought or worked by any process.

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PIONEER REDUCTION WORKS,

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Highest price paid for GOLD, SILVER and Copper Ores.

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ORES SAMPLED, TESTED, ASSAYED.

GUIDO KUSTEL,

MINING ENGINEER and METALLURGIST.

P. O Address: ALAMEDA, CAL.

Continued from page 357.

averaged $1,040 per ton. The bottom, sides and top of this drift shows ore of the same grade. Both walls of the great lode have been found. They are 114 feet apart, are smooth, solid and coated with clay. At one point the ore and vein matter on the footwall was 30 feet thick and on the hanging-wall 9 feet. A "horse" 75 feet in thickness appeared here, but in drifting 150 feet along it, it narrowed down to a point, and in the opposite direction this is also found to be the case. A 5-stamp mill, with engine power for 10 stamps, has been ordered for the company from San Francisco.

ITEMS.—The *Miner* hears that the Hon. C. C. Bean has succeeded in obtaining in San Francisco, a roaster for the Aztlan mill, which will enable him to work the rebellious ores of the Hassayampa district, of which there are tens of thousands of tons ready to be extracted from the mines, and are only waiting appliances to enable the mill to work the ore successfully. The Perry alone is ready and eager to supply all the stamps in the district with high-grade ore, the only difficulty being the want of a roaster to enable amalgamators to separate the silver from the base. The Tiger mine, says the *Enterprise*, is in a very healthy condition. It is now opened, by shaft and winze, to a depth of 300 feet from the bottom of a deep gulch. The Oro Bonito people are pushing the erection of their mill and the development of their mine.

NEW MINES.—Grant County (New Mexico) *Herald*, Nov. 23: John Swisshelm, who returned lately from the Whitewater basin, in the Swisshelm mountains, Arizona, gives a most favorable account of the new mines in that vicinity. He says that four of the mines are now being worked with splendid results. The first of these is the Mountain Queen, which is being opened by a tunnel running across the vein. It has been run in about 40 feet, and the west wall rock of the vein was struck about 20 feet from the mouth. The balance of the work has been carried on through metal, of which some 80 tons have been extracted. The eastern wall rock has not yet been reached, although the character of the ore has changed from gray and black carbonates of silver to a red oxide. The average assay of the ore is 112 ounces. This mine is owned by Henry Henson, John Swisshelm and J. W. Fleming. The second mine in importance is the Whale, situated about half a mile northeast of the Mountain Queen. A shaft four by eight feet and 12 feet deep has been sunk entirely on the vein, the wall rock not being touched upon either side. Thirty-five tons of ore, assaying from 174 to 430 ounces to the ton, have been taken out. It is a red carbonate, and steadily improves in quality with increase of depth. The Mammoth, an extension of the Whale, belongs to Martin Smith, of San Francisco, and George W. Myers. The vein is opened up along about 400 feet of its length and some 40 tons of ore have been taken out. It shows both horn and metallic silver, and although no assay has yet been made, experts who have examined the rock are unanimous in pronouncing it very rich—some estimates even running into the thousands. The fourth mine, the Mountain Chief, is being worked by James Bullard and Adam Clark. The vein, which is four feet wide, runs parallel with the Mountain Queen, about 500 feet to the east, and shows the same class of ore as the latter. The shaft had reached a depth of 10 feet, when Mr. Swisshelm left, and some 30 tons of fine-looking ore had been taken out. No assay has yet been made. There are numerous other locations in the immediate vicinity, and a regular district will soon be organized. Wood, water and grass are abundant for miles around. The mines are situated about 12 miles west of Camp Supply, and some 30 miles south of Bowie.

COLORADO.

LEADVILLE.—*Reveille*, Nov. 16: The Agassiz mine is yielding 12 to 14 tons of ore per 24 hours, with two men on each shift breaking mineral. As in other mines where the deposit is thick, but very little development is shown for the amount of production. The workings consist of an incline 45 feet long from the bottom of No. 1 shaft, on ore 7 feet high. At the lower end of this incline a room 12 feet wide has been sloped out, and an 80-foot shaft from the surface connects with it. From this point another incline has been run 30 feet, and stoped out 12 to 15 feet in width. This is all the mining that has been done to prove this a first-class property.

FRENCHMAN.—This mine, adjoining the Adelaide on the west, at a depth of 230, discloses a body of 6 feet of soft carbonates, from which select specimens returned an assay of 100 ounces in silver.

KENOSHA AND OCEAN WAVE.—The developments by shafts and tunnels on these claims of A. T. Hathaway's, aggregate 300 feet upon ore 2, 3 and 4 feet in thickness, running 154 ounces per ton.

CLIMAX.—A rich body of mineral two feet thick has just been disclosed in the Climax mine on Fryer Hill. Mr. Witherell, of Berdell & Witherell, has taken the first load to their smelting works for treatment. The ore will probably run 200 ounces of silver to the ton.

DUNKIN.—The Dunkin is yielding heavy masses of low grade ore, and small quantities of exceedingly high grade. An assay lately returned 600 ounces, and selected specimens can be found on the dump which will assay 3,000 ounces.

A New Milling Machine.

We have had an opportunity to examine a new invention in mining machinery, devised by Mr. Ezra Colemsn of this city.

Combined Amalgamator and Settler.

This consists of a pan similar to the ordinary amalgamating pan, but much deeper, so as to allow of the working of a large charge, and to facilitate settling. The cone, muller and the screws for raising and lowering the upper plate and shoes present no new features. The novelty is in the upper plate and shoes. The upper plate of the smalgamators generally in use, is perforated by rectaugular holes which extend neither to the center nor to the circumference of the plate. Through these holes the pulp passes to be grouud between the upper plate and the bottom of the pan. But owing to the position of the holes, the pulp is not distributed over the whole bottom, but only in a ring midway between the center and circumference. The result is that the shoes attached to the under side of the upper plate wear unevenly and soon have to be replaced. In Mr. Coleman's machine the holes or slots are cut from the circumference in half way to the center, and alternate with other slots cut from the center out half way to the circumference. By this means the pulp is distributed evenly over the bottom of the pan and it is claimed that the shoes will wear so evenly that they need not be replaced until they are all together worn down very thin. Another advantage, arising from the fact that the whole bottom is available for grinding, instead of only a part of it, is that more pulp may be operated upon at once. Moreover, so much metal is cut from the upper plate that it is comparatively light—a great advantage where saving in freight and labor is an object.

This pan is to be used also as a settler. During settling the velocity of the plate should not be so great as when amalgamating. By an ingenious arrangement of gear below the pan, Mr. Coleman is able to increase or decrease the velocity of the plates without altering the velicity of the pulley over which passes the belt that runs the whole machine. And this is accomplished by simply a short, easy movement of a lever which extends from under the pan.

The Martin White Case.

[Continued from last week.]

Corner Posts not Absolutely Necessary.

So far we agree entirely with the views of counsel for appellant; but, although we are satisfied that a location must be of a surface claim, and that the boundaries and extent of the claim must be plainly defined by stakes or marks on the ground, it does not appear to be a necessary consequence that the least admissible marking is by posts or monuments at all the corners of the claim.

We are aware that the Commissioner of the Land Office has recommended the planting of posts at the corners and the erection of a sign-board with the name of the claim, the names of the locators, etc., at the location point, and undoubtedly a compliance with these recommendations would be sufficient to satisfy the law in this particular. But at the same time we think it may be satisfied by something less. There is, after all, something in the fact that it is a mining claim and not an agricultural claim that is being located, and some account should be taken of the customs, habits and circumstances of a mining community in determining what is a sufficient marking of a mining claim.

The Vein the Principal Object.

The vein is always the principal object that the locator has in view; it is generally, after location and work at the location point, a conspicuous feature of the locality: it is the first thing that attracts the attention of mining men; the surface claim by which it is to be located ought to conform to its course; the end lines must be parallel, and, as they ought to conform to the dip of the ledge as nearly as practicable, they ought to be at right angles to the side lines, so that if the center line of the claim is once established the boundaries are thereby fixed and may be readily traced.

The Object of the Law

In requiring the location to be marked on the ground is to fix the claim—to prevent floating or swinging—so that those who in good faith are looking for unoccupied ground in the vicinity of previous locations may be enabled to ascertain exactly what has been appropriated in order to make their locations upon the residue. We concede that the provisions of the law designed for the attainment of this object are most important and beneficent, and that they ought not to be frittered away by construction. But it must be remembered that the law does not in express terms require the boundaries to be marked. It requires the location to be so marked that its boundaries can be easily traced. Stakes at the corners do not mark the boundaries; they are only a means by which the boundaries may be traced. Why not, then, allow the same efficacy to

THREE medals were awarded to California wine manufacturers at the recent American Institute fair in New York.

ONE of the *Pomerania's* boats has been secured, with a bag containing $25,000.

A NEW 10-stamp mill, built in Cincinnati, is now on the way to the Tombstone district.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch from Washington, D. C

FOR THE WEEK ENDING NOVEMBER 19TH, 1878.

AIR VALVE ATTACHMENTS FOR SEWERS, ETC.—Parker F. Morey, S. F.

WOODEN WELL CURBING—John V. Naas, San Jose, Cal.

WAGON BRAKES—Irwin S. Wright, Centerville, Cal.

SHUTTERS—Wm Cruse and John D. Isaacs, Oakland, Cal.

BOOT-JACKS—Francis T. Lessen, S. F.

SPRING BED BOTTOMS—Thomas J. Pettit, S. F.

PORTABLE LADDERS FOR GATHERING FRUIT—Luther H. Titus, San Gabriel, Cal.

MIXED PAINTS—Trademark—Yates & Co., S. F.

ELLIOTT'S GREAT DISCOVERY—Label—Dr. John Elliott, Stockton, Cal.

News in Brief.

INDIAN raids in Nebraska.

BUSINESS in silver at London is at a complete standstill.

ANOTHER cable will connect Australia with Europe.

FIRES at Marysville and Pacheco. Also, at Fall River, Mass.

AN International Dairy fair opens at New York next Monday.

THANKSGIVING was not observed to any great extent in Virginia.

COLLISION between Mississippi steamers; one sank; 20 lives lost.

A FRANCO-AMERICAN commercial meeting was held in Paris, Dec. 1st.

THE Commercial Convention met at New Orleans December 3d.

KING KALAKUA'S birthday was celebrated on the 16th of November.

THE Porte has suppressed the Turkish Legation at Washington.

THE Bavarian authorities are discussing the question of cremation.

SCHURZ wants the Pimas and Maricopas removed to Indian Territory.

SMITH, FLEMING & Co., of London, have failed. Liabilities, $14,557,425.

THE Spanish government has decided to expel from Spain all political refugees.

F. C. HAVENS is making arrangements to light Honolulu with gas made by the Union Gas Machinery.

THE number of desertions from the army during the year ending June 30th was 1,678—less than any year since 1873.

THE famous Capitoline Grounds in Brooklyn, N. Y., have been sold for city lots.

THE Southern Pacific Railroad company are laying one mile of track per day in Arizona.

THIRTY-SEVEN passengers are missing from the *Pomerania* and eleven of the crew.

INDIAN COMMISSIONER HOYT denies that the Red Cloud Indians are in danger of starving.

SEVERAL persons were seriously injured in a sham battle at Mount Gilead, O., Nov. 28th.

THE Andrews brothers, who crossed the Atlantic in a dory, intend to perform the same feat on the Pacific.

SECRETARY SCHURZ has written a severe and caustic reply to the recent letters of Generals Sherman and Sheridan.

TRADE dollars are now being imported from China to New York at a profit of six cents on each to the importers.

What Women Can Do.

Our attention has been called to a new article for the use of ladies, the invention of which has conferred an everlasting blessing upon every lady. We refer to the Queen City Skirt Suspenders, for supporting ladies' skirts, the most desirable and beneficial article ever invented for the relief of women, many of whom have suffered years of miserable health caused solely by carrying the weight of a number of heavy skirts, completely dragging them down. Something to support ladies' clothing is absolutely necessary. These Suspenders are recommended by our leading physicians to all ladies and young girls. Every lady should have them. Thousands will testify to their excellence and the advantages to be derived from wearing them. They are sold only through lady agents. Many ladies in other localities are making from a hundred to two hundred dollars per month, selling these and other new articles made by the same Company, and it can be done here. We have been asked by the manufacturers for the name of a reliable lady to act as their agent for this county. We advise such to write at once to the Queen City Suspender Company, Elm and Longworth Streets, Cincinnati, Ohio.

FRESH attractions are constantly added to Woodward's Gardens, among which is Prof. Gruber's great educator, the Zoographicon. Each department increases daily, and the Pavilion performances are more popular than ever. All new novelties find a place at this wonderful resort. Prices remain as usual.

EXAMINE the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.94. Lewis C. Grover, President; L. Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

ARTESIAN WELLS WANTED.—Parties who are prepared to contract for boring artesian wells are invited to send terms to Edward Frisbie, proprietor of the Reading Ranch, Anderson, Shasta County, Cal.

WE USE on our steam printing press superior machinery lubricating oil from the Phœnix Oil Works of Hutchings & Co., No. 517 Front street, San Francisco.

MODEL MAKER AND MACHINIST.—I. A. Heald, No 514 Commercial St., San Francisco, (fourth floor).

METALS.

[WHOLESALE.

WEDNESDAY M., December 4, 1878.

IRON.—	
American Pig, soft, ton	23 00 @26 00
Scotch Pig, ton	25 00 @26 50
American White Pig, ton	23 00 @— —
Oregon Pig, ton	26 50 @— —
Refined Bar, ₰	2½@ 3
Horse Shoes, keg	5 00 @— —
Nail Rod	—@ 7½
Norway, according to thickness	6½@ 7
COPPER.—	
Sheathing, ₰	34 @ 35
Sheathing, Yellow	19 @ 20
Sheathing, Old Yellow	— @—
STEEL.—	
English Cast, ₰	13 @ 17
Black Diamond, ordinary sizes	16 @— —
Drill	16 @ 17
Flat Bar	16 @ 19
Plow Steel	8 @ 12½
TIN PLATES.—	
10x14 I C Charcoal	8½@ 9
1ux14 I C Coke	7 @ 7½
Banca Tin	18 @— 20
Australian	16½@ 17
ZINC.—	
By the Cask	3 @— —
Zinc, Sheet 7x3 ft. 7 to 10, ₰, less than cask	9½@— 10
NAILS.—	
Assorted sizes	2 90@3 00

LUMBER.

WEDNESDAY M., December 4, 1878.

CARGO PRICES OF REDWOOD.

Rough, M	13 00
Refuse	9 00
Clear	23 00
Clear Refuse	13 00
Rustic	23 50
Refuse	13 00
Surfaced	20 00
Refuse	14 00
Flooring	20 00
Refuse	12 00
Beaded Flooring	23 00
Refuse	13 00
Half-inch Siding	16 00
Refuse	14 00
Half-inch Surfaced	20 00
Refuse	14 00
Half-inch Battens	16 00
Pickets, Rough	11 00
Rough, Poluted	12 50
Fancy, Pointed	18 00
Shingles	1 75

PUGET SOUND PINE

RETAIL PRICE.

Rough, M	18 00
Fencing	18 00
Flooring and Step	28 00
Narrow	30 00
2d quality	25 00
Laths	3 50
Furring, lineal ft	¼

REDWOOD.

RETAIL PRICE.

Rough, M	18 00
Refuse	14 00
Pickets, Rough	15 00
Pointed	16 00
Fancy	22 50
Siding	20 50
Surfaced & Long Beaded	30 00
Flooring	30 00
Refuse	22 50
Half-inch Surfaced	30 00
Rustic, No. 1	30 00
Battens, lineal ft	—
Shingles M	2 00

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by SUTRO & Co.]

SAN FRANCISCO, December 4, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 99¼@99.95. SILVER, 2 @1½. GOLD in New York, 100¾.

GOLD BARS, 890@910. SILVER BARS, 8@22 ₰ cent. discount.

EXCHANGE on New York, ½%, on London bankers, 49¼@49½. Commercial, 50; Paris, five francs ₰ dollar; Mexican dollars, 89¾@90.

LONDON Consols, 94 3-18, Bonds, 1c¾.

QUICKSILVER in S. F., by the flask, ₰ lb, 40@41c.

Signal Service Meteorological Report.

SAN FRANCISCO.—Week ending December 3, 1878.

Nov 27	Nov 28	Nov 29	Nov 30	Dec 1	Dec 2	Dec 3
HIGHEST AND LOWEST BAROMETER.						
30.18	30.27	30.30	30.43	30.33	30.30	30.22
30.12	30.19	30.29	30.33	30.32	30.21	30.10
MAXIMUM AND MINIMUM THERMOMETER.						
58.5	57	61.5	60.7	60	63	67.5
50.5	48	47	48	43.5	50	51
MEAN DAILY HUMIDITY.						
79	81	65	58	64	58	59
PREVAILING WIND.						
W	SW	W	N	NW	N	N
WIND—MILES TRAVELED.						
168	93	87	132	134	154	135
STATE OF WEATHER.						
Fair.	Clear.	Clear.	Clear.	Fair.	Clear.	Fair.
RAINFALL IN TWENTY-FOUR HOURS.						

Total rain during the season, from July 1, 1878, 2.40 in.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Land Purchasers' Association.—Location of principal place of business, San Francisco, California.

Notice is hereby given that at a meeting of the Board of Directors, held on the 5th day of November, 1878, an assessment of four ($4) dollars per share (being a part of the 43d installment on the subscription to the stock) was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at No. 641 Sacramento street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 9th day of December, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before will be sold on Saturday, the fourth (4th) day of January, 1879, to pay the delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors. O. S. WRIGHT, Sec'y.

No. 641 Sacramento St., San Francisco, Cal.

Mount Jefferson Milling and Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Garrote Mining District, Tuolumne County, Cal.

NOTICE.—There is delinquent upon the following described stock on account of assessment (No. 5) levied on the Seventeenth day of October, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate. OLD ISSUE.	No. Shares.	Amt.
E B Pond	44	80	$ 16 00
E A Richardson	69	100	20 00
E A Richardson	75	100	20 00
E A Richardson	77	100	20 00
E A Richardson	84	200	40 00
E A Richardson	80	50	10 00
E A Richardson	02	50	10 00
J H Nelson	15	100	20 00
Edward R Mundeline	118	50	10 00
Edward R Mundeline	119	50	10 00
	NEW ISSUE.		
A J Adams	19	2000	100 00
B F Baker	5	5000	250 00
F G Cleland	14	2000	100 00
F G Cleland	15	5000	250 00
G M Condee, Trustee	28	2000	100 00
G M Condee, Trustee	32	3000	150 00
G M Condee, Trustee	34	1000	50 00
N C Fassett	21	500	25 00
N C Fassett	22	500	25 00
N C Fassett, Trustee	7	500	25 00
N O Fassett, Trustee	8	500	25 00

Names.	No Certificate	No. Shares	Am't.
D D Shattuck	23	10000	500 00
D D Shattuck	24	10000	500 00
D D Shattuck	25	10000	500 00
D D Shattuck	26	5000	250 00
D D Shattuck	35	11080	554 00

And in accordance with law, and an order of the Board of Directors, made on the seventeenth day of October, 1878, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of the Company, on Tuesday, the seventeenth day of December, 1878, at the hour of two o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

J. W. CLARK, Secretary.

Office, 318 Pine street, Room 6, San Francisco, Cal.

Summit Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Pinnias County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the nineteenth day of November, A. D., 1878, an assessment, (No. 6,) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of said Company, 318 Pine street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the sixth (6th) day of January, A. D., 1879, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the fourth day of February, A. D., 1879, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors

J. W. CLARK, Sec'y.

Office, Room 6, No. 318 Pine Street San Francisco, Cal.

The California Fruit Growing Association.—Location of principal place of business, San Francisco, California. Location of property, El Dorado County, California.

Notice is hereby given, that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 1) of three ($3) dollars per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, No 641 Sacramento street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 30th day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Monday, the 21st day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco, Cal.

POSTPONEMENT.—At a meeting of the Board of Directors of the California Fruit Growing Association, held September 2d, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till Saturday, the 26th day of October, 1878, and the day of sale of delinquent stock is hereby postponed to Friday, the 22d day of November, 1878.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco.

POSTPONEMENT.—At a meeting of the Board of Directors held on the Nineteenth day of October, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till November 30th, 1878, and the day of sale of delinquent stock is hereby postponed to December 21st, 1878.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento Street, San Francisco, Cal.

Vigorit Powder Company.—Location of principal place of business, City and County of San Francisco, California. Location of works, California City, Marin County, State of California.

Notice.—There are delinquent upon the following described stock, on account of assessment (No 1) levied on the first day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. of Cert.	No. Shares	Amount
Louis McLane, Trustee	30	437½	$218 75
Louis McLane, Trustee	32	½ of 875	218 75
G W Grayson, Trustee	92	1312½	656 25
H H Shinn, Trustee	91	400	200 00
H H Shinn, Trustee	92	400	200 00
H H Shinn, Trustee	93	400	200 00
H H Shinn, Trustee	94	112½	56 25

And in accordance with law, and an order of the Board of Directors, made on the First day of August, 1878, so many shares of each parcel of stock as may be necessary will be sold at public auction, at the office of the Company, Room No. 1, 109 California street, on Wednesday, the second day of October, 1878, at the hour of 2 o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale. JAS. W. BAKER, Sec'y.

Office, No. 109 California street, Room 1, San Francisco, California.

POSTPONEMENT.—By an order of the Board of Directors made on the First day of October, 1878, the above sale is postponed until Monday, October 21st, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

POSTPONEMENT.—By an order of the Board of Directors made on the Eighteenth day of October, 1878, the above sale is postponed until Friday, November 1st, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

POSTPONEMENT.—By an order of the Board of Directors made on the first day of November, 1878, the above sale is postponed until Monday, November 18th, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

POSTPONEMENT.—By an order of the Board of Directors made on the eighteenth day of November, 1878, the above sale is postponed until Monday, December 2d, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

PARTIES wishing to invest in Arizona mines will please call on or address W. H. S., care of MINING AND SCIENTIFIC PRESS, S. F.

PAUL'S PULVERIZING BARREL.

A. B. PAUL.—*Sir:*—Having used two of your five-foot diameter Barrels, I can say that they are complete in every detail, add a thoroughly practical pulverizer. I donot if any better machine for pulverizing quartz, and to stand the same amount of wear and tear, can be devised. Yours, S. O. FREDERICK.

These pulverizers feed and discharge automatically, and reduce with expedition to a uniform size, as desired. Barrels made of from five to twenty tons a day capacity.

For particulars apply to

ALMARIN B. PAUL,

Room 20, Safe Deposit Building, San Francisco, Cal.

A. S. HALLIDIE,

Office, No. 6 California Street, SAN FRANCISCO.

Manufacturer and Dealer in all kinds of

Iron and Steel Wire Rope,

Flat and Round, for Mining, Shipping, Hoisting and General Purposes.

Having the most complete and extensive Wire Rope Works in the United States, I am prepared to manufacture Wire Rope and Cables of any length or size at short notice, and guarantee the quality and workmanship equal to any made at home or abroad.

Iron, Steel and Galvanized Wire

Of all sizes on hand or made to order.

Barbed Fence Wire.

Sole Proprietor of

Halidie's Endless Ropeway,

For the Transportation of Ores, etc.

Send for a Circular.

A. S. HALLIDIE,

Office, No. 6 California St., San Francisco.

California Artesian Well

— AND —

MINING COMPANY,

202 Sansome Street, San Francisco

Having located, under the title, and at the place above indicated, for the purpose of conducting the ARTESIAN WELL, LAND IRRIGATING, PROSPECTING and MINING business, in all its various branches, on the Pacific Coast, we call your attention to the following facts:

1. That we have the best Machinery in the world, and so pronounced by the best judges in the world.
2. That we are practical Miners and Engineers, and understand what we are about.
3. That we sink Wells to any required depth, through all formations, including quicksand, boulders, and the hardest rock.
4. That we perform the above named service for about one-half the prices now charged for the same.
5. That as we do not expect to bore the whole Pacific Coast ourselves, we will sell our Machinery to parties who desire to purchase, and instruct them how to use it, free of charge.
6. That we want active and responsible Agents, and will guarantee a fortune to men of the right stamp.
7. That by calling at our office, or addressing us for circulars and catalogue, we will verify the above statements to the satisfaction of all reasonable and sane inquirers.
8. That if you or any of your friends are interested in the above facts and statements, we shall esteem it a favor if you or they will call upon or address us, and we will talk business and tell you the truth every time.

California Artesian Well and Mining Co.,

202 Sansome St., San Francisco, Cal.

E. P. HILL, Manager. J. W. R. HILL, Engineer.

FINE WOOD

ENGRAVING

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REASONABLE PRICES

At the Office of the MINING AND SCIENTIFIC PRESS, No. 202 Sansome Street, S. F.

☞Samples shown and Prices furnished on application.

PRINTERS' PROOF PRESS,

COMPLETE AND IN GOOD WORKING ORDER,

For Sale at this office,

AT THE LOW PRICE OF $37.50.

☞Call and see it.☜

Mill and Mining Machinery

OF ALL KINDS For Sale by BERRY & PLACE

At the Old Stand, Market, head of Front Street, S. F.

GIANT POWDER

MANUFACTURED UNDER A. NOBEL'S ORIGINAL AND ONLY VALID NITRO GLYCERINE PATENTS

Nos. ONE, TWO and THREE.

Stronger, Better and Safer than any other High Explosive.

Judson Powder

IS NOW USED IN ALL LARGE HYDRAULIC CLAIMS.

It breaks more ground, pulverizes it better, saves time and money, and is superseding the ordinary powder wherever it is tried. ☞Triple Force Caps and all Grades of Fuse.

BANDMANN, NIELSEN & CO., San Francisco.

VULCAN BLASTING POWDER.

The strongest and most economical explosive in use.

Wherever it has been given a test, it has surpassed all other high explosives.

Works at SAN PABLO, California, and RENO, Nevada. | Office, No. 123 California Street, SAN FRANCISCO.

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BRASS and BELL FOUNDRY

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MANUFACTURER AND IMPORTER OF

Church and Steamboat BELLS and GONGS
BRASS CASTINGS of all kinds,
WATER GATES, GAS GATES,
FIRE HYDRANTS,
DOCK HYDRANTS,
GARDEN HYDRANTS

A General Assortment of Engineers' Findings.

Hooker's Patent Celebrated

STEAM PUMP

☞The Best and Most Durable in use. Also, a variety of other

PUMPS

For Mining and Farming Purposes.

ROOT'S BLAST BLOWERS,

For Ventilating Mines and for Smelting Works.

HYDRAULIC PIPES AND NOZZLES,

For Mining Purposes.

Garratt's Improved Journal Metal.

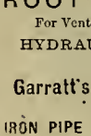
IMPORTER OF

IRON PIPE AND MALLEABLE IRON FITTINGS.

ALL KINDS OF

WORK AND COMPOSITION NAILS,

AT LOWEST RATES.



GARDNER'S

Celebrated

Governor

These Steam Governors have long been known as THE BEST, and as lately Improved and Perfected, they have no Rival.

THE SAFETY STOP

On these Governors is alone worth double the price of the Governor. We have sold over six hundred, and

Never one has Failed.

They are sold at the same price (or less) as ordinary Governors. Send for Circular.

BERRY & PLACE,

Market, head of Front St., San Francisco.

N. W. SPAULDING'S

PATENT DETACHABLE TOOTH SAWS,

Manufactory. 17 & 19 Fremont St., S. F.

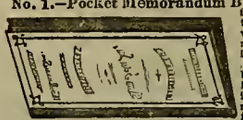
PROMPT AND SUCCESSFUL.—*Messrs. Dewey & Co:*—Gentlemen: Your Circular letter, 12th inst., informing me of successful termination of my application for patent received. Please accept thanks for the prompt and successful manner in which you have managed this business. Yours respectfully, J. H. CAVANAUGH.

Walla Walla, Dec. 24th.

HOLIDAY CABINET.

6 New and Useful articles for 25 cts. An unheard of offer. Examine the list.

No. 1.—Pocket Memorandum Book.—Made of finest Silicate, a material that never wears out. For memoranda, figuring, or writing of any description. Use an ordinary lead pencil. Writing can be instantly rubbed out with the fingers, leaving the pages clean for new entries. Complete Calendar for 1879 with each Book. Useful alike to school-boy, girl, or business man. Is alone worth the price of whole Cabinet.



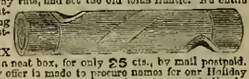
No. 2.—Youth's Box of Paints, with assorted paints and brushes. A pleasant and instructive pastime enabling those who have a taste for it to learn the beautiful art of water color painting.

No. 3.—Mystic Oracle, or Combination Cards.—A great mystery. Will enable you to learn (without their suspecting it) the age of any "old bach," "old maid," or other person; also to discover any number or numbers thought of. Never makes a mistake. Just the thing for social parties.

No. 4.—Eureka Pocket Book.—Suitable for young folks of either sex, but may be used by any one. Has compartments for bills, postage stamps, and currency. Neat, handy, and useful.

No. 5.—Jet Sleeve Buttons.—New and elegantly colored designs. They contain no metal, cannot tarnish, and are always bright and ornamental. Adapted alike to ladies and gentlemen, young or old.

No. 6.—French Merleton.—A rousing, rattling musical instrument, sure to please every wide-awake lad. Will scare the cats, drive away rats, and set the old folks frantic. An entire brass band in a nutshell. Jolliest thing ever made for Christmas.



We send all SIX articles, packed in a neat box, for only **25** cts., by mail postpaid. This extraordinary offer is made to procure names for our Holiday Catalogue, as we hope to make permanent customers of all who purchase the Cabinet. Persons not desiring ALL the articles can sell those not wanted for more than the cost of the whole. Clean, unused Postage Stamps taken same as cash. Address,

Eureka Trick and Novelty Co.,

P. O. Box 4514. **39 Ann St., New York.**

This advertisement will not appear again.

South Pacific Coast Railroad.

New Route (Narrow Gauge.)

Commencing Monday, September 30th, 1878, boats and trains will leave San Francisco daily from the New Ferry Landing, foot of Market street, at 5:30 A. M., 9:00 A. M., and 4:00 P. M. for ALAMEDA, SAN JOSE, LOS GATOS, ALMA, and all way stations.

Stages connect with 9:00 A. M. train at Alma for Santa Cruz.

EXCURSION TICKETS will be sold Saturday afternoons and Sunday mornings from San Francisco and Alameda to San Jose, Los Gatos, and Congress Springs, and return, at reduced rates, good only until Monday evening following date of purchase.

FERRIES AND LOCAL TRAINS, DAILY.

From San Francisco.—5:30, †6:40, 9:00, 10:30 A. M.; 1:30, 4:00, 5:15, 6:30 P. M.

From High Street, Alameda.—†5:10, 7:40, 9:01 A. M.; 12 M.; 2:40, 4:00, 5:16, 6:24 P. M.

†Daily, Sunday excepted.

The Company are prepared to carry vehicles of all kinds on the Ferry, to and from San Francisco, Alameda and Oakland.

THOS. CARTER, Superintendent. GEO. H. WAGGONER, Gen'l Passenger Agent

---

ASSAYING 504 Washington St., SAN FRANCISCO. TAUGHT.

S. Phillips M.E.

CONSULTING ENGINEER, EXAMINER OF MINES

MINERAL ASSAYER & METALLURGIST.

The Explorers', Miners' & Metallurgists' Companion, 672 pages, 83 Illustrations, (2d Edition.) Price.....$ 10.00
The Prospector's Patented "Wee P. t" Assayer... 100.00
The Testing machine for Gold, Silver, Lead, Etc.. 40.00
Cabinet of Fluxes etc., for these machines..... 20.00
Pocket Laboratory for Blowpipists..... 50.00
Vest Pocket Blowpipe..... 3.00
CHARGES.—ASSAYING, $5; TESTING, $2 per metal.

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507 Mechanical Movements.

Every mechanic Should have a copy of Brown's 507 Mechanical Movements, illustrated and described. Inventors, model makers and amateur mechanics and students, will find the work valuable far beyond its cost. Sold by DEWEY & Co., Patent Agents and publishers of MINING AND SCIENTIFIC PRESS, San Francisco. Price, $1, (post paid.

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Iron and Machine Works.

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MANUFACTURERS OF

IRON CASTINGS and MACHINERY

OF ALL KINDS.

Fremont Street, Bet. Howard and Folsom,

SAN FRANCISCO.

SACRAMENTO BOILER WORKS,

214 & 216 BEALE St., (rear of Ætna Foundry)

J. V. HALL,

PRACTICAL BOILER MAKER,

Marine, Stationary and Portable Boilers, Smoke Stacks, Hydraulic Pipe, Oil or Water Tanks, Ore and Water Buckets, Gasometers, Girders, Bridges and Iron Ship Building.

ALL KINDS OF SHEET IRON WORK.

Repairing promptly attended to at the lowest possible terms.

UNION IRON WORKS,

SACRAMENTO, CAL.

ROOT, NEILSON & CO.,

MANUFACTURERS OF

STEAM ENGINES, BOILERS AND ALL Kinds of Machinery for Mining Purposes.

Flouring Mills', Saw Mills' and Quartz Mills' Machinery constructed, fitted up and repaired.

Front Street, Between N and O Streets,

SACRAMENTO, CAL.

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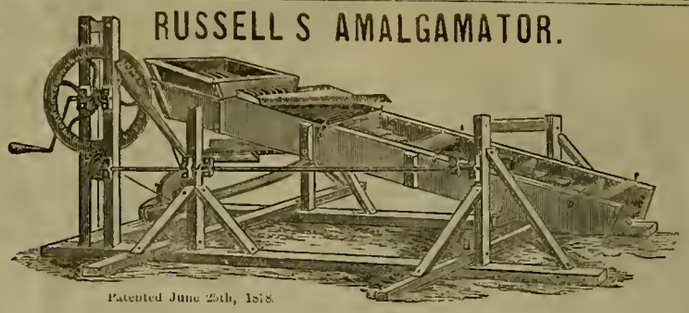

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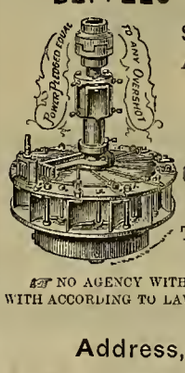

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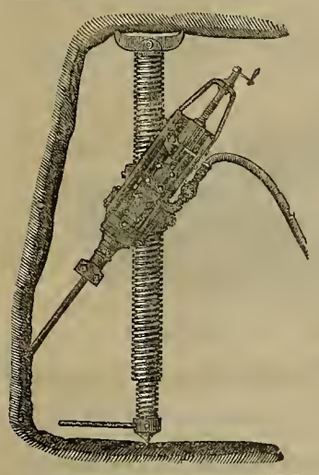

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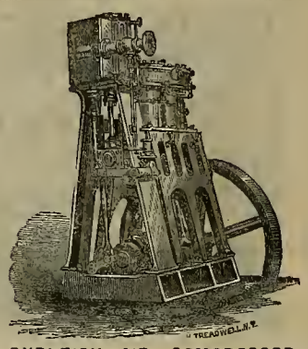
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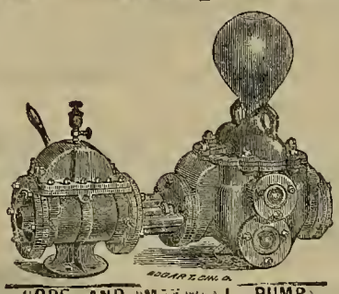
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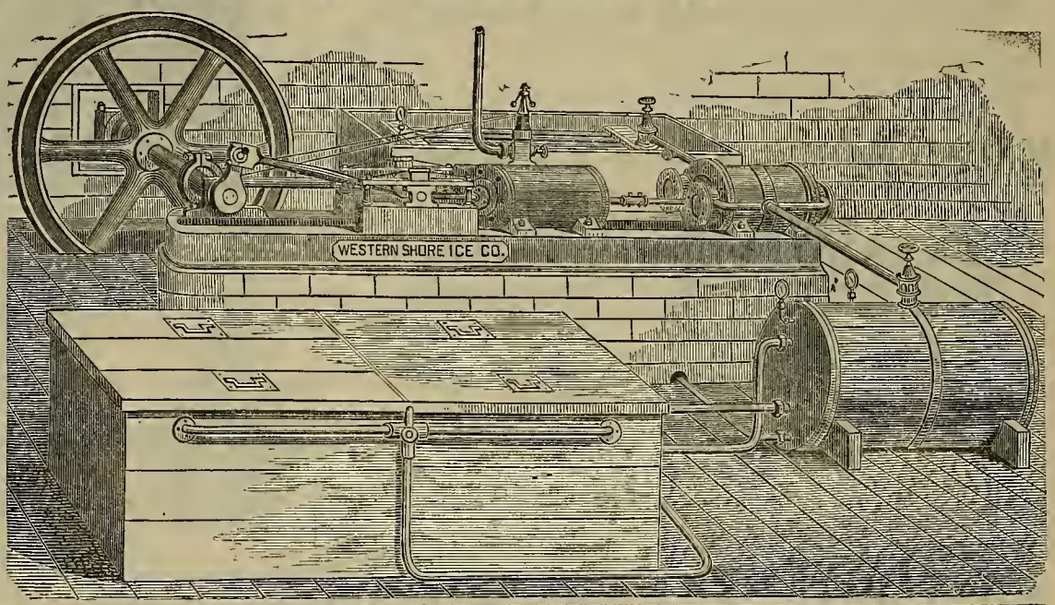

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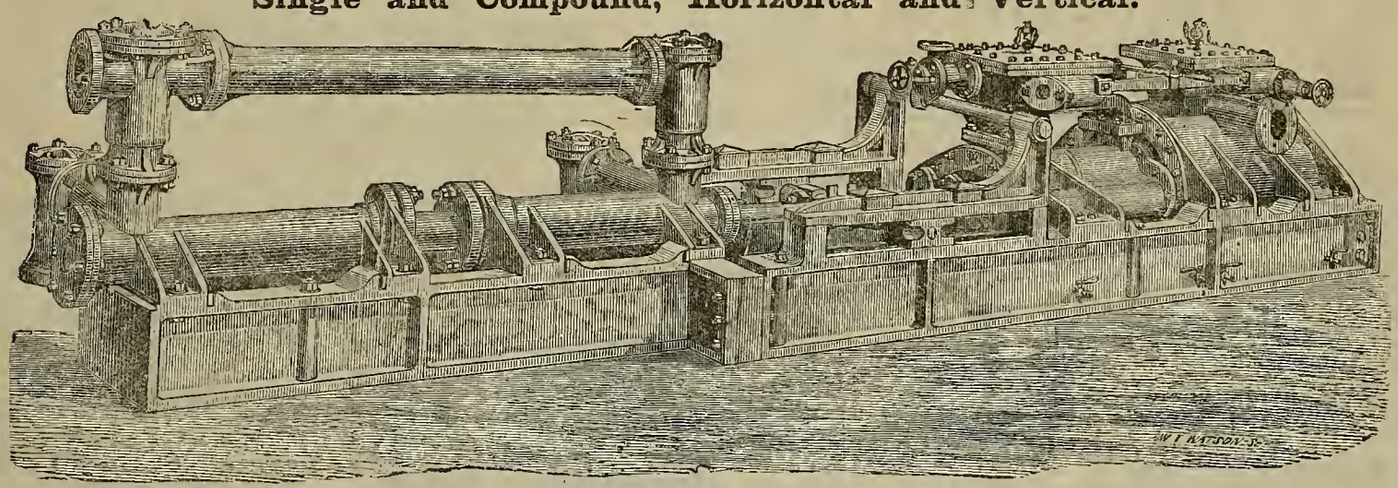

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BY DEWEY & CO., Publishers. SAN FRANCISCO, SATURDAY, DECEMBER 14, 1878. VOLUME XXXVII Number 24.

Deep-Mine Pumping Without Pump-Rods.

It is a well-known fact that the pumping machinery and the drainage of a mine make up the most costly items of expense, and hence every new idea bearing upon the problem is of some interest to the miner. We notice in a late number of *Dingler's Polytechnische's Journal* an improvement in pumping machinery, which, while not altogether new as to its main idea, still differs somewhat in its method of application from anything which we have seen. The inventor is a mining engineer, by the name of A. Angeley.

The purpose of the machine is to do away with the long system of pump-rods, etc., which is such a cumbrous instrument in deep mining. The principle by which this is effected is by means of pressure transmitted by the column of water itself. This is easily effected, according to the well-known property which fluids have of transmitting pressure equally in all directions, and also in virtue of the well-known incompressibility of water.

The simplest arrangement of this pump consists of two parts, the suction part and the compressor. The first consists of two vertical cylinders placed the one above the other, *A* and *B*, Fig. 1. In each of these cylinders moves a piston on opposite ends of the same piston rod; these pistons are without valves, and fit watertight. The piston rod passes through a stuffing box, both above and below the upper piston. The upper pistou, *a*, bears against a spiral spring, *r*, which is coiled about the piston rod, and rests against the top of the cylinder. The upper cylinder, *A*, is connected at its lower end by means of a side tube, *D*, with the ascending pipe, *T*, while the larger cylinder, *B*, is connected by means of the side tube, *D*, with the valve chamber, *E*; the latter is provided with valves, whose operation is evident from the cut.

The apparatus for compression consists of a pump cylinder, *F*, placed at the top of the pipe. It contains a piston, moved up and down by the handle, *P*. The discharge opening, o, is left free when the piston, *p*, has reached its highest point. Now, when the downward stroke is made, the pressure upon the piston, *p*, is transmitted almost without loss to the piston, *a*, and lifts this and with it *b*, while it at the same time compresses the spring, *r*. At the same time the space *x*, beneath *b*, fills with water. When *a* and *b* have completed their stroke, and the pressure on *x* is removed the spring *r* reacts on *a*, and the piston, *a*, and with it *b* are driven down. This, of course, has the effect of closing the lower valve chamber, *E*, and of forcing the water in *x* and *x'* up the pipe column, and out of the discharge opening at *O*.

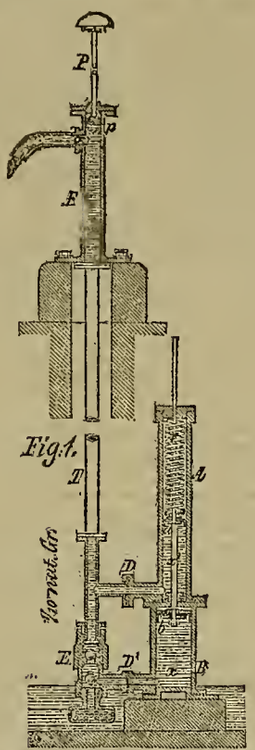
It would seem at first sight as if the amount of water flowing from o, would be exactly equal to that sucked in under the lower piston, *b*. This, however, is not the case; it is in fact found to be somewhat greater. This is due to the fact that the column of water in the pipe, *T*, continues in motion for a short time after the pistou, *b*, has finished its downward stroke in virtue of the momentum which it has acquired, hence a small additional amount over and above what has entered the cylinder, *x*, will enter the pipe, *T*, through the valve chamber, *E*. In order to obtain the maximum of useful effect, the pressure of the spring upon the small pistou, *a*, at its lowest position, must be a little greater than the sum of the pressures upon *a* and *b*.

The above arrangement is stated to be economically adapted to all wells deeper than 8 meters (26¼ feet).

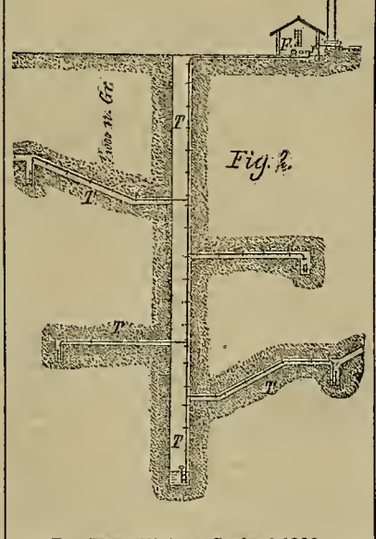
The advantage of this arrangement is especially apparent in deep-mine pumping. The entire system of pump-rods, pump-bobs and connections of all sorts is entirely done away with, and besides the advantages which result from this fact, is to be added another, viz.: the simple manner in which the hitherto difficult operation of connecting pumps at the foot of inclines, drifts, etc., with the main pump column is effected. The column of water in the pipes transmits pressure equally in all directions, and therefore it is plain that a complicated system of pumps, as is shown in Fig. 2, is not only perfectly practicable, but at the same time as easily applied as the arrangement at the bottom of the shaft.

Fig. 3 shows the arrangement which it is proposed to apply to deep-mine pumping. *F*, is the compressor which is here arranged horizontally, *T*, the pump column, *E*, the valve chamber, *A* and *B*, the two cylinders, and *a* and *b*, the two pistons, as in Fig. 1. Instead of the spring which gives the reaction in the small pump, we have here a system of weights, shown at *R*, which can be adjusted according to the length of the superincumbent pump column, for the station at which the pump is placed.

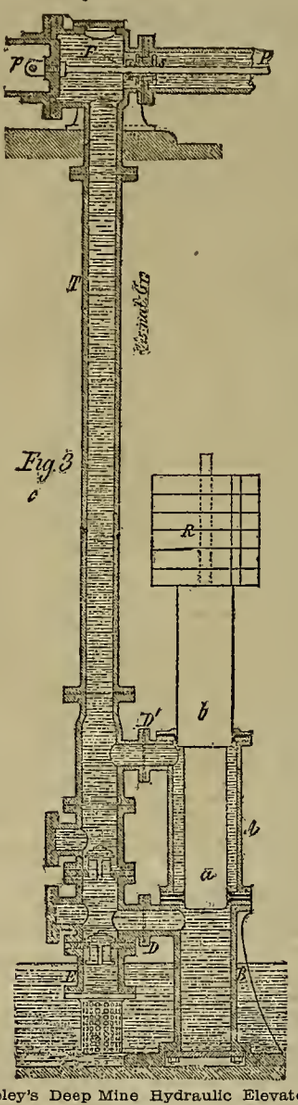
Of course in every such departure from the methods which experience has shown to be practicable, it is well to be conservative, and we are far from lending our unqualified endorsement to each an arrangement, in view of the fact well-known to all practical men that details are frequently of as vital importance to the success of any technical enterprise, as the principles themselves. But we feel certain that it is well to call the attention of our mechanical engineers to what may be when properly developed, a very important addition to the apparatus for deep-mine drainage on the Pacific coast.



Angeley's Hydraulic Elevator. Scale, 1-10.



For Deep Mining. Scale, 1-1000.



Angeley's Deep Mine Hydraulic Elevator. Scale, 1-25.

THE first mining corporation in Arizona was incorporated at Florence, Dec. 9th, as the "Arizona and Louisiana M. Co.," with a capital of $5,000,000, divided into 100,000 shares of stock. President, Jos. Collingwood; Secretary, John J. Devine; Treasurer, J. Collingwood & Co.; Attorney, Hon. G. H. Oury, Florence; Superintendent, M. A. Baldwin, San Francisco. Trustees—Jos. Collingwood, Hon. G. H. Oury, Hon. J. D. Walker (Florence), M. A. Baldwin (San Francisco), A. B. Seelye (New Orleans). The company will commence operations at once in developing the group of rich mines known as the "American Flag" series in the Santa Catalina mountains, about 40 miles southeast of Florence.

LIGHT rains quite general throughout the State, Dec. 9th.

Safety Attachment for Mine Cages.

Chas. W. Lane, of Aurora, Nevada, has recently patented through the MINING AND SCIENTIFIC PRESS Patent Agency, a novel device for disconnecting a mining cage or giraffe from the cable. As miners know very well, serious accidents often occur by a mining cage being drawn up too far, and going into the sheaves in the gallowe frame over the shaft, and very frequently lives are lost in this way. Many devices have been tried for the prevention of this kind of accidents, but they are, most of them, much too complicated, or necessitate material changes in the mechanism already constructed. Mr. Lane's device is intended to act automatically when the cage is raised to any given point above the mouth of the shaft; its object being to disconnect the cable from the cage when it is raised too high, and is in danger of being drawn into the sheavee. The usual safety apparatus for holding the cage in the guides catches the cage after the cable is disengaged from it. With this device no alterations whatever are made in the existing conditions of hoisting machinery, the device being applied to the cable just above the cage. It consists of a device which is placed between the end of the cable and the cage, connecting them together, formed of a box or casing in which is enclosed a latch bearing a hook formed on its upper end, and a trigger projecting through the side of said case. This hook engages with a link on the end of the cable, and in case the cage is raised too high, the trigger engages with a projecting bar or lug placed in the proper position, so that the hook is disengaged from the cable, being held by the guides in the usual way. The hook and trigger are formed in one piece, made in a peculiar shape, and a spring holds the catch so that it can easily be disengaged by meane of the trigger.

The form of construction is such that it possesses great strength and comparative lightness. The edges and sides of the case are solidly bolted together, and even should the pin on which the latch swings break, the cage would not be separated from the cable, as the latch could not get out of the casing and release the link. The peculiar shape of the latch is such that the link cannot be disengaged from it by any other means than the trigger striking the projection as described. Holes are formed in the lower part of the sides of the case, so that any water which may run down the cable will run out. This device may be applied to cages in shafts, giraffes in inclines, or any place where it is desired to disengage a cage or car from a cable or rope before it reaches any given point.

"MORRISON'S MINING DIGEST."—A. L. Bancroft & Co., of this city, have just issued the above-named book, compiled by R. S. Morrison, of Georgetown, Colorado. It is a digest of the law of mines and minerals, and of all controversies incident to the subject matter of mining, comprising the cases in the English and American reports from the year books to the present time. In the arrangement of the book, each syllabus has a separate heading, and as the general plan is based upon the idea that a digest as a work of refereuce should contain every possible aid to the speedy finding of the proposition sought, the index is so arranged as to contain under each title a reference to those syllabi which might have been collated under that title, but which, owing to their relation to other headings, have necessarily been distributed under such headings. The work contains decisions pertaining to mining from all the States, and from England, and combines in one convenient reference hook everything pertaining to the subject. It shows a vast amount of energy and work on the part of the compiler, and bears traces of diligent and faithful research. We know of no hook so useful to the legal profession on this coast, where so many mining cases occur. The references are all carefully given in each decision. The arrangement of the hook is admirable, and it is worthy of a place in the library of every one interested in mining matters, as there is no question in connection with the legal phases of the subject which will not be found answered in its pages.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—EDS.

An Extensive Establishment.

The Manufacture of Bone Fertilizers.

EDITORS PRESS:—A short time ago your correspondent took a stroll out to the bone-charcoal and agricultural fertilizer manufactory of his old friends, Ohlandt & Buck, at the beginning of the second Long bridge in South San Francisco. These gentlemen commenced the business of making bone-charcoal and neats-foot oil in this city in 1865. By persevering industry and strict honesty in all their transactions, they have built up a business that overshadows all others of its kind on this coast, and, in extensiveness, is equaled by few in the United States. At their factory they give constant employment to more than 20 men.

Up to about 1870, Messrs. Ohlandt & Buck confined their operations exclusively to the manufacture of bone-charcoal and neat-foot oil. Since the latter date they have given a part of their attention to the manufacture of bone fertilizers.

Their long and extensive experience in the preparation of bones has enabled them to perfect a process—the invention of the proprietors themselves—by which they can turn out a better and cheaper article of bone-coal than has heretofore appeared in the market.

The energy and perseverance of Ohlandt & Buck have enabled them successfully to compete, during all these years, with the products of Eastern manufacturers, till they have succeeded in driving them almost completely from our markets. Their bone charcoal is used exclusively in all the sugar refineries on the Pacific coast, and they have now commenced shipping it to Mexico, where several sugar refineries have been lately started.

For the preparation of the bones for charcoal they have four large kilns, in which the bones are charred or carbonized, and every trace of animal matter is destroyed. The bones are next ground, when they go through a careful process of screening, and the article is then fit for use for general filtering purposes. The refuse or dust left after this operation is put through a chemical process, and thus is made the superphosphate.

The ground bone, bone-meal, or bone-flour, as it is variously called, according to the degree of fineness to which it is ground, we will describe by quoting from Prof. Hilgard. In his report to the President of the University for 1877, describing a visit to this same manufactory, he says: "This establishment was visited for the purpose of ascertaining what progress had been made in the manufacture of phosphate manures on the Pacific coast; and specimens of the article were courteously furnished by the proprietors. * * * * They manufacture both bone-meal and superphosphate, but for want of a market, chiefly the former. This is prepared in the most approved manner, by steaming the bones, which process not only renders the bones so friable as to be much more easily pulverizable, but is also well-known to increase materially the efficacy of the meal as a manure. The Professor then describes the superphosphate made by this firm, and draws a comparison between it and the Eastern article found in our market, by no means flattering to the latter.

For the manufacture of this bone-meal, the firm has lately introduced improved and expensive machinery. It is their policy to spare no expense in availing themselves of all the latest improvements in machinery that bear on their business. In some instances their best improvements have been the products of their own observation and experience.

But the chief interest which this extensive establishment has for us, is the manufacture of agricultural fertilizers. For this business they have advantages which no other firm on the Pacific coast can have. Their large bone-charcoal business with the sugar refineries, gives them very superior advantages. Schooners and lighters can take their products right from their own wharf, and carry them to any part of the bay, or to any ship in the harbor.

Strange to say, with all these advantages so near at home, the California farmers have not yet been persuaded to make any noticable use of these wonderful fertilizers. The firm stated to your correspondent, as they did to Prof. Hilgard, about a year ago, that the home consumption of their articles is very small, although for the past two years it has been on the increase, especially for use in vineyards and on lawns. They find markets for most of it in Germany, the Eastern States, Australia and New Zealand. The New Zealand market for these products was first opened up by this firm, and they can now dispose of all they send there; and as they showed us by quotations from New Zealand papers, their products bring a higher price than any other brands in that market. When we consider, too, the high freight from here to New Zealand, we cannot help feeling surprised, when we compare the appreciation of these fertilizers shown by the farmers away off in New Zealand with the wonderful lack of it shown by our California farmers. If there were no other fact than this, it would be a proof that there is a most urgent need of diffusing agricultural information of a very fundamental kind among our farmers. Of course the most obvious means of doing this is through our College of Agriculture at the University; but it does seem that the Grangers and other agricultural societies might, by some concerted movement, make themselves the means of diffusing such information through the agricultural press, pamphlets and lectures, by making and giving the results of experiments.

But still the extraordinary qualities of bone fertilizers are so notorious to all who possess the most elementary ideas on scientific agriculture, that the indifference to their use, by our California farmers, seems almost ludicrous. Our farmers take crop after crop, year after year, from their farms, never giving themselves a thought about the exhaustion of the soil, or that they are robbing themselves and their children of their future substance, till their land at last will refuse to pay the expense of cultivation. They lose sight of the simple fact that for the development of their crops not only must the soil be prepared for the seed, but the soil itself must contain certain mineral or earthy matter which enters into the structure of their fruits and cereals. When the soil contains sufficient quantities of this the farmer will be rewarded for his labor—otherwise, not. It is this substance that comes out of the soil that constitues his profit. Every crop removed from the soil removes a certain percentage of its fertility, and if the process were continued without renewing the fertility, nothing is clearer than that the soil would soon be exhausted. When the farmer sells a bushel of grain, or a ton of hay, he sells so much of the mineral wealth of his land. These mineral constituents are generally distributed on the surface in limited quantities. The carbonic acid, nitrogen and ammonia compounds are constantly being returned to the soil through the atmosphere, by nature herself, according to the immutable laws of circulation. But the phosphates and potash of the soil are rapidly exhausted, and these must be returned to the soil by the agriculturist himself.

The phosphoric acid from our farms is carried away in grain bags, fruit boxes and animal frames on our railroads to our large cities, where it is lost; or is taken in ships to England. Says Prof. Waring: "Phosphoric acid forms about one-half of the ashes of wheat, rye, corn, buckwheat and oats; nearly the same proportion of those of barley, peas, beans and linseed; an important part of the ashes of potatoes and turnips; the cultivation of our whole country has been such as to take away phosphoric acid from the soil without returning it. Every hundred bushels of wheat sold contains about 60 pounds of phosphoric acid. For every cow kept on a pasture in the summer, there is carried off in veal, butter and cheese, not less than 50 pounds of phosphate of lime (bone earth) on an average. This removal of one of the most valuable constituents of the soil has been the cause of more exhaustion of farms and more emigration in search of fertile districts than any other acts of injudicious farmers."

No inference can be plainer from these facts than that the present methods of farming in use in California will prove ruinous in the end. Since this loss to the land which we have spoken of must be returned to the soil by the farmer himself, it follows that the next thing to look at is the best means of effecting this end. All know that bones are the most available source of phosphoric acid—ordinary bone-meal containing from 24% to 25% of phosphoric acid, besides other desirable fertilizing qualities. Prof. J. T. W. Johnson (in Agricultural Chemistry) says: "Few substances have of late years done so much to increase the agricultural produce of various parts of England, as the use of ground bones for manuring the land."

England imports thousands of tons of fertilizers every year, in addition to which every particle of material valuable as manure—all the excrements of the large cities, even—is saved. The fertility of our soils goes not only to feed English mouths, but to increase her harvests, too.

In the same part of the "report" above alluded to, Prof. Hilgard says: "It can hardly be questioned that the hauling of common stable manures, from the city stables to the truck gardens outside of the city, very frequently renders that manure more expensive than would be an amount of high-grade superphosphate, producing a corresponding commercial result. It cannot be long before this will be understood, and the shipping of our phosphates to Australia replaced by sales in the home market. I cannot help thinking that if a first-class fertilizer of this kind, sold by assay of actual value as are other products, were to be had in the San Francisco market it would soon come into use, and that a most profitable industry would thus speedily be created. Wherever crops producing a high value per acre (such as the fruits of California) are prominent in culture, the introduction of the use of concentrated commercial fertilizers, to increase and improve the products, cannot be long delayed."

Undoubtedly, as suggested by Prof. Hilgard, fruit culture will be the first field for the introduction of these fertilizers, and they have already begun to be used for this purpose; but they can be used with almost as much profit in the cultivation of cereals. It is not uncommon for the number of bushels to the acre to be doubled by the proper use of bone fertilizers.

The effect of these bone fertilizers on the soil is not exhausted with the present crop, but its effects will run through several years.

Messrs. Ohlandt & Buck are now preparing to give more attention than formerly to the sale of their fertilizers in the home market, and all will have a chance to give them a fair trial. They have also commenced the importation of guano; but as yet the greater part of this is also intended for export. From the personal knowledge your correspondent has of these gentlemen, we are sure that all who deal with them will be profited and satisfied. M.

San Francisco.

Advancement in Mining Stock Gambling and Results.

[By ALMARIN B. PAUL.]

When an old California miner casts his mind back a quarter of a century, and recalls the mechanical devices for working the precious metals of our quartz lodes, and then over the active field of these improved times, he sees a stride so wonderful as to almost make him question the fact that so much has been done in so limited a period. That we are building up a pursuit, soon to be so productive of wealth, and so perfect and extensive in operation, and so profitable in results, as to enlist the attention of the mining world, is as sure as that we have already done so much. Activity, quantity and perfection, are the prevailing ideas when the mind once rests on mining, mining machinery and production.

Not only in the mechanical department of mining is there such rapid progress, but in the science of mining.

The practical hard-fisted miner—the prince of experts, by his years of toil and observation, in delving for the precious metals, has studied the science of the rocks and the lodes, till he is as thorough, practical and enlarged in his ideas, as the advances of the mechanical devices which may surround him.

Such is the fact, and we as a mining community have much to be proud of for our advancement, and to-day should be the wealthiest population on the globe.

The great mass of people should be prosperous and happy, through the vast mineral product of the Pacific States; but is it so, and why is it not? Everything in nature has its parasites, and so has legitimate mining in these villianous "put up" jobs to rob the credulous outsider with his little capital for a venture in mining. I don't know but what I can say, too, that this branch of mining (?) enterprise has advanced to such enlarged conditions that the prisons of years past are only good for the smaller rogues.

To be polite, we must accept the term of "stock gambling," this idle, non-productive, blood-sucking parasite of mining, a pursuit which has infamy as its companion, immorality, ruin and degradation as its climax.

In the face of such grand achievements in mining, science, mechanical and development of vast mineral belts, why is it that intelligent men and women, too, love so much to "sport" in stock rather than legitimate delving into the bosom of nature to bring forth her wealth, and to receive therefrom, her undefiled treasures, for peace, comfort and elevation.

To destroy this wild stock gambling spirit should be the aim of every honest newspaper on the coast, as its destruction is prosperity and comfort of the masses, the re-enstallment of condition as it was in former years. The making of life and thrift in every mining locality, instead of this centralizing capital among the few, and in special localities where gambling deals are the easiest bred. Was capital more plentiful for good legitimate properties, no matter where located, a cheer would go up from every county of every Pacific State and Territory, as then there would be a reward for meritorious mines, which each adventurer would be willing to expend muscle and money to make so by developments.

As it is, what is the use of the miner wearing himself out to develop when a hole in the ground or a "hatful of ore" has millions in it for the few when handled by unscrupulous operators. Drop this stock gambling and embark in enterprises where your capital has a show of legitimate reward. With your capital build up gold and silver-producing manufactures; develop your mines and look for your reward by honest industry and attention to legitimate mining. Gather your wealth from mother earth and save your brains from the whirlwinds and typhoons of stock speculation. To become a producer of wealth instead of a consumer, should be the endeaver of every intelligent man and woman. Legitimate mining produces—stock gambling consumes, and too often not only wealth but character.

As I before remarked, the strides are such that mining, through its expeditious working and cheapened machinery, is becoming more profitable every year, and he who now seeks the mountains with capital or muscle, will, in a few years, reap a rich reward. And now is the time the whole United States are having an eye to legitimate mining. It is becoming an acknowledged fact that with economy, skill and experience it can stand on a par with other manufacturing ventures. So let us all lend a hand and voice in building up our mining localities, and thus more universally distribute wealth, comfort, peace and intelligent efforts.

San Francisco, Dec. 1st, 1878.

THE suit of the United States against Claflin & Co., of New York, for the recovery of nearly $250,000, has been decided by the United States Supreme Court in favor of defendants.

Pedagogic Plunder.

The sound of bribery and corruption has fallen to the minor notes. Long enough has the din of purchased congressional eloquence, of purchased judicial decision, of purchased action in all departments of trust, grated on the ear. The people must be tired of the "heavy villain" in the drama of public affairs, and the disclosures of the last few days furnish the lighter shades of human depravity for popular contemplation. And yet we are not sure that it is indeed so light as at first it appears. There are some petty transgressions which strike directly at the foundation of all virtue, truth and integrity. Let us see if such be the outcroppings of evil to which we allude.

On the day before the regular examination for teachers' certificates in this city, the *Evening Bulletin* printed in full the questions which had been prepared in the office of the State Superintendent of Public Instruction, and sent thence to the several counties of the State under seal, to be opened only on the day of the examination. This publication demonstrated that the questions which the State Superintendent sends out are not guarded as they should be, but that persons, other than the boards of examination, get possession of these State secrets and use them to extort money from candidates for teachers' certificates; because, by having opportunity to study the questions beforehand and memorize answers thereto, any one can gain the coveted certificate even though wholy devoid of proper general qualification. This publication of the questions threw the examinations overboard, and has been followed by protracted examination by the city Board of Education to discover, if possible, by whose agency this abomination has been enabled to flourish. These examinations are still in progress and it is impossible as yet to determine who is the guilty party, who has betrayed the trust of the State department of public instruction.

It is probable that farther investigation will disclose this fact, and we shall have opportunity to expose for public execration the base trafficker in public trusts. Enough has already been discovered to determine that the evil is not a recent one, but that for about ten years it has been possible, by the villainy of some one, to secure, in advance, copies of questions which the public supposes are held from all eyes until the time of the examinations. It has been shown that in this city, if not elsewhere, candidates for examination have been crammed with answers, and made to pay high a price for the same by unprincipled parties connected with our public school system. The result is, that certificates have been secured by persons who could not have obtained them by fair examination, and the public money has been paid for instruction to those who corruptly purchased their title to teach, and the public service has thus been outraged.

We have called these minor notes of depravity in view of the heavy dirges of corruption which have been heard from Congress, from our public works, and from our public institutions of trust and savings. And yet it is hard to conceive of depravity which is more densely evil in its tendencies and influences than that which invades our public schools, and which forces us to entrust our children to the care of corrupt and ignorant persons whom we fondly believe are of good moral character, and wise in the themes on which we seek instruction. Our little ones are taught by us with all diligence to respect their teachers, to look to them for moral and educational guidance during the hours that they are away from us. Our youth are enjoined to obey and respect these exponents of the State's desire to train them up in principles of good behavior and of general culture. Now we are forced to see that, in some cases, we have taught respect for persons who have gained their trusted places by the basest means—who have entered upon their work with fraud, corruption and deception. We send for truth to those who have acted lies; for honesty to those who have, by the aid of coin, stolen their certificates of qualification; for wisdom to those who are confessedly ignorant and incompetent. Could there be a more startling disclosure?

This matter has not yet been probed to the bottom, but we trust it may be. It is the more serious from the fact that the evil has been of long continuance. Let something be done now which shall check the evil for a generation at least. Let the brand of infamy be placed so plainly upon all who have been concerned in this evil work, that it shall serve as a wholesome warning to all who would profit by the unholy traffic. Let the investigation go on. Let us all know who are the people's foes, and who, for petty plunder, would turn our public school system into a hotbed for crime, corruption and incompetence.

TRADE DOLLARS AS BULLION.—Secretary Sherman says there is a strong speculative feeling springing up to give silver bullion in the form of the trade dollar a value greater than other bullion, thus discriminating in favor of bullion held in China against bullion in the hands of our miners. The Secretary says trade dollars will be bought as bullion upon bids each Wednesday, and that preference will be given to trade dollars over other bullion. This is the Secretary's answer to the San Francisco offer of 1,000,000 trade dollars deliverable there from China within sixty days.—*Bulletin.*

MECHANICAL PROGRESS.

A German Arrangement for Deep Mine Pumping.

We read in foreign exchanges an account of a pumping engine of great power, recently constructed for the Hartz silver mine. *Iron* says that after the Hartz famous silver-lead mine had reached a depth of more than 2,800 feet it was found that the pumping system of raising water in numerous shafts with primitive machinery, would not, in the future, be able to cope with the growing bodies of water. A deep vertical shaft was therefore sunk beyond the hanging wall of the main lode, the Burgstadter Zug, which was to serve for the centralization of the pumping machinery, and a large gallery was driven at a depth of 670 feet below the lowest drainage adit, the Ernst August, to serve as a general reservoir. The problem to be solved was to construct machinery which would utilize the supply of water coming from the main ditch and pond system of the district to raise the mine water for the reservoir level to the Ernst August drainage adit, a hight of 738 feet. The depth of the reservoir below the point where the supply tunnel enters the Maric shaft (95 feet) was 1,959 feet. It was decided to use two water-pressure engines placed in the reservoir level, and as the water for driving the engines had to be conducted to the drainage level also, the effective head of water was 1,209 feet. By this arrangement the necessity of using a long pump rod, requiring frequent repair, was avoided, a difficulty which placing the engine in the adit level would have entailed. The disposition chosen more than counterbalanced the drawbacks of an increased length of pipe, and its greater thickness in the lower portions to resist the pressure of 59 atmospheres. The difficulty in constructing a water-pressure machine under such conditions was that as water is incompressible, and that as it transmits shocks in all directions, any sudden changes of the diameter of the vessels through which it flows are apt to prove disastrous to the machinery. The twin engines are direct-acting, and are provided with a fly-wheel, upon the shaft of which are the eccentrics which move the piston-valve gear. The gearing had to be so arranged that the time of the stroke of the main piston coincided exactly with that of the valve pistons, but as it is manifestly impossible to preserve so accurate mounting for any length of time, the openings of the valve were not entirely closed at the end of the stroke, by which means sudden shocks are avoided. This, it is true, entails a loss of power, but it was chosen as being the least of two evils. The greatest amount of water to be pumped per machine was 600 gallons per minute. The theoretical power of the water at disposal was 220-horse power, but careful experiments showed that only 76% or 35% were utilized when the number of strokes was 12. It was found that as soon as the number of strokes per minute rose beyond 16, the valves of the pumps were subjected to shocks which endangered the machine.

SHIPPING A STEAMBOAT TO SOUTH AMERICA.—A complete steamboat was shipped from Pittsburg, Pennsylvania, on the 19th of October last, by way of New York, to be delivered to the United States of Colombia, South America. It was shipped in sections, and will be put together when it reaches its destination by men who will be sent from Pittsburg for that purpose. The hull is 150 feet long, 29 feet 9 inches beam, 4 feet depth, 28 inches shear, and made of homogeneous and tensile strength of 70,000. The machinery consists of 15-inch cylinders, five-feet stroke, two patent cut-off boilers, 45 inches in diameter, 16 feet long, with 41 3½-inch tubes each, which were tested before leaving to 245 pounds. The boilers are also of homogeneous steel. The cabin was made something after the style of our Western river boats. The hull is all steel except the bulkheads and angle-irons; the cylinder "timbers" also being steel. The wheel is of iron. The cabin-stanchions are fastened to the hull and stern-bulkhead. The name of the steamboat is the *Francisco Montaya*, and she is designed to run on the Magdalena river.

THE SIZES OF BALES.—The following practical notes may be found useful by those whose business is in the way of raw produce. Cotton bales vary from 4 to 5 feet long, and from 1 foot to 2 feet 6 inches in width and depth. Their weight varies from 300 to 550 lbs. The dimensions are different at different shipping ports: thus, Indian bales weigh from 350 to 400 lbs.; American bales 400 lbs. to 500 lbs.; Egyptian bales about the same; Calcutta bales of hemp measure 4 feet 8 by 2 feet by 2 feet; Calcutta bales of jute measure 3 feet 6 by 2 feet by 1 foot; Bombay bales of hides measure 7 feet by 3 feet by 2 feet, and weigh 17 cwts. Bales of cocoa-nut fiber measure 3 feet by 2 feet by 2 feet, and weigh 400 lbs.

CAR PLANNING.—A very sensible improvement has been introduced in a car on the College Hill railroad, a suburban narrow-gauge road at Cincinnati, where the seats, which run lengthwise in order to give more room, are placed back to back, so that the passenger faces outward. The windows also are made nearly continuous, instead of being separated by wide panels to interrupt the view.

IRON GALVANIZING FURNACE.—In galvanizing iron the main point to ensure a uniform coating of zinc is the maintenance of a thin bath of metal. Unfortunately the zinc absorbs iron, thickens, and as the temperature must be rapidly raised, when it does so this absorption goes on increasing until the metal is unfit for further use. This is aggravated by the fact that the metal is melted in cast or wrought iron vessels heated from below. *Iron* says that in order to avoid the disadvantages of iron vessels, and yet retain ample working space above the surface of the metal, F. A. Thum, of Lauback, Germany, has constructed a furnace resembling somewhat a reverberatory furnace. It has a fireplace and a chimney at each end, the part of the hearth connecting the two being arched over. The rest of the rectangular hearth is perfectly open above, so that the heat-conducting power of the metal is relied upon to keep it at the proper temperature in that part of the hearth. The slabs of fresh zinc are introduced through doors communicating with the hot ends. The staying of the furnace has to be very strong, in order to prevent any accidents to the archiug over the ends of the hearth.

WASHING OUT BOILERS WITH HOT WATER.—A letter from John E. Martin to the *Railroad Gazette* contains the following: I notice in the discussion on boilers at the last convention of master mechanics, that Mr. Hudson recommends washing out locomotive boilers with hot water. I have used the injector for that purpose lately and with great success. We connect the boilers to be washed out with the injector of another locomotive by means of wrought-iron piping and a flexible hose pipe that will stand a good pressure. A nozzle of five-sixteenths of an inch is used on the hose. With such a nozzle and with a boiler pressure of about 130 pounds we throw a stream of hot water of 140° Fahr. temperature into the boiler to be washed out. A gauge on the hose pipe showed a pressure of 110 pounds, equal to a vertical weight of nearly 250 feet. The hot water loosens the scale more effectually than cold water, and the force of the stream is all that can be desired. A stream of water can be thrown a distance of 60 feet and could be used as a fire extinguisher.

MECHANICAL EDUCATION.—Mechanical education in Russia has been carried to a point of success not yet reached in this country. Col. Forney, of the Philadelphia *Press*, writing from the Paris exhibition, remarks that American progress has astonished Europe, yet "Germany, Switzerland and France, have methods and systems that deserve to be studied. Even Russia may be a model for all of us. Yesterday I saw some machinery at the exhibition, and my admiration increased as I was told that much of this exquisite work was made by the youth, many of them sons of the best families, sent into the machine shops to learn trades as a part of their education. There was no alternative; they were compelled to pass this ordeal. The Government is the master, and young Russia must obey; and now obedience becomes a delight; and it is as much the fashion to finish a practical education in this way, as formerly it was the fashion to pass through a school or an academy, or college, for the easy acquisition of superficial accomplishments."

MANUFACTURING STATES.—The *North American Review* says: "The relative manufacturing rank of the several States is being made a subject of discussion in the Southern and Western States, which find Pennsylvania ahead by 994 establishments and $39,827,525 capital—dividing place with New York in other respects, and followed by Massachusetts, Ohio, Illinois and Missouri. These statistics were approximately correct when they were collected. They have since changed somewhat, but not so that they can be revised at once. When the figures of 1880 are given, the West will undoubtedly show large gains, and the South as well; and if the existing conditions are preserved, some of those who are anxious now will be greatly gratified, for manufacturing has increased since 1870.

PRIZE CATTLE CARS.—The Royal Society for the Prevention of Cruelty to Animals (England), having offered £400 in prizes for improved cattle trucks, the judges, in June last, inspected 55 competing models, and selected four, which they requested the inventors to build of full size, in order that if necessary a practical trial of their capabilities might be made. Three of these trucks have now been completed, and one inventor has been allowed further time. The traffic managers of the railways companies expressed their readiness to facilitate the proposed trials, and to adopt a simple, light, cheap, safe and workable method of watering animals in transit, if only the objectionable features hitherto found existing in most proposals of the kind can be really removed.

A MEXICAN EXPOSITION.—The Mexican Minister of Public Works has announced that the government is about to nominate a special commission to organize such an exhibition in the City of Mexico at a conveniently early date. November 18th, 1879, has been suggested as the date of the opening of the exhibition. It is to be confined exclusively to American and Mexican productions, and to be under the direct auspices of the Mexican government.

SCIENTIFIC PROGRESS.

Estimation of Phosphorus in Steel and Iron.

The *Iron Age*, translating from a German scientific journal, describes the method followed by Prof. Filkener, of Berlin, in the estimation of phosphorus in iron and steel. The method may be of use and interest to some of our analysts. Prof. Filkener gives the iron in hydrochloric acid of 1.4 spec. grav., evaporates to dryness in a porcelain crucible, heats to 200° to 250° C., dissolves in strong hydrochloric acid and filters. He precipitates with a molybdic acid solution holding 33 grams molybdic acid, 141 grams nitric acid and 19.4 grams of ammonia in one liter. The volume of the precipitating solution must be at least four times that of the phosphorus solution, only two-thirds being decomposed by the existing phosphoric acid. For every 100 c. c. of the mixture 25 grams of nitrate of ammonia must be dissolved in it. The precipitate is washed with a 20% solution of nitrate of ammonia, with which in the beginning nitric acid to the amount of one-thirtieth in volume of nitric acid has been added. In order to convert the precipitate into a weighable compound, the greater part of the contents of the filter is transferred to a weighed porcelain crucible. Portions adhering to the filter are dissolved with dilute warm ammonia, which is concentrated. An excess of nitric acid is added, and the mass is then brought into the porcelain crucible, where the liquid is evaporated and the nitrate of ammonia is removed by careful heating over a flame cooled with wire gauze. This does not decompose the phosphomolybdate of ammonia, the water of crystallization only being driven off. The residue attracts moisture readily, and must therefore be rapidly weighed. A second addition of nitrate of ammonia, etc., changes the weight but very little—about only 0.1 of 1%. The precipitate contains $72\,MoO_3\,(9-x)$, $Am_2O + x\,H_2O$ for $3\,P_2O_5$. In calculating the percentage of phosphorus, x may be assumed to be $x = 1$. Then the precipitate contains 3.794% P_2O_5. If arsenic acid is present it enters the precipitate; the latter is then dissolved in ammonia and the solution saturated with pure sulphureted hydrogen. Then an addition of sulphur dissolved in sulphide of sodium is made, the solution is warmed, precipitated with hydrochloric acid, the filtrate boiled down and precipitated again with molybdic acid. Chloride of iron and soluble silica are stated to be without any injurious effect.

A MARBLE-BORING SPONGE.—The New York Academy of Sciences has had an interesting specimen of marble which came from a ship wrecked in 1871, off the south coast of Long Island. The marble was perfectly honeycombed by some marine-boring animal. The *Scientific American* says that Dr. Newberry believes that it was due to the ravages of a species of sponge of the genus *Cliona*, and this view has been recently indorsed in a note on the subject published by Prof. A. E. Verrill, who has had an opportunity of examining some specimens sent to the Peabody Museum of Yale College. Prof. Verrill states that the exposed portions of the slabs examined by him are thoroughly penetrated to the depth of one or two inches by the crooked and irregular borings or galleries of the sponge, *Cliona sulphurea*, so as to reduce them to a complete honeycomb, readily crumbling in the fingers. The marble is perfectly sound and unaltered beyond the borings. He says that the rapid destruction of the shells of oysters, etc., by the borings of this sponge has long been familiar to him, but he has never before seen examples of its effects on marble or limestone; for calcareous rocks do not occur along those portions of our coast inhabited by the animal. He suggests that its ability to rapidly destroy such rocks might have a practical bearing in case of submarine structures of limestone or other similar materials.

LEAD AS IODATE.—We learn from the *Polytechnic Review* that Mr. C. A. Cameron, in a paper which he has read before the Society of Analysts at Dublin, states that as a result of experiments, he has found plumbic iodate absolutely insoluble practically. Iodate acid and alkaline iodates precipitate lead far more perfectly than sulphuric acid, even when alcohol is added to the latter. The plumbic iodate formed is weighed, or, if a volumetrical inertia be desired, the following is the process: Precipitate with standard solution of soluble iodate, and filter off the plumbic iodate. The filtrate and washings are to be mixed, and the excess of iodic acid contained in them estimated volumetrically by the hydrochloric acid and hyposulphate method. As it is almost impossible to procure pure iodic acid or potassium iodate, the solution of iodate must be standardized by means of a solution of pure nitrate of lead. Owing to the slight solubility of plumbic iodate in alkaline chlorides, iodides, and bromides, none of these salts must be present. HCl rapidly dissolves iodate and lead.

LARGE FUNGI.—Among noteworthy specimens seen at the recent Edinburg Fungus Show was a *Polyporus giganteus* three feet six inches in diameter, and a puff-ball (*Lycoperdon giganteum*), fifty-four inches in circumference and weighing twenty pounds.

New Notes on Stridulation.

According to the Science Summary, in the *Independent*, some fresh observations on the buzzing of insects have been made by J. Perez. He believes that the cause of buzzing certainly resides in the wings. In the Hymenoptera and Diptera the buzzing is due to two distinct causes—one the vibration of which the articulation of the wing is the seat, and which constitutes true buzzing; the other the friction of the wing, an effect which more or less modifies the former. In moths of strong flight, such as the sphinges, the soft and full buzzing which these insects produce is only due to the friction of the air by the wings. This sound, which is always grave, is alone produced. It is not accompanied by the basal beatings, owing to a peculiar organization, and especially to the presence of the scales. In the dragon-flies, also, in which the base of the wing is furnished with soft fleshy parts, no true buzzing occurs; but a simple rustling, due to the friction of the organs of flight. M. Perez believes that the passage of air through the respiratory orifices has nothing to do with the production of sound, as when injured or closed the buzzing goes on. When the stigmats or air-holes are stopped hermetically, as was done by Barmeister, the buzzing is only weakened, as the insect itself is partially asphyxiated by the loss of fresh air. When, as Chabrier did, Perez stuck together the wings of a fly, the sound was still produced, as the base of the wing continued to vibrate and the buzzing sound to be produced. But all buzzing was stopped if, by holding the wings pressed together, over as large an extent as possible, so as to exert a certain traction upon their bases, all movements of these organs is rendered impossible. In whatever way the wings are confined, provided their immobility be incomplete, the buzzing absolutely ceases; contrary to Hunter's statement. M. Perez's observations can be readily repeated, if nice methods of procedure are followed, by observers in this country, and this vexed question be set at rest.

SPONTANEOUS COMBUSTION.—Dr. Hoffman has called attention to some curious cases of spontaneous ignition of hydrogen in air. The phenomenon has been noticed in factories where large quantities of zinc were being dissolved in hydrochloric acid for the preparation of zinc chloride. Violent explosions took place when no flame was near; and it was eventually ascertained that the gas took fire spontaneously. It appears to be caused by fragments of very porous zinc, which, when lifted above the surface of the liquid during the violent evolution of the gas, and so brought in contact with hydrogen and air, act just as spongy platinum would do under the circumstances. The author recommends the performance of such operations in the open air. The ignition can be shown by treating a few kilogrammes of finely divided zinc with acid. The "zinc dust" may even ignite by contact with water.

GEOLOGICAL.—The *Polytechnic Review* learns through a private letter from Dr. T. Sterry Hunt, that the Geological Congress at Paris was a great success. There were 260 members present; and various committees were formed, the work of which will prove highly important and useful. Arrangements were made for a Congress, to be held in 1881, at Bologna. From another source we learn that Dr. Hunt has returned from England, and will spend the winter in Montreal, Canada, where, as scientific men will be interested to hear, he expects to devote himself to important scientific investigations. Before leaving England, he accepted an invitation to deliver two lectures at Cambridge—a graceful and merited recognition of the ability and reputation of an American *savant*.

SOLAR AND ARTIFICIAL HEAT.—Prof. S. P. Langely, Director of the Allegheny Observatory, in addition to the routine work connected with the institution over which he presides, has lately been busily engaged in completing a direct experimental comparison between the heat of the sun and the highest heat attainable in the arts. The result of his investigations indicate that the sun's *intrinsic* heat is almost beyond comparison greater than that of any blast furnace, and far larger than has been reckoned by the French physicists.

AMERICAN MICROSCOPES.—Prof. J. Gibbons Hunt, M. D., of Philadelphia, in a recent lecture, stated that, in his opinion (and he is one of the most experienced microscopists in this country), England, which first introduced cheap instruments, sits at the feet of America in respect to both lenses and mechanical appliances. He says it is affectation or stupidity for Americans to send to Europe for microscopes when they can purchase better ones at home.

"SCIENCE NEWS."—A new publication, which will interest many who desire to keep posted on current scientific progress, without recourse to the heavier publications, is *Science News*, of which we receive the initial number from the publisher, S. E. Cassino, Naturalists' Agency, Salem, Mass. It is ably edited, and starts with a full list of contributors from among our best scientific scholars. It appears twice a month, and will doubtless attain a wide circulation.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending Nov. 21.		Week Ending Nov. 27.		Week Ending Dec. 5.		Week Ending Dec. 12.	
Alpha	11	6	11½	9½	10½	8⅝	10	8
Alta	14½	9¼	9	7⅝	7½	5½	7¼	5⅛
Andes	1	50c	75c	50c	75c	40c	65c	40c
Alps					30c		25c	
Argenta	4½	3⅜	4½	3	3½	2.50	2.60	2.40
Atlantic	1.20							
Aurora Tunnel	75c	50c				50c		50c
Baltimore Con	2.60	2½	1½		1½		1⅝	1½
Belcher	8½	4⅛	6	4	5¼	4	4.30	4
Belmont	1½	50c	1.10	50c	50c	30c	35c	25c
Best & Belcher	23	15	17½	16	21½	17	20½	17½
Bullion	13	6¼	7¼	6	6¼	4.40	5⅛	4.40
Bechtel	80c	50c	65c	50c	65c	30c	80c	45c
Belle Isle	40c	30c	30c		40c		20c	15c
Bodie	19	16	17	16⅛	16⅛	16	14⅝	12¼
Benton	6¾	2	3	3⅛	3½	2	4¼	2½
Bulwer	16	13	16	15	16⅜	16	16	15
Boyle								
Black Hawk	1		50c		1	50c	1	90c
Belvidero	1		1½	90c	1	50c	1	20c
Booker	1½	75c	1	75c	1	90c	1	75c
Caledonia	4.65	2½	3½	2.80	2¾	2	2½	1½
California	10	8	9½	8½	10¾	9	11	9½
Challenge	2	1.40	1.35	1	1½	90c	2	1
Chollar-Potosi	54	30	41	36	33½	35½	40½	35
Comanche								
Confidence	10¾	6½	8¾	5	7¾	5	9½	7¼
Con Imperial	1.10	70c	85c	75c	80c	55c	75c	55c
Con Virginia	9⅜	8	8½	7	8½	7	8¼	7⅜
Crown Point	8½	5	6¾	5	5¼	4	5	4
Con Washoe	3.45		3.05		3.05	1	2.90	2¼
Champion	60c	40c	45c	40c	40c	15c	15c	5c
Concordia								
Dayton								
DeFrees	10c		25c	5c	25c	10c	20c	15c
Daney								
Dby	45c	25c	35c	30c	35c	20c	35c	30c
Eureka Con	36	32	35	33	37	35	37	34½
Exchequer	7¼	3	5¾	4	4¾	3¼	4.10	3¼
Endowment	45c	30c	50c	30c	40c	25c	30c	10c
Gen Thomas								
Grand Prize	8½	8	11	9½	10½	8½	8⅝	8¼
Gila	25c	20c	25c	20c	10c		25c	15c
Golden Chariot	25c	20c	25c					
Golden Terra	4¼		5		5		6	5¼
Goodshaw	55c	45c	50c	35c	45c	30c	50c	40c
Gould & Curry	17¾	8¾	9¾	8½	9¾	7½	8¾	7⅞
Hale & Norcross	18⅜	9	13¼	12½	13⅜	10	12	10½
Hillside	4	3½	3⅝	3½	3.60	3.40	3½	2½
Highbridge	2.60	2.15	2	2½	2	2	2¼	2.10
Homestake	1⅞	13¾			15			
Hussey	50c	40c	40c	35c	40c	30c	40c	30c
Independence	1.95	1	1½	1½	1.40	1½	1.30	1½
Julia	5	2½	3½	2½	3.60	2½	4.60	2½
Justice	7¾	4¾	6	4.40	5	4	4¾	3.90
Jackson	7¾	6¼	6¾	5¼	6	5½	7¾	6
Joe Scates								
K K Con					1½	1	1½	1
Kentuck	7	4	5	4½	5¼	4	4¾	4
Kossuth	30c	25c			25c	15c	15c	
Keystone								
Lady Bryan	3½	1.40	2¼	1.30	2	1.10	2.10	1½
Lady Wash	2	1	1½	1	1½	1	1½	1
Leopard	1.10	1	1.05	1	1½	1.15	1.20	1
Leviathan	65c	45c	50c	45c	50c	30c	50c	35c
Leeds	1½	1	1½	1	1½	1.20	1½	1
Lee								
May Belle	70c	60c	75c				50c	40c
Modoc	30c	15c	30c	20c	20c	10c	15c	5c
Manhattan	4.80	3.90	4.60	4	4¾	4	4¾	4.15
Martin White	9¼	8	8¼	8	10	8¼	7¾	6
McClinton	75c	60c	55c	50c	75c	40c	50c	
Meadow Valley								
Mexican	75	35	39½	30	45	23½	28½	22½
Mides			1½				1½	
Morning Star	4½				3	2	3	2½
North Con Virginia	12	6¼	8	5	7¾	4½	6¾	4
New York	1½	50c	90c	60c	70c	50c	55c	40c
Northern Belle	10½	10	10½	9½	10	9½	9½	9¼
New Coso	25c	5c	25c		40c	25c	35c	
Navajo	50c	40c	50c	40c	75c	40c	50c	40c
Occidental	1	75c						
Ophir	57½	37½	43½	35	43½	34	43½	34
Oriental	75c	45c	45c	25c	45c	40c	30c	25c
Overman	23½	12½	13½	11½	13	9½	11	9⅝
Panther								
Phenix	2¾	2½						
Phil Sheridan	1	50c	75c	55c	75c	50c	55c	45c
Prospect								
Raymond & Ely	6⅜	6	9¼	7	10½	9	9½	7¾
Richer	1	75c	80c					
Rock Island								
Rye Patch								
Rough & Ready								
Savage	17	9½	11½	10	11½	9	11	9⅜
Seg Belcher			26	17	25	20	20	18
Sierra Nevada	107	60	65	39	55	38	51½	39
Silver Hill	2½	1⅜	2	1½	1⅞	1½	1⅝	1
Silver King	17	15	15		15		12	
Silver Prize	5c							
Succor	1½	60c	80c	40c	1	75c	85c	65c
Summit			1.80	85c	1.50	1	1½	1.10
Scorpion	4	2	3.60	1	1.65	1	1½	1
Solid Silver	1.10	1	65c	50c	70c	50c	50c	
South Bodie	55c		55c	50c	50c			
South Standard	30c	25c	30c	10c	5c	10c	5c	40c
Star	60c	50c	50c		45c	25c	40c	25c
St. Louis	75c	65c						
Syndicate								
Tioga Con	2¼	1.80	1.80	1½	2	1½	1½	1.10
Tiptop	1½	1½	1½	1½	1½	1½	1½	1.30
Trojan	40c	30c	30c	25c	30c	25c	30c	25c
Union Con	155	55	65	48	64	37½	60	33½
Utah	42½	22	22½	17	21	13	16½	13
Vermont Con								
Ward	1.10	75c	80c	70c	75c	50c	1	50c
Wells-Fargo	65c	20c	40c	20c	60c	25c	35c	25c
Woodville	40c		30c	25c	25c		25c	20c
White Cloud								
Yellow Jacket	22½	14½	17½	14½	15	11½	15	11⅜

Sales at S. F. Stock Exchange.

Friday A. M., Dec. 6.

240 Alta ..... 5¼@5⅛
65 Alpha ..... 8½@8⅝
1000 Andes ..... 50c@40c
650 Best & Belcher ..... 17½@17¼
825 Bullion ..... 4.40@4¼
320 Belcher ..... 4¼@4⅛
525 Benton 2½
520 Challenge ..... 1.40@1.20
630 Con Virginia 7⅞
685 California ..... 9⅛@9
50 Chollar ..... 35@35½
255 Crown Point ..... 4½@4
1045 Con Imperial ..... 60c@55c
835 Caledonia ..... 2¼@2⅛
775 Confidence ..... 8¼@8
935 Exchequer ..... 3¾@3⅝
270 Flowery ..... 70c@65c
1035 Gould & Curry ..... 7⅞@7¾
215 Hale & Nor ..... 10½@10¼
400 Justice ..... 4@3.90
970 Julia ..... 2½@2.35
70 Kentuck ..... 4.10@4¼
100 Lady Wash ..... 1@1.10
1200 Lady Bryan ..... 1¾@1.30
910 Mexican ..... 22½@23
130 Morning Star 2¾
500 N Sierra Nevada 10c
375 North Con Vir ..... 5@5½
415 N Bonanza ..... 1.00@1.65
360 New York ..... 45c@40c
65 Overman 9⅞
690 Ophir ..... 41½@42
900 Succor ..... 65c@45c
935 Sierra Nevada ..... 40@39
640 Savage ..... 9¼@9⅜
205 Scorpion ..... 1.10@1
250 Solid Silver 50c
365 Seg Belcher ..... 18@20
1215 Silver Hill ..... 1.20@1
250 Union Con ..... 40@38½
1300 Wells-Fargo ..... 35c@25c
325 Woodville ..... 26@20c
155 Ward 50c
370 Yellow Jacket ..... 11¾@11¾

AFTERNOON SESSION.

100 Alps 25c
100 Argenta 2.40
100 Aurora T 50c
500 Adenda 65c
1000 Bechtel 45c
825 Bullion ..... 4.40@4¼
50 Belmont 30c
100 Bulwer 16
270 Black Hawk ..... 90c@1
500 Belle Isle 20c
440 Booker ..... 75c@80c
100 Belvidere ..... 90c@1
300 Champion 15c
500 Caledonia (B H) 1½
180 C Pacific ..... 2¼@2⅛
700 Dudley ..... 1@1.10
100 Modoc 3c
120 Eureka Con 36½
2220 Fourth of July ..... 15@10c
100 Golden Terra ..... 5¢
150 Gila 25c
770 Grand Prize ..... 8¾@8¼
300 Goodshaw 30c
100 Hussey 30c
100 Highbridge ..... 2@2.10
200 Homestake 15
100 Hillside 3¼
20 Jackson ..... 1@1.10
245 McClinton 50c
320 Mono 4
440 M White ..... 7@7½
200 Modoc 15c
195 Manhattan 4½
300 New Coso 30c
250 Navajo 45c
55 Northern Belle ..... 9¾@9½
430 Oriental ..... 70@75c
605 Paradise ..... 1.90@1.95
625 Raymond & Ely ..... 8¾@8¾
150 Red Cloud 1
520 Summit ..... 1.10@1
100 Sitting Bull 50c
150 Tiptop 1.30
145 Tioga Con ..... 1.10@1½

Saturday A. M., Dec. 7.

180 Alpha ..... 10@9¾
1050 Alta ..... 6@5⅞
1355 Argenta 2½
145 Andes 65c
100 Alps 25c
50 Belmont 35c
118 Best & Belcher ..... 18@18¾
265 Bullion ..... 5@4⅞
615 Belcher ..... 4½@4.30
200 Baltimore Con 1¼
365 Bodie ..... 13@14
525 Benton ..... 3@3.40
120 Bechtel ..... 50@65c
50 Booker 90c
385 Con Virginia ..... 7¾@7⅞
500 California ..... 9¼@9¾
355 Confidence ..... 9@9¼
75 Chollar ..... 37½@35¾
235 Crown Point ..... 4.70@4.80
940 Caledonia ..... 2½@2⅜
2150 Con Imperial 70c
1490 Challenge ..... 1.90@2
150 O P Ravine 20c
100 Champion 15c
110 Con Pacific 20c
20 DeFrees 20c
100 Dudley 1
500 Exchequer ..... 3.80@3.95
175 Eureka Con ..... 35@34½
100 Endowment 30c
450 Flowery ..... 75@70c
425 Gould & Curry ..... 8¼@8⅛
365 Grand Prize ..... 8¾@8½
170 H & Norcross ..... 11½@12
360 Hamburg ..... 90c@1
300 Highbridge 2.15
200 Hillside ..... 3¾@3¾
50 Hussey 30c
200 Independence 1¼
620 Justice ..... 4½@4⅜
630 Julia ..... 3.10@3.05
25 Kentuck 4½
635 Keatuck ..... 4½@4⅜
420 L Bryan ..... 1.60@1.65
50 Lady Wash 1¼
350 Leviathan 35c
1395 Mexican ..... 25@24½
10 Manhattan 4½
500 Modoc 10c
225 Martin White 7
100 McClinton 50c
80 Mono ..... 4½@4⅜
830 New York ..... 50@45c
1850 N Bonanza ..... 1@1.90
1430 Navajo ..... 40@45c
170 Northern Belle 9¼
600 Ophir ..... 35¾@36
480 Overman ..... 10¢@10¼
100 Oriental 25c
1570 Phil Sheridan ..... 55@50c
600 Raymond & E ..... 8¾@7¾
210 Savage ..... 10¢@10¼
50 Star 40c
600 Sierra Nevada ..... 44½@45
500 Succor ..... 80@85c
880 Silver Hill ..... 1½@1.40
370 Scorpion 1
500 Solid Silver 50c
1200 Summit ..... 1¼@1.10
100 S Standard 25c
45 Tiptop 1½
150 Tioga Con 1½
610 Union Con ..... 45@46
300 Utah ..... 15@15½
100 Woodville 25c
600 Ward ..... 75c@70c
1000 Wells-Fargo 30c
870 Yellow Jacket ..... 15@14½

Monday A. M., Dec. 9.

285 Alta 6½
70 Alpha 9
230 Best & Belcher 18
480 Belcher ..... 4½@4.40
1215 Bullion ..... 5¼@5
1590 Benton ..... 4@4½
950 California ..... 10½@11
380 Con Virginia 7⅞
735 Crown Point ..... 4¾@4.90
900 Con Imperial ..... 70c@60c
670 Challenge ..... 1½@1.60
310 Caledonia 2¼
325 Confidence ..... 8½@8¼
805 Exchequer ..... 4c@3.80
300 Flowery ..... 65c@55c
470 Gould & Curry 7⅞
70 Hale & Nor ..... 11@10¾
285 Justice 4¼
680 Julia ..... 3¼@3.40
115 Kentuck ..... 4½@4¼
1135 Lady Bryan ..... 1½@1.60
100 Lady Wash 1¼
960 Mexican ..... 23@23¾
25 North Con Vir 5
2720 N Bonanza ..... 1½@1¾
1485 New York ..... 50@55c
520 Ophir ..... 36¾@37
2255 Overman ..... 10¾@10
500 Phil Sheridan 55c
2750 Solid Silver 50c
100 Scorpion ..... 1@1.10
200 Savage ..... 10¾@10
920 Sierra Nevada ..... 44@45
295 Silver Hill ..... 1.20@1¼
15 Seg Belcher 20
170 Utah ..... 14½@14¾
490 Union Con ..... 45½@46
500 Ward ..... 75@85c
440 Wells Fargo 25c
100 Woodville 25c
150 Belvidere ..... 90c@96c
200 Bechtel 75c
225 C Pacific 2¼
200 Caledonia (B H) 1¼
700 Dudley ..... 1@1.10

AFTERNOON SESSION.

50 DeFrees 20c
320 Eureka Con ..... 36@36½
325 Endowment 25c
250 Giant & O A 6
1005 Grand Prize ..... 8¾@8½
200 Golden Terra ..... 5¢
100 Goodshaw 35c
50 Gila 20c
100 Hussey 40c
139 Hillside 3¾
559 Highbridge ..... 2.15@2.10
710 Independence ..... 1¼@1.30
50 Indian Queen 1.10
150 Jackson ..... 6@6¼
635 Leopard ..... 1.10@1.20
1000 Liberty 50c
100 Modoc 3c
45 Manhattan 4½
595 Mono ..... 4½@4¼
40 Martin White 6¾
120 McClinton 50c
196 Northern Belle 9¾
530 Navajo ..... 45c@50c
150 Oriental 25c
2630 Paradise ..... 2¼@2.10
200 Real Del Monte 4
220 Raymond & Ely ..... 8@7¾
2110 Summit ..... 1¼@1.10
300 Sitting Bull 75c
300 Star ..... 30@25c
400 South Standard ..... 25@40c
100 Tiptop 1.40
270 Tioga ..... 1.10@1.20

Tuesday A. M., Dec. 10.

90 Alpha ..... 9¼@9⅛
665 Alta ..... 7@7¼
210 Andes ..... 50@45c
330 Best & Belcher ..... 20c@20¼
355 Belcher ..... 4¾@4.90
845 Bullion ..... 5¼@5⅛
230 Benton ..... 4@3.90
1625 California ..... 11@10¾
255 Caledonia ..... 2½@2.30
2355 Con Virginia ..... 8¼@8
895 Con Imperial ..... 70@75c
35 Chollar ..... 40¾@40
415 Crown Point ..... 5@4¾
70 Confidence 9
1000 Challenge 1¾
540 Exchequer ..... 4.10@3.80
350 Flowery ..... 60c@55c
485 Gould & Curry ..... 8¾@8¼
215 Hale & Nor ..... 11¼@12
100 Justice ..... 4¼@4.60
1575 Julia ..... 3½@3.60
415 Kentuck ..... 4¼@4¾
300 Lady Bryan ..... 1.60@1½
120 Lady Wash 1
900 Leviathan ..... 45@50c
370 Mexican ..... 28@28¼
1400 Phil Sheridan ..... 55@50c
300 Senator 20c
645 Sierra Nevada ..... 51@49
1450 Savage ..... 10¢@10¼
250 Solid Silver 50c
425 Scorpion 1¼
125 Silver Hill ..... 1½@1.40
150 Succor ..... 75c@80c
300 Trojan ..... 30@25c
1200 Union Con ..... 51@55½
490 Ward ..... 1.15@1¼
2160 Wells-Fargo ..... 30c@25c
430 Yellow Jacket ..... 14½@14⅝

AFTERNOON SESSION.

400 Argenta ..... 2¼@2.60
100 Adenda 65c
150 Belmont ..... 30c@25c
235 Bodie ..... 14¼@14
50 Bechtel 80c
200 Black Hawk 90c
250 Booker ..... 75c@90c
120 Belvidere 1
200 Belle Isle 15c
250 Caledonia (B H) 1¼
100 Champion 5c
40 C Pacific ..... 2¼@2½
200 DeFrees 20c
780 Day ..... 35c@30c
650 Dudley 1
450 Giant & O A 6
150 Gila 25c
640 Highbridge ..... 2.15@2.20
185 Hussey ..... 40c@35c
550 Independence ..... 1¼@1.30
90 Jackson ..... 6¼@6¾
2400 Liberty 40c
490 Leopard 1.15
665 Mono ..... 4½@4¾
215 Manhattan ..... 4¼@4.15
200 Modoc 10c
970 McGluiton 50c
500 M White ..... 7c@7¼
50 New Coso 35c
150 Northern Belle ..... 9¾@9⅝
875 Navajo ..... 40c@45c
140 Oriental 30c
590 Paradise ..... 2¼@2.45
1000 Raymond & Ely ..... 8¾@8¾
100 Red Cloud 1
650 Summit ..... 1¼@1¼
400 S Standard 25c
400 Star 25c
1000 Tuscarora 55c
185 Tiptop ..... 1.40@1¼
790 Tioga Con ..... 1.20@1.10

Wed'sday A.M., Dec. 11.

60 Alpha ..... 9¼@9
1035 Alta ..... 6@6¼
400 Andes ..... 50c@50c
60 B & B ..... 18@18½
210 Bullion ..... 4⅞@5
345 Belcher ..... 4.15@4¼
860 Benton ..... 3@2¾
10 Chollar 39
620 Con Virginia ..... 7½@7¾
130 California ..... 10¾@10½
950 Crown Point ..... 4¼@4.65
650 Caledonia ..... 2¼@2.10
480 Con Imperial ..... 70c@55c
250 Con Washoe 2½
190 Confidence 8
400 Challenge ..... 1¾@1.40
700 Exchequer ..... 3¾@3¼
210 Flowery ..... 60@55c
425 Gould & Curry ..... 8¼@8
120 Hale & Nor ..... 10½@10¾
845 Justice ..... 4¼@4.40
1190 Julia ..... 3.80@4
140 Kentuck ..... 4¼@4.10
300 Kossuth 15c
600 Lady Bryan ..... 1¾@1.60
100 Lady Wash 1¼
760 Mexican ..... 26@26¾
200 Mides 1¼
1180 N Bonanza ..... 1.40@1¾
480 New York ..... 50@40c
70 North Con Vir 5¼
50 Overman ..... 10¾@9¾
420 Ophir ..... 38¾@39
300 Phil Sheridan ..... 50@45c
200 Succor ..... 75@65c
300 Solid Silver 50c
440 Scorpion ..... 1¼@1.15
450 Seg Belcher 19
840 S Nevada ..... 45@46¼
1010 Silver Hill ..... 1.20@1.35
400 Trojan ..... 25@30c
170 Utah ..... 13¾@14
575 Union 44
900 Woodville 25c
650 Wells-Fargo 25c
850 Ward ..... 60c@1
535 Yellow Jacket ..... 13@12¾

AFTERNOON SESSION.

100 Aurora T 50c
1320 Argenta ..... 2½@2.60
100 Alps 25c
500 Adenda ..... 65@60c
500 Belmont ..... 30@35c
50 Bulwer 15
195 Bechtel 75c
50 Belvidere 20c
935 Booker ..... 85@90c
475 Champion 4
140 C Pacific ..... 2@2¼
100 Dudley 1.40
500 DeFrees ..... 20@15c
339 Day ..... 35@30c
365 Eureka Con ..... 36@37
540 Endowment ..... 20@10c
200 Gould & Curry 8¼
400 Giant & O A 6¼
200 Goodshaw 50c
110 Gila ..... 20@15c
300 Hillside ..... 2½@3
1290 Highbridge ..... 2¼@2.20
25 Independence 1.30
235 Jackson ..... 7@7½
100 K K Con 1½
2000 Liberty 60c
50 Leeds 1¼
500 Martin White 6
200 Mono ..... 4½@4¾
10 Manhattan 4¼
1195 McClinton 50c
330 Mono 4¼
300 May Belle ..... 40@50c
300 Navajo ..... 40@45c
250 Oriental 25c
1200 Paradise 2¼
100 Real del Monte 3¾
205 Raymond & Ely ..... 8¼@8¾
240 Red Cloud ..... 1¼@1.40
350 Star ..... 30@40c
100 Sitting Bull 65c
600 Summit ..... 1¼@1.30
22 Silver King 12
700 Tuscarora 55c
50 Tiptop 1.30
800 Tioga Con ..... 1.15@1.20

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in Mining and Scientific Press and other S. F. Journals

ASSESSMENTS—STOCKS ON THE LISTS OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business
Alta S M Co	Nevada	13	1 00	Dec 10	Jan 13	W H Watson	302 Montgomery st
Aurora T & M Co	California	20	50	Dec 7	Jan 10	C V D Hubbard	312 California st
Belmont M Co	Nevada	19	50	Nov 27	Jan 3	J W Brown	310 Pine st
Bechtel G M Co	California	3	25	Nov 6	Dec 11	Dec 30	W H Lent	327 Pine st
Belvidere M Co	California	2	20	Dec 7	Jan 20	Feb 20	C V D Hubbard	312 California st
Benton Con M Co	Nevada	1	50	Dec 11	Jan 15	Feb 3	W H Watson	302 Montgomery st
Bullion M Co	Nevada	8	1 50	Dec 3	Jan 7	Jan 23	Joseph Gruss	418 California st
California S M Co	Nevada	25	50	Nov 15	Dec 20	Jan 10	R Wegener	414 California st
Champion M Co	California	1	25	Nov 22	Dec 27	Jan 16	Jno Crockett	203 Bush st
Concordia M Co	California	1	10	Oct 31	Dec 5	Dec 26	G A Holden	310 Pine st
De Frees M & M Co	Nevada	8	15	Oct 25	Dec 2	Dec 23	T E Atkinson	310 Pine st
Endowment M Co	Nevada	2	25	Nov 21	Dec 30	Jan 21	R H Brown	327 Pine st
Equitable T & M Co	Utah	19	65	Nov 7	Dec 9	Jan 2	S Healy	45 Merchant's Ex
Gila Con M Co	Arizona	3	03	Oct 17	Nov 18	Jan 9	W J Pedrigrew	419 California st
Gen Lee S M Co	Arizona	3	25	Oct 19	Dec 3	Dec 31	T E Atkinson	310 Pine st
Gould & Curry S M Co	Nevada	34	1 50	Nov 18	Dec 23	Jan 14	A K Durbrow	309 Montgomery st
Hale & Norcross S M Co	Nevada	60	50	Dec 10	Jan 15	Feb 7	J F Lightner	58 Nevada Block
Julia Con M Co	Nevada	7	1 00	Nov 1	Dec 6	Dec 28	A Noel	419 California st
K K Con M Co	Nevada	1	1 00	Nov 8	Dec 10	Dec 30	B B Minor	309 Montgomery st
Leopard M Co	Nevada	8	50	Nov 15	Nov 19	Dec 18	R H Brown	327 Pine st
McCrackin Con M Co	Arizona	2	50	Oct 22	Dec 6	Jan 27	H Aug Whiting	211 Sansome st
Modock Con M Co	California	7	50	Nov 14	Dec 23	Jan 13	J W Pew	310 Pine st
New York M Co	Nevada	17	30	Nov 12	Dec 14	Jan 3	D L Thomas	203 Bush st
Nevada S M Co	Nevada	56	3 00	Oct 22	Nov 27	Dec 18	W W Stetson	309 Montgomery st
North Bonanza M Co	Nevada	25	50	Dec 6	Jan 10	Jan 28	W W Stetson	309 Montgomery st
North Con Virginia M Co	Nevada	14	1 00	Nov 21	Dec 27	Jan 17	G C Pratt	309 Montgomery st
Ophir S M Co	Nevada	34	1 00	Nov 5	Dec 10	Dec 30	C L McCoy	303 Bush st
Real del Monte M Co	Nevada	4	1 00	Oct 15	Nov 25	Jan 6	C V D Hubbard	312 California st
Raymond & Ely M Co	Nevada	9		Oct 21	Nov 23	Dec 17	J W Pew	310 Pine st
Savage M Co	Nevada	36	1 00	Dec 4	Jan 7	Jan 27	E B Holmes	309 Montgomery st
Scorpion S M Co	Nevada	4	1 00	Dec 3	Jan 18	Feb 10	G R Spinney	310 Pine st
Sierra Nevada S M Co	Nevada	56	3 00	Oct 22	Nov 27	Dec 18	W W Stetson	309 Montgomery st
Silver Prize G & S M Co	Nevada	3	15	Nov 7	Dec 11	Jan 2	H W Redington	111½ Leidesdorff st
Tuscarora M & M Co	Nevada	2	05	Nov 13	Dec 19	Jan 13	M E Sperling	309 California st
Utah S M Co	Nevada	22	1 00	Oct 15	Nov 20	Dec 9	G C Pratt	309 Montgomery st
Vermont Con M Co	Nevada	2	15	Dec 7	Jan 9	Jan 29	E F Stone	306 Pine st
William Penn M Co	Nevada	4	03	Nov 22	Dec 24	Jan 11	O J Humphroy	328 Montgomery st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Arizona S M Co	Nevada	4	1 00	Dec 9	Jan 13	Feb 3	W Willis	309 Montgomery st
Arizona-Utah G & S M Co	Arizona		03	Sept 10	Nov 9	Dec 14	O H Spencer	408 California st
Gaskey G & S M Co	Nevada	19	50	Nov 25	Dec 27	Jan 16	C A Saskey	331 Montgomery st
Challenge Con M Co	Nevada	1	20	Nov 22	Dec 23	Jan 14	W E Dennis	203 Bush st
Colorado G & S M Co	Nevada	1	25	Oct 18	Nov 22	Dec 12	C E Wetmore	419 California st
Colorado River C & G M Co	Arizona	3	50	Nov 29	Jan 2	Jan 18	H A Whiting	211 Sansome st
Dardanelles M Co	Nevada	6	1 00	Nov 12	Dec 13	Dec 30	J S Dimon, Jr	310 Montg'y st
Dudley M Co	California	1	25	Nov 1	Dec 5	Jan 6	E C Masten	22 Nevada Block
Eagle S M & M Co	Nevada	11	10	Nov 30	Jan 2	Jan 25	R H Brown	327 Pine st
Father DeSmet Con G M Co	Dakota	2	1 00	Nov 13	Dec 18	Jan 15	T Widmann	404 Montgomery st
Florence B G M Co	California	2	03	Nov 12	Dec 17	Jan 7	F A McGee	32 Merchants' Ex
Gen Robt Allen S M Co	Arizona		25	Oct 29	Dec 2	Jan 2	M C Southard	411½ California st
Hazard Gravel M Co	California	2	06	Dec 9	Jan 8	Jan 24	J T McGeoghchan	318 Pine st
Jupiter M Co	California	1	10	Oct 17	Nov 21	Dec 12	E C Masten	22 Nevada Block
Lodi M Co	Nevada	1	25	Nov 20	Dec 23	Jan 13	O J Humphrey	328 Montgomery st
Mammoth M Co	California	1	60	Oct 31	Dec 9	Dec 30	B R Zantzinger	302 Montgomery st
Maybelle Con M Co	California	1	15	Oct 31	Dec 5	Dec 26	G A Holden	310 Pine st
Magalia G M Co	California	1	10	Nov 32	Dec 27	Jan 16	T A White	113 Leidesdorff st
McMillen S M Co	Arizona	1	25	Nov 22	Jan 12	Jan 29	A C McMeans	24 Safe Deposit Build
Mount Jefferson M & M Co	California	1	05	Oct 17	Nov 18	Dec 17	J W Clark	318 Pine st
Mineral Fork M & S Co	Utah	1	02	Oct 31	Dec 7	Dec 30	Otto Metchke	328 Montgomery st
Oriental Con G & S M Co	California	1	50	Nov 19	Dec 23	Jan 13	F C Moebach	327 Pine st
Queen Bee M Co	California	1	25	Dec 2	Jan 6	Jan 27	T A White	113 Leidesdorff st
South Standard M Co	California	3	20	Nov 5	Dec 10	Dec 31	C A Sankey	331 Montgomery st
South Utah M Co	Nevada	1	05	Nov 13	Dec 21	Jan 7	C S Healy	45 Merchants' Ex
Starr King S M Co	Utah	1	20	Oct 16	Nov 21	Dec 10	H T Bush	27 Merchants' Ex
Summit M Co	California	6	05	Nov 19	Jan 6	Feb 4	J W Clark	318 Pine st
Summit G M Go	California	1	60	Nov 27	Jan 6	Jan 28	W H Lent	327 Pine st
Tiger M Co	Arizona	2	1 00	Oct 21	Dec 10	Jan 20	W H Lent	327 Pine st
Wall Street Q M Co	California	4	10	Nov 23	Dec 28	Jan 15	D K Tripp	401 California st

MEETINGS TO BE HELD.

Name of Company.	Location.	Secretary.	Office in S. F.	Meeting.	Date
Andes S M Co	Nevada	M Landers	309 Montgomery st	Annual	Dec 18
Autocrat M Co		C W Crane	328 Montgomery st	Annual	Dec 16
Del Rey S M Co		S A Chapin	65 Merchants' Ex	Annual	Dec 9
Eagle G & M Co	California	F W Thier	113 Leidesdorff st	Annual	Jan 6
Gould and Curry M Co	Nevada	A K

25 Exchequer	3.70@3.80	200 Mackey	11
125 Gould & Curry	.8½@8¾	150 New York	.50@60c
20 Hale & Nor	11¾	200 Ophir	.40@41¼
300 Highbridge	2.20@2.15	55 Sierra Nevada	.42½50
70 Justice	4¼	130 Silver Hill	1¼
120 Julia	4.15	60 Union Con	.57@59
125 Mexican	.25½@25¾	70 Yellow Jacket	.13¼@13

California Board—Latest Sales.

Wed'sday A.M., Dec. 11.		AFTERNOON SESSION.	
25 Alexander	11¼	60 Alpha	.9½@9¾
1700 Atlanta	45c	375 Atlanta	.46@55c
125 Ætna	17c	65 Alexander	11¼
45 Alta	.6½@6¾	40 Alta	.6¾@7
60 Belcher	.4¼@4¾	200 Ætna	.15@16c
95 Best & Belcher	.18@18½	100 Andes	.55c
70 Bullion	.5@5.05	300 Almaden Q	.50@37½c
210 Caledonia	2.40	50 Belcher	4.50
85 California	.10¼@10½	50 Best & Belcher	.18¼@18½
30 Con Virginia	8¼	60 Bullion	.5@5.05
200 Con Imperial	70c	60 Crown Point	.4.60@4¾
50 Chollar	.37@37½	70 California	.10¼@10½
50 Crown Point	.4.85@4.90	50 Con Virginia	.8@8.10
100 Coso Con	30	50 Chollar	.39
80 Exchequer	.3.90@3.80	200 Con Imperial	.70c
50 Gould & Curry	.8¼@8½	750 Coso Con	.60@59c
55 Hale & Norcross	.10¼@10½	40 Exchequer	.3¾
105 Julia	.4¼@4½	80 Gould & Curry	.8¼@8½
95 Lady Bryan	.1.20@1.15	40 Hale & Nor	.10¼@10½
400 Mint	.18c@16c	375 Highbridge	2.20
75 Mexican	.26½@26¾	60 Julia	.4¼@4¾
320 Mackey	.11¼@11½	30 Justice	4¼
100 North Con	.37½@40c	70 Mexican	.27½@28
100 N Sierra Nevada	.10c	500 Mint	.18c
100 N Scorpion	.75c	1000 N Scorpion	.75@60c
30 Ophir	.39¼	70 North Con Vir	.5@5¼
60 Savage	.10@10½	30 Ophir	.40¾
55 Sierra Nevada	.46¼@46¾	20 Phil Sheridan	.45c
200 Santiago	1¼	50 Savage	.10@10½
200 S Europa	40	40 Sierra Nevada	.47½@48
230 Senator	.30c	150 Silver Hill	.1.35@1.40
50 Union	.53@53½	150 Trojan	.27½c
20 Utah	14	500 Tiger	.50c
700 Union Flag	.2c	1500 U Flag	1c
440 Wells-Fargo	.30c	300 Woodville	.27½@26c
50 Woodville	.27½c	250 Ward	.90@85c
70 Yellow Jacket	.13¼@13½	65 Yellow Jacket	.13¼@13¾

Mining Share Market.

The market has been hardly less quiet this week than last. The Sierra Nevada is dropping out of sight still further, in the face of reports, such as the following from the Gold Hill *News:*

"At the mine work ie progressing well on every hand, aud neither men nor money are being spared to forward the developments as fast as possible."

California has paid a dividend of $1 per share. But it is still simply folly to attempt to argue on whatever grounds, either for or against the bonanzas. Bodie has excited comment by something of a fall this week. The *Standard* of December 2d still expects the Comstock crash will react in favor of Mono stocks. Eureka Con. has remained steady, always a protest against the neglect of Central Nevada mines. It is strange that the protest is not listened to. It is attracting more attention, and it will not be long before many Comstock mines must yield place on the lists to others scattered on the coast, that is, provided a mine must be listed in order to succeed, which is by no means decided. The Grass Valley *Union*, in giving its last monthly summary, calls attention to the fact that Nevada county mines have not been on the boards as a rule, and yet in her own way Nevada county is not equaled by any other county in the State.

A glance at our column of "Highest and Lowest," will give some idea of the decreasing activity in stock operations. Many mines have no sales to report for week after week.

Bullion Shipments.

Since our last issue, we have noticed the following shipments of bullion:

California.—Bodie, Dec. 6th, $10,200; Extra, Nov. 30th, $1,977.42—total for month, $21,146; Klamath Quartz, Dec. 2d, $4,275; Standard, Dec. 5th, $16,907; December 8th, $17,583.72.

Dakota.—Homestake, Dec. 8th, $26,622.

Nevada.—California, Dec. 7th, $106,335.98; Grand Prize, Dec. 9th, $32,000; Hamburg, from Dec. 1st to 7th, $11,319.19; Hillside, Dec. 8th, $5,150; Dec. 10th, $5,133; Jefferson, Dec. 6th, $1,588.22; Manhattan, Dec. 5th, $11,800; 9th, $10,841.87—total for November, $100,597.31; Navajo, Dec. 9th, $5,700; Northern Belle, Dec. 4th, $4,485.61; Dec. 7th, $4,407.62; Raymond & Ely, Nov. 30th, $4,904.31; Dec. 4th, $9,636.54.

DISTANCES FROM SAN FRANCISCO.—The South Pacific Coast R. R. (narrow-gauge), furnishes the following schedule of distances on its line from San Francisco: To Alameda Point (by fast steamer), 5 miles; Alameda, 10; West San Leandro, 10; West San Lorenzo, 17; Mt. Eden, 21; Alvarado, 24; Hall's, 25; Newark, 30; Mowry's, 31; Alviso, 38; Agnew, 41; Santa Clara, 44; San Jose, 46; Lovelady's, 51; Los Gatos, 56; Alma, 58. This ie the ehortest and quickest railroad line from San Francisco to San Jose, and in several respects the pleasantest. It is also rapidly increasing in freight and passenger traffic and general popularity.

FOR 11 months of the present year the immigration to this country is given at 72,147, against 52,009 for the same period last year.

THE American bark *Devonshire*, seized by the Chilean authorities while loading guano, has been released.

SOJOURNER TRUTH, a colored woman over 100 years old, has lately lectured in New York.

FIFTY cases of leprosy are said to exist in La Fourche, La.

Mining Summary.

The following is mostly condensed from journals published in the Interior, in proximity to the mines mentioned.

CALIFORNIA.

AMADOR.

ST LOUIS.—*Dispatch*, Dec. 7: This is the name of a prospect at Kennedy Flat, to the west of the Kennedy mine. It was discovered a few months ago by a man named Cox, who recently sold out the claim to A. Farrie. The new owner is developing it as fast as possible. A shaft reaches 35 feet, with a 7-foot ledge at the bottom. The rock prospects well. A small piece of quartz, picked carelessly from the dump, was pounded in a mortar, and made a handsome showing of gold. Judging from this test, the rock would pay in the neighborhood of $20 per ton.

VOLCANO AND BEYOND.—The rock in Downs mine shows amazingly rich, as development proceeds. It is roughly estimated that there is $50,000 already in sight. The Rising Sun mill has got to work again, with cheering prospects. Toop and McQuaid are crushing some rock from their claim at Mace's mill. It is estimated to yield $30 per ton. Numbers of men are out prospecting for quartz beyond Volcano. Frakes & Storey have about finished the fixing up of their one-stamp Kendall mill near Aqueduct. It is to be started up on ore from Mattingly & Bartlett's claim.

MISCELLANEOUS.—At the Oneida mine 115 out of 200 feet of sinking, is accomplished. A small vein of quartz has been struck recently in the Talisman at Amador City. The discovery is not of particular moment at present, but may develop into importance. According to the *Ledger*, the Keystone company have lately made a good clean-up, and are still taking out large quantities of good rock.

CALAVERAS.

WHISKY SLIDE.—*Chronicle*, Dec. 7: The bonders of the Whisky Slide mine, which has been lying idle for some time, have commenced cleaning out their tunnel preparatory to their commencing work on an extensive scale. Water has stopped operations on the Tumwalt mine. It is rumored that San Francisco will start up the Hoosier and Horse Thief. The Brady, on Jesus Maria creek, about two miles above the town of Jesus Maria, is also idle.

MINING IN GENERAL.—*Chronicle:* Hydraulic mining still languishes for want of water. The "Bonanza," Moses and Co., proprietors; Mammoth," owned by Veith, and the "Eureka," the property of Cook Bros., are being actively worked, and are taking all the water there is to spare for hydraulic purposes. All the other hydraulickers are wanting water. With the tunneling and milling claims, times are a little brisker. Brown & Co., Querel & Co., Johnston and other tunnel miners are working away briskly and with uniformly good results. The Rough Diamond mill is also running part of the time and Hoey & Sliter's battery is kept in constant operation.

EL DORADO.

KELSEY.—*Mountain Democrat*, Dec. 7: Everything about the Gold Depoeit is as lively as ever. The work is carried on by from 12 to 15 men, all residents of this county. The shaft is now down 65 feet, showing a large, well-defined lode. A level has been started from the bottom of the shaft, south, which is now in 10 feet. The ore in the level is equal to, if not better than that in the shaft. The mill is kept constantly running night and day, but it will take some time yet to get the platform clear of rock, so that they can commence on the ore outside. The furnace for roasting the sulphurets will soon be completed, when the work of reducing them will commence. There is some talk of another mill being put up on the Morning Star mine, which is about one mile north of the Gold Deposit. There are other parties prospecting in the immediate vicinity, who show the best results.

MCNULTY.—This mine is prospecting well, and a mill is to be erected for crushing the rock.

INYO.

BROWN MONSTER.—*Independent:* This is the new name of the old Eclipse property now being opened under the general management of Capt. Eudey. A strong force is engaged in extracting ore under contract, and the dumps are piled full of much richer ore than the old mine was ever supposed to yield. A 2,000-foot steel cable has just arrived, to be used in shipping ore down from the mine to the head of the tramroad. It is stated that the mill will be started up on the 17th inst.

BENTON BULLION.—The Comanche mill at Benton is still running on ore from the Tower mine, which is of high grade and improving as depth is attained. On the 15th ult., a shipment of $10,468.53 was made, and on the 23d three bars, valued at $5,286.99, were sent.

MARIPOSA.

THE MINES.—*Gazette*, Dec. 7: The Hite mine to-day is more valuable than ever before, for time and labor have demonstrated the fact that it is inexhaustible—that it contains gold-bearing quartz enough to last for the next generation, at least. A shaft has recently been sunk 100 feet below the lower level, which shows a strata of ore four and a half feet thick, that will, judging from specimens shown us from the bottom of the shaft, assay fully $1,000 per ton. This shaft, going as it does down from the lower level, proves conclusively that the rich body of ore is very large. Various rumors have been in circulation for some time past, concerning the sale of the Hite mine, but there is no evidence on record that a sale has been consummated. The mine next in importance to the Hite is the Georgia Point, located on the point of ridge running down from the divide between the two rivers to the South Fork of the Merced, and about 2,000 feet easterly from the Hite mine, and is deemed an extension of that lode. Considerable prospecting has heretofore been done on the Georgia Point vein, and good paying ore found, similar in character to that of the Hite lode; but the working of the vein necessitated an outlay of considerable capital before developments could be made or any profit realized therefrom. A short time since a company was formed in the State of Connecticut, styling itself the South Hite mining company, which has purchased the Georgia Point mine, and through its agent, Mr. W. E. Brown, has taken possession, and the preliminary labor of erecting buildings and running tunnels has earnestly begun. Quite a number of miners are already employed in running some three or four tunnels, two of which will strike the vein with 500 and 700 feet. There are many other gold-bearing quartz veins in this vicinity that have not been developed, or even had a pick stuck into them.

MONO.

We clip the following from the Bodie *Standard*, of Dec. 4th:

BODIE.—The new shaft has been sunk 13 feet during the week; it is now 35 feet below the station, and has attained a total depth of 241 feet. There is nothing special to note in the appearance of the mine. The stopes are all looking well. The ore is of the same average quality as heretofore. The mill is running steadily.

STANDARD.—The east crosscut from the Mono shaft is in 50 feet; progress for the week seven feet. The face is in good blasting porphyry. The south drift from this crosscut is in 33 feet; the ledge is two feet wide. The south drift from the west crosscut is in 48 feet; the ledge is three feet wide. The West Standard south drift is in 195 feet; progress during the past week, 30 feet; the ledge is three feet wide, of very rich ore. There is no particular change in the stopes. The mill is running well.

MONO.—The east drift on the 260 level is now in 46 feet, the face in hard porphyry, carrying numerous seams of quartz. It is expected that the ore vein will be reached in a further distance of about 50 feet. Work has been resumed in the shaft which is now 285 feet deep. A strong and well-defined quartz vein, about three feet in thickness shows in the bottom, giving low assays. Large supplies of wood, charcoal, lumber and mining timbers are now coming in, and everything will be in shape for vigorous prosecution of work during the winter. The safety cage is now in, and greatly facilitates work in the mine.

CHAMPION.—The main shaft has attained a depth of 460 feet, and we are pleased to learn that the formation has changed entirely and looking favorable. The west crosscut is now in 208 feet and looking well, and stringers of quartz are coming in. The east crosscut is new in 139 feet, and looking well. We learn that the Champion will open a station at 500 level, and both the Bruce and Burgess veins of the Bodie mine are continuous.

BODIE TUNNEL.—From the mouth to the face the tunnel has reached a length of 615 feet, with work still being pushed forward. As progress is made indications show an improved appearance in formation, and important developments are expected at any time. Among mining men of intelligence and knowledge of the country, the Bodie tunnel is a favorite enterprise and will do as much as any other work now being done to thoroughly develop the mines of the district.

SILVER HILL TUNNEL.—*Chronicle*, Nov. 30: In company with Thomas Steel, we visited the workings of the above company yesterday. Entering the tunnel, situated south of the Aurora tunnel on Silver hill, we passed through the best of timberings. The tunnel will gain a depth of about 300 feet beneath the summit of the hill. A distance of 450 feet has been accomplished, cutting through numerous strata of clay and quartz, and a ledge of decomposed quartz and clay eight feet in width, which prospects well. The tunnel is four by six feet, and has been worked unceasingly since the commencement on August 8th last, and we are assured that work will be continued throughout the winter. A great amount of dead work has been done and capital expended in prosecuting the work. Important developments may be looked for at any time, as the prospect for intersecting the Bodie and Standard veins is evident. We predict for this enterprise a bright future.

MARY ANNE.—This claim is one of the oldest and most promising mines on Silver hill, being situated on the west side, and near the summit of the hill, 1,500 feet south of the Mono. The ledge is two feet wide of $30 ore. The work done consists of an inclined shaft on the ledge, 60 feet in depth. It is the intention of the owners of this valuable property to resume work on it at an early date. It is owned by William Irwin, Jr., Thomas Steel, and others.

NEVADA.

The following is from the monthly review of the Grass Valley *Union*, Dec. 4th:

IDAHO.—During the past month there has been a general improvement in the Idaho. The 9th and 10th levels are being carried into the east country, on a strong and good ledge, and the new shaft below the 10th level is carrying a ledge of four feet in width of excellent ore. Everything about the mine is in excellent working condition, and the head of 50 stamps in the mill are kept constantly running. The yield of the mine for the month of November was $57,000. The regular monthly dividend of $7.50 per share, amounting to $23,250 was declared on the 2d inst., payable immediately. This is the 112th dividend declared during the life of the mine, aggregating $2,533,750.

CENTENNIAL.—During the month the 3d level, 420 feet on the incline, has been extended both north and south, showing a good ledge all the way. Drifting and stoping is also going on on the 2d level. The mine continues to open out well and give assurance of permanency and profit. On account of the necessity of laying in the winter supply of fuel, and the danger that storms may interfere with the hauling of quartz to mill, the company has concluded to pass a dividend for the present month. The condition of the treasury would warrant the payment of a dividend were it not for these contingencies. A crushing of 160 loads of company and tribute rock is now being made at the Orleans mill, which from the appearance of the plates will not pay less than $9,000.

GOLD HILL.—The incline has been sunk under the new contract, 170 feet below the fourth level. The shaft carries a good-sized ledge all the way, but the character of the rock has not been such as to justify opening a new level. Lately, however, quite a healthy improvement is noticed in the appearance of the rock, which shows well in sulphurets. On the completion of the present contract a new level will be opened. Three tribute companies are at work on the 2d and 4th levels.

ROCKY BAR.—A perpendicular shaft is being sunk to the north of the hoisting works, as the ledge in this direction shows signs of improvement, and it is believed that the north ground will be found better than that which has been worked on the south end of the location. The last crushing paid from $35 to $40 per load.

NEW YORK HILL is yielding good ore, and the mine has been showing a stronger ledge than it did a month or more ago. The last crushing of rock at the Omaha mill paid $80 per load.

FRANK MORSE'S ground, situated on the same hill, shows well as the rock is impregnated with fine sulphurets and free gold. The work of sinking the shaft deeper has been commenced.

MARTIN BEAN & CO.'S MINE, situated on King's hill, about 35 loads of rock on the dump shows well in gold and sulphurets—ledge from 12 to 18 inches.

SHASTA.

AFTER THE FIRE.—Reading *Independent*, Dec 5: Workmen are clearing the rubbish at the old Afterthought mill, Furnaceville, and preparing to erect the new mill. Timber and lumber for the purpose are arriving. The old shafting though warped can be fixed over. Some of the light iron works are damaged to such an extent that it will be necessary to replace them with new material. The battery works are in a very fair condition; the powerful little Turbine is all right. Mr. O'Hara still remains, and has experimented upon the ores to such an extent that he is satisfied that his process will work to perfection the minerals of this district.

COPPER CITY.—All kinds of mining operations are progressing finely in this camp. The Extra Co.'s mill is constantly reducing ore, which continues to yield good results, and they keep up their regular shipment of bullion, which is the best proof of what is being done. The Potter mine is improving rapidly, showing a beautiful vein of very uniform ore, which ranges from 7 to 10 feet in thickness from the top to the bottom of the shaft, which is 120 feet deep, with well-defined walls on both sides, which proves it to be a true fissure vein. The ore produced from this mine runs about $40 per ton assay, and varies but little in appearance or value from top to bottom of the main shaft. The Jennie June mine, which joins the Potter mine on the north, has been sold by Mr. Sallee, and bids fair to become one of the best mines in this State, as it has an ore body 14 feet thick with an average assay of $35 per ton; and the ore is very similar to that of the Potter mine. Work is being pushed forward rapidly at the Northern Light mine, and when they cut the ledge with their present tunnel, they will have their mine opened in fine shape, enabling them to produce an unlimited amount of rich ore which is known to exist in this mine, as the ore taken from the upper tunnel is known to be of a very high grade, averaging assays of $40, and frequently finding samples going well up into the hundreds. The tunnel at the Winthrop Co.'s mine is being pushed forward as fast as possible, and will reach the ledge in a short time. This company will build a mill next spring.

TUOLUMNE.

MILLS.—*Independent*, Dec. 7: The new quartz mill on the Evans mine will be finished, and in running order inside of 15 days. The iron work is being done by the Sonora foundry. The mill will be a counterpart of that on the Harris mine at Jamestown, which is the prettiest working mill in Tuolumne county. The mill on the "Hunter" mine is nearly complete.

NEVADA.

WASHOE DISTRICT.

CALIFORNIA.—Gold Hill *News*, Dec. 11: At the 2150 level the station is nearly completed ready to start a drift northward to connect with

Continued on page 380.

Insanity and Crime in Mining Countries

An address dellvered by Hon. ALEX. DEL MAR, Late Director U. S. Bureau Statistics, Statistician of the U. S. Silver Commission, Supervisor of New York Census, etc., before the California Academy of Sciences, December 3d, 1878.

Mr. President, Ladies and Gentlemen:—Only those who have lived in gold and silver mining countries can fully understand the powerful influence which the hazardous industry of mining exercises upon the moral welfare of the surrounding community. The almost universal passion for gambling, whicb it excites and encourages; the extraordinary freaks of fortune wbich it gives rise to, when, sometimes, and in the course of a few months the most indigent and illiterate of the community are lifted into opulence and power, while the well-to-do and intelligent are reduced to unexpected poverty and obscurity; the licentiousness of the *noveau riche*, and the grief and despair of the unlucky and disappointed; all these are social features peculiar to mining countries, whose broad and deep mark to be appreciated, must he seen with the observer's own eyes.

A continuous residence of more than two years in California, has satisfied the present writer that, at least in San Francisco, which contains one-third of the entire populatiou of the State, there are few persons of an adult age who are not at some time or other directly interested iu the mines; aud this is probably also largely the case throughout the State generally, and also throughout Nevada and the remaining portion of the North Pacific slope. The miners themselves, who, now that the placers are exhausted, are, for the most part, workingmen upon daily wages, are probably the least interested of any class in the vicissitudes of the miues. But down to the very boot-blacks and servant-girls, there are few others of whom the same can he said. When a new ore discovery is made, or is expected to be made—and this occurs not unfrequently—all kinds of productive labor are abandoned for tbe superior attraction of the stock exchange and the broker's office. At these centers of activity, can be seen, npon any day, thousands of men and women, the latter chiefly of the lower classes, trades-women and domestic servants, waiting for that turn of the wheel of fortune, which shall bring them opulence and ease. Little hoards are withdrawn from savinge banks and other receptacles, and eagerly exchanged for ehares in looked-for honanzas, aud when the prices of the latter advance so as to place them beyond the reach of the purchaser with limited means, the shares of other properties, often so obviously worthless as to he openly and generally alluded to as "wild-cats," are purchased with the same eagerness, and paid for in coin wrung from the sweat of labor and subservience.

Upon the passion thus aroused and the credulity which it fosters, there are not wanting classes to prey and thrive. Falee or exaggerated reports of ore discoveries, delusive tricks and plants in and about the mines, stock deals and jobs concocted to deceive investors; wash-sales and bull and bear movements on tbe etoek market, the employment of stool-pigeons, point-givers and cappers; in short, all the devicee knowu to the jockey and the blackleg, are brought into active play. The common result is loss and despair to the deluded investor and fortune to the conspirator. And yet the few prizes snatched from this fire are so fascinating that no degree of general loss appears to be sufficient to deter new aspirants for fortune. There is scarcely a class of the community who do not play some part in this drama. The conservative merchant or hanker who lends money npon this or that stock or withdraws the often designedly accorded credit; the leader of fashion wbo confidentially imparts the exclusive intelligence concerning some mine to his or her circle of dearest friends, which, in most cases, is certain to ruin them; the fiduciary who horrows from his trust fund, merely for a few days, until he can realize the enormous profit promised by an impending rise in etocks and pay back the dishonestly abstracted money; the clerk who is tempted to seek fortune through the humhler medium of his master's till; the poor shop-girl whose virtue falls an easy prey to the powerful allurements of wealth, and is then employed as the medium for trapping other victims; all these and many other classes are cast in the dangerous and demoralizing pursuit of eudden wealth from the mines.

At the present writing there are four exchanges in San Francisco, all of tbem devoted exclusively to mining stocks.* So small a quantity as five shares of stock is commonly dealt in, and cases are known where a single share, nay, one-balf of a ehare, was bought and sold. The prices of the stocks range from $1,000 down to five cents a share, so that the smallest speculator can he accommodated.

So universal has stock gambling become in California that mining stocks take the place of the weather in other countries and have become the commonest theme of conversation, alike in the politest circles and the obscurest retreats. Indeed, one can learn, after a brief residence on the coast, merely by observing the faces and demeanor of those who throng the neighborhood of the exchanges, whether the "market" is up or down.

That in a community thus engaged and constituted—and the same may be said of the mine-owuing towns of Mexico and Australia—insanity and crime should prevail to an unusual extent is only what should naturally be expected. The intellect is not proof against the sudden changes of fortune induced by the hazard of gold and silver mines aud the sudden and tremendous fluctuations in their value; nor are the passions subject to tbe same control that distinguish them in communities occupied in safer and more sober pursuits. The evidences of these aberrations of mind, this violence of emotion, which distinguish mining countries, are to be found in every direction. It will suffice for the purposes of this paper if two of the principal ones are selected for illustration. These are insanity and suicides.

In arranging the evidence of insanity, it is primarily necessary to distinguish between this mental derangement and idiotcy—the former being "the product of society and of moral and intellectual causes," and the latter "a state depending on soil and material influences." Next, an allowance must be made for the number of insane in private families, or at large, and not confined in the asylums. According to the voluminous, though far from critical, report, of Dr. Wilkins to the Governor of California, France is the only country whose statistics, as quoted, distiuguish the insane and idiotic, severally, in asylums and at home. The year selected for illustration, 1861, happens to he that one when the official figures were, for the first time, substantially correct. Of this we are assured by tbe *Statistique de la France*;* the same work on a previous page giving the number of insane under treatment in France at various recent periode as follows :

	1851	1856	1861
In Asylum	21,353	25,485	30,239
At Home	24,433	34,004	53,160
Together	45,786	59,499	83,399
Population of France	35,783,170	36,139,364	36,717,254
Insane to Popult'n, 1 in	781	607	440

The increase of insanity, apparently shown here, is due for the most part to the increased completeness of the returns, evidenced by the augmenting proportion of insane treated at home. This, at the latest date, was 175 to 100 in asylums.

The statistics of insanity in the United States are obtained for the federal censue from the reports of asylume. They are somewhat defective as to numbers in private asylums and do not make any allowance for the numbers treated at home. With an estimate of the latter, based on the proportions exhibited in France, the statistics of the United States are as follows:

	1850	1860	1870
Whites in Asylum	14,257	23,593	35,610
Estimated at Home	24,950	41,288	62,318
Together	39,207	64,881	97,928
White Population	19,553,008	27,461,813	33,589,377
Insane to Popult'n, 1 in	498	423	343

The estimates on the second, third and fourth lines for the year 1860, include free colored persons who are not distinguished from the whites in the census compendium of that year. The proportion of free colored is little more than 1%. All of the above numbers include California.

The black, formerly the slave, population of the United States, is omitted, because, while idiotcy is quite common with this race, insanity is rare, and their incorporation into the table would render it misleading.

Here again the numbers and proportions exhibit increase since 1850, and show that in the United States generally insanity is half again as prevalent at the present time as it was 20 or more yeare ago.

Let us now ece how the case stands in California, considered hy itself. In this State there are no private asylums. The official returns of insane at Stockton and Napa include a few idiots—according to the federal census of 1870, only 14% of the whole number—and to that extent the comparison which will presently be made is vitiated, certainly for one year, and probahly, to more or less than this extent, for all yeare:

Close of Fiscal Year.	In Asylums at Stockton and Napa.	Estimated at home: Proport'n as in France.	Together.	Population of State.	Insane to Popult'n, 1 in
1850	22	780	1,147	165,000	2,750
1860	417	3,213	1,906	379,994	331
1868	698	1,346	2,115	470,400	250
1867	769	1,493	2,340	500,039	239
1868	853	1,610	2,530	518,000	221
1869	920	1,832	2,870	538,000	213
1870	1,047	1,870	2,917	560,247	192
1871	1,090	1,908	2,998	582,400	194
1872	1,123	1,965	3,088	605,700	196
1873	1,156	2,023	3,179	630,000	198
1874	1,204	2,154	3,358	651,400	194
1875	1,232	2,279	3,511	675,700	192
1876	1,492	2,490	3,982	705,700	177
1877	1,590	2,783	4,373	737,000	168

These numbers include wbite and other races; hut as the latter form only a small proportion (10%, mainly Chinese) of the whole population of the State, it has not been deemed worth while to exhibit their statistics of insanity separately. The proportion of Chinese insane is less than 5% of the whole number.

The uncertain factor in this table is the proportion of insane not in the two asylums at Stockton and Napa.

The proportion estimated is derived from the statistics of France, where, wealth being less equally distriluted, and the police more scrutinizing, it is to be presumed that this proportion, great as it is, is less than in California.

As tbese statistics do not show the number of new persons afflicted eacb year, but only show the whole number remaining afflicted at the close thereof, and as the population of France, the United States and California, respectively, are of different ages, there is other room for errors, when the tahle is used for the purpose of international comparisons. But these uncertainties and discrepancies are not important in the present connection.

Unmodified hy these considerations, it appears tbat among the white race in France insanity is the condition of one in 440 of the population; in the United States, generally, 1 in 343; in California, by itself, 1 in 168. In other words, insanity appears to he twice as rife in California as in the United States, and more than twice and a half as rife as in France.

The number of new commitments for insanity each year since 1866 may serve, in some measure, to indicate the causes of thie extraordinary and sorrowful exhibit:

Fiscal Year Ended June 30th.	Commitments to Stockton & Napa Asylums	Population of the State.	Annual Commitm'ts to population, 1 in
1866	279	476,409	1,707
1867	313	500,039	1,597
1868	387	518,000	1,338
1869	432	538,000	1,116
1870	562	560,247	997
1871	523	582,400	1,112
1872	506	605,700	1,197
1873	401*	630,000	1,177
1874	524	655,200	1,250
1875	615	681,400	1,108
1876	735	708,700	964
1877	652	737,000	1,130

*Nine months to June 30th.

From 1848 to 1865, inclusive, a period of 18 years, the whole uumber of commitments to the State asylums for the insane was 3,169, or an average of 176 per annum; while from 1866 to 1877, inclusive, a period of 12 years, the commitments bave been 5,979, or an average of 498 per annum.

The former may be regarded as the era of the placers, when few besides those who worked in or about the mines were subject to their vicissitudes, and when death soon closed the career of the unfortunate adventurer, and ehielded him from the milder visitation of insauity. The latter is the era of the vein-miues, of mining incorporations, and of gambling made easy by mining shares and stock-markets. It is not difficult to infer that these causes have had much to do with the great increase of insanity shown by the statistics adduced; an inference that becomes greatly strengthened npon turning to the statistics of suicides in Sau Francisco.

These statistics, it must be remarked, are very defective. Until lately no attempt had been made at the Coroner's office to construct tables of suicides, comparing one year with another, and nothing beyond the most indifferent effort to ascertain their causes. Much improvement in these respects has lately taken place; hut etill many suicides are not reported. These consist mainly of persons who drowned themselves in the bay, and whose bodies are not recovered, and brought under the notice of the Coroner, and of Chinese, the deaths of whom in San Francisco, from whatever cause, are reported as due to "unknown" causes.*

Another class of omissions is of persons belonging to the city, who may have committed suicide beyond its corporate limits. In such cases the Coroner of the city has no supervision, and makes no mention of them. Some of these, not all, are included in the reports of the Health Officer.

From the records of these two officials, and, when they disagree, choosing the bigher number as the more nearly correct, we have the following comparative results:

Reported Numbers of Suicides in San Francisco.

Year.†	*Suicides.*	*Year.*†	*Suicides.*
1860	31	1870	47
1861	130	1871	51
1862	13	1872	37
1863	18	1873	38
1864	20	1874	61
1865	17	1875	64
1866	24	1876	70
1867	29	1877	76
1868	28	1878	102
1869	39		

† Ended June 30th.
‡ Estimated.
‖ Estimated from returns of 9 months. The returns for the years 1867, 1868, 1872, 1874, 1875, 1876 and 1877 are from the Health Board returns; tbe others from the Coroner's. The latter's summary report for 1878 gives, on p. 124. the following numbers for each year; commencing with 1863, viz. : 17, 20, 16, 20, 28, 20, 43, 44, 44, 45, 37, 59, 60, 56, 75 and 103. Total reported in 16 years, 687. Chinamen are not included in any of these numbers, except where, very rarely, a Chinaman is specifically reported to have died from self-destruction. Inquests are held upon the bodies of Chinamen dying from unknown causes.

Any comparison of these numhers with the reputed population of the city in any other years but those in which a census was taken, is considered hazardous, on account of the tendency to exaggerate the numher of inhabitants, which is common to the growing cities of the United States, and appears in all the publications relating to them, except the census itself. The only years of the series above shown, in which a census was taken in San Francisco, were 1860 and 1870, when the population was, respectively, 56,802 and 149,473.

The least objectionable means of determining the relation of the number of suicides in San Francisco to that in other cities, is to compare hoth of them with the whole number of deaths iu each place. Without burdening this paper with details which would probably weary the reader, it is deemed sufficient to say, that, determined in this way, suicides are more than twice as common in San Francisco as in New York and more than thrice as common as in Philadelphia. It is the present writer's belief, that, as compared with population—could the latter be satisfactorily determined as to San Francisco—the result would appear still more unfavorable. It is also to be remembered tbat this result is only given with reference to the number of the reported, not the true, number of suicides in San Francisco. Giving due weight to this consideration, it will probahly be not far from correct to regard the proportion of suicides in San Francisco, either to all deaths or to population, as fully three timee as great as in New York, where suicide is a much more common crime than any where else in the United States.

An inquiry into the probable causes of such an extraordinary preponderance of suicidee is bound to be heset with obstacles. When the predisposing, nay, even the immediate causcs of self-destruction defy, as we know they commonly do, the scrutiny of a legal inquest, there would seem to be little hope of determining them from that more general sort of evidence which is to be found in other ways; and, but for a personal knowledge of the habits of life common to several mining countries, the present writer would hesitate to indicate them. In his report for the fiscal year ended June 30th, 1878, the Coroner of San Francisco reports 35 casee as caused by pecuniary and seven by unknown motives; three of the former he directly traced to stock gambling. Intemperance, iusanity and unsound mind cover 21 more cases. All of these cases and many others attributed to various causes may have been, and probably were, due either to gambling in the mines or the absence from home and friende, which forms a condition peculiar to mining countries. This probability is greatly strengthened by the causes of the suicides, covering a portion of the same period, which were reported by the daily press. During the calendar year ended Decemher 31st, 1877, the following suicides, with their supposed causes, were reported iu the San Francisco *Chronicle:*

Assigned or Supposed Causes of suicide.	Males.	Females.	Total.
Losses in mining stocks, etc.	20	2	22
Insanity (cause not stated)	5	0	5
Intemperance (cause not stat'd)	12	0	12
Incurable disease	7	0	7
Love	4	3	7
Ill treatment	0	2	2
Religion	1	0	1
Remorse for murder	1	0	1
Unknown (or not stated)	24	3	27
	74	10	84

Among the conditions that influeuce suicide, there are none except mine-gambling and the separation from home and familiar faces, which is peculiar to mining communitice and especially those of recent growth, in which San Francisco does not enjoy advantagee which should exempt it from this crime. The city is exceptionally healthy. It is purified hy seawinds that blow every day; its foundations are laid in clean dry sand; it is hilly; it has a good drainage, and is washed by a vast bay on the oue side and the ocean on the other. The climate is dry, temperate and steady. Food of every description is plentiful and cheap; all the other necessaries of life are to he obtained on the same terms as in other cities throughout the United Statee, while labor is ordinarily in demand and commands a higher price than elsewhere. Hence in looking for tbe causes of this great and peculiar mortality, the inquirer is led at once to the subject of the mines.

Before the civil war the number of suicides committed annually in San Francisco was about 30. During tbe war—and this period also agrees with the opening and development of the great Comstock mines—when great profits, rising prices and abundance of employment for the industrial classes preserved them from those temptatione to self-destruction which find their origin in necuniary difficulties, the annual average fell to 17. When the war closed and the Comstock mincs came to be incorporated into stock companies, suicides resumed their former frequency, aud during the four years ending with 1869 the annual average became again, as before, 30.

The ensuing four years witnessed the opening of the great Crown Point and Belcher honanza, and the first series of gigantic stock speculations and jobberies which distinguish the annals of the coast. During this period the average annual number of suicides rose to 43. In 1874, while the Crown Point and Belcher bonanza were still yielding at the rate of $18,000,000 a year, the Big Bonanza was struck in the Con. Virginia and Californiа mines, and this added some $5,000,000 to that year's production of the precious metals, and proportionately increased the pre-existing excitement and the practice of jobhery. From this time forward until 1877 the Big Bonanza continued to increase its product, to augment the predominant mania of the coast, and to afford additional support to the resourcee and devices of jobhers.

In the last-named year the faot was disclosed

*These are the San Francisco, the Pacific, the California and the People's.

* Par Maurice Block, Paris, 1875, vol. I, p. 303.

*Report of the Coroner for 1878, p. 5: The Chinese in San Francisco number about one-tenth of the population; and although they uearly all consist of adult males in the prime of life, while the whites consist of both sexes and all ages, the whole number of Chinese deaths is in about the same proportion.

that this great ore-body had passed its point of highest production. Then followed a tremendous collapse in all mining shares, numerous bankruptcies, a fall in real estate, rents, commodities and wages, popular tumults, and numerous misdemeanors and crimes; among the latter an unusual number of suicides. Taking together the five years ended June 30th, 1878, the number of suicides reported to have been committed in San Francisco reached the unprecedented annual average of 75.

It is impossible to believe that these occurrences were not connected. This conviction is strengthened not only by the statistics of commitments for insanity hereinbefore given, but also by the statistics of deaths by violence, crime, immorality* and disorder of every sort, by the accounts of the savings banks, by the returns of bankruptcies, and by the prevalence of indigence and suffering among those classes of the community who did not profit by these speculations or succumb to the blow which they inflicted on the losers.

* The number of divorces decreed in San Francisco in 1876 was 253, and in 1877 it was 243.

The Martin White Case.

[Continued from last week.]

The Marking of a Center Line

In a district where the extent of a claim on each side of the center line is established by the local rules? It would be safer and therefore better to comply with the recommendations of the Land Office and erect stakes at the corners of the claim, but if the grand object of the law is attained by the marking of a center line we can see no reason why it should not be allowed to be sufficient.

In this case the locators of the Paymaster marked the center line of their claim on the 10th of October, 1872. No miner, no man of common intelligence acquainted with the customs of the country, could have gone on the ground and seen the monument, notice and work at the discovery point and the two stakes —one 300 feet southeast of the location monument, marked "Southeasterly stake of Paymaster," the other 1,200 feet northwest of the location monument and marked "Northwesterly stake of Paymaster"—in a line with the croppings and the discovery point, without seeing at a glance that they marked the center line of the claim. By the rules of the district and the laws of the land he would have been informed that the boundaries of the claim were formed by lines parallel to the center line and 300 feet distant therefrom and by end lines at right angles thereto. With this knowledge he could have traced the boundaries and, if such was his wish, ascertained exactly where he could locate with safety.

The Paymaster Sufficiently Marked.

We conclude, therefore, that the Paymaster location was sufficiently marked on October 10th, 1872. At that time the Shark location had not been marked in any way, and whether the law allows a locator a reasonable time or not to mark his boundaries—protecting his full claim in the meanwhile—the same result equally follows. If the Paymaster was not marked within a reasonable time after discovery, then certainly the Shark was not, for the first was marked within three months and the latter not until more than eighteen months after discovery; so that the Shark claim was lost by the failure to mark its location within a reasonable time, and such time is allowed, then the Shark was thereby excluded. If no time for tracing is allowed, and the first to mark his boundaries is first in right, then the Paymaster location holds the claim, because it was first defined by monuments on the ground.

Unless the Paymaster location failed in some other particular to comply with the law, there is no hypothesis upon which anything can be claimed under the Shark location.

Regarding Notices and Records.

But it is contended that the Paymaster location was rendered invalid by non-compliance with the rules of the district and the law of Congress respecting the notice and record of claims.

There is no doubt that in order to secure the right of possession to a mining claim there must be a compliance not only with the laws of the United States, but also with such local regulations of the mining district as are not in conflict therewith (R. S., 2324), and if the miners of the Ward district have made the posting and recording of the location notices essential, the courts are not at liberty to dispense with them.

The original laws of the district were adopted May 1st, 1872, ten days prior to the passage of the Act of Congress, which, as we have seen, introduced an entirely new system of making locations—a system in which the preliminary posting and recording of notices is entirely out of place, except as a means of protecting a claim during the time necessary for tracing the ledge and marking the boundaries of the location. When the location is thus marked, all that the notice and record were intended or expected to accomplish is effected in a manner far more satisfactory and complete. In place of a very imperfect, and often misleading, notice of what was claimed, there is a plain and unambiguous notice to all the world of the exact position and extent of the location. It might well have been held, therefore, with respect to the rules adopted May 1st, 1872, that their requirements as to the posting and recording of notices were superseded by the act of Congress of May 10th, 1872; that they were merged in the higher and more efficacious rule of the statute, or, at least that, if they continued of any force whatever, it was only as a means of protecting a vein discovery during the time reasonably necessary for tracing its course and marking the boundaries of the location, and, consequently, that if the discoverer chose to mark his location in the beginning, or actually did so at any time before an adverse claim was made, his failure to post and record a notice would count for nothing.

Useful Information.

Statistics of Increase in American Exports.

President Hayes in his Cumberland speech, said: "What have we sent abroad? Take the article of corn. Six years ago we exported 34,000,000 bushels, now 85,000,000; wheat, 26,000,000 bushels, now 72,000,000; flour, 2,500,000 barrels, now 4,000,000; cotton. 933,000,000 lbs, now 1,607,000,000; bacon, 246,000,000 lbs, now 592,000,000; fresh beef, 26,000,000 lbs, now 92,000,000; pork, 57,000,000 lbs, now 71,000,000. The total increase in six years is about $140,000,000." The official statistics of the first eight months of 1878 also show that there has been a great increase in the quantities and values of the food exports of the present year, as compared with the corresponding exports of 1877. The quantity of Indian corn exceeded 66,000,000 bushels, as against a little more than 51,000,000 bushels; wheat rose from a little less than 17,000,000 bushels in 1877 to nearly 57,000,000 bushels in 1878; wheat flour increased from 1,608,635 barrels to 2,935,806 barrels; and the increase in nearly every staple export, classified under the head of provisions, was equally marked—the exports during the first eight months of 1878, of a few leading articles, being as follows: Bacon and hams, 479,627,519 lbs, valued at $38,737,611; cheese, 102,649,756 lbs, valued at $10,218,364; lard, 254,770,780 lbs, valued at $21,142,257.

Of 12 leading classes of articles, the exports increased $262,899,614 in value, from the fiscal year ending June 30th, 1868, to the fiscal year ending June 30th, 1878. The classifications named and gain, during 10 years in the value of the exportations, were as follows: Agricultural implements, $1,901,817; live animals, $5,111,258; bread and bread-stuffs, $112,793,510; coal, $843 247; copper, brass, and manufactures of, $2,139,099; manufactures of cotton, $6,564,574; fruit, $970,457; iron, steel, and manufactures of, $5,694,619; leather and manufactures of, $6,663,289; oil-cake, $2,181,715; coal oil and petroleum, $24,764,298; provisions, $93,271,733. In this list one of the most remarkable gains was in provisions, which quadrupled, rising from $30,278,253, in 1868, to $123,549,986, but it found a fitting parallel in the gain in the exports of breadstuffs, which increased from $68,980,997 in 1868, to $181,784,507 in 1878.

Population of Some of the Great Cities of the World.—The Registrar General of London, in one of his weekly reports, gives the population of the cities of the world having over a quarter of a million of inhabitants, as follows: First comes London, with its 3,577,304 people; next is Paris, with its 1,988,806; New York, with its 1,084,528, and its close neighbor or partner, Brooklyn, with 549,438; and then Berlin, with 1,019,620 inhabitants. Philadelphia has its 876,118; Vienna, 727,271; St. Petersburg, 669,741; Bombay, 644,405; Glasgow, 566,940; Liverpool, 532,581; Manchester, with Salford, 530,765 people. All these are above the half million. Then comes Naples, with its 457,407; Calcutta, with 429,535; Madras, 397-552; Hamburg (the State), 405,104; Birmingham, 383,117; Baltimore, 355,000; Buda-Pesth, 319,350; Dublin, 314,666; Leeds, 304,948; Amsterdam, 302,266; Sheffield, 289,537; Rome, 282,214, and Breslau, with 267,000 population. He seems to omit the great Chinese and Japanese cities.

Marble Cements.—A composition of gumlac, colored to suit the occasion, is sometimes used. The rust cement is also used, composed of hydrochlorate of ammonia, 2; flour of sulphur, 1; iron filings, 16. For coating inside of cisterns: Pulverized baked bricks, 2; quicklime, 2; wood ashes, 2; olive oil to make a paste. For stone seams and joints: pulverized tiles or hard brick, 6; whitelead, 1; litharge, 1; oil to compound. Another cement is as follows: Hydraulic cement, 12; triturated chalk, 6; fine sand, 6; infusorial earth, 1; all mixed with soluble soda glass.

Depreciation of Coal by Storage.—A case having come before the Bohemian courts, it was found that bituminous coal stored 12 months depreciated as follows: 1. English Peases West coal suffered no depreciation. 2. Ihhenhneren, Westphalian coal lost 1.4% in weight, 6% in calorific value, and made 4.6% less of coke. 3. Dortmund coal lost 2.6% in calorific value and made 2.1% less of coke. 4. Gelsen Kirchen coal 0.4% loss of weight, 0.6% loss of calorific value and 2.1% loss of yield of coke. 5. Borgloh coal respectively 2.6% and 0.5%. Experts have testified that a loss of 2% in transportation by cars was not extraordinary for bituminous coals.

What is Steel?

At the opening meeting of the Association for the Advancement of Science (French) M. Fremy spoke of the service rendered different industries by chemical studies, and cited among those especially indebted to scientific research, the manufacture of soda and of steel.

Concerning steel, after passing in review the new processes for the manufacture of this material, the learned professor summed up the principles of the new theory of steelification as follows:

1. There does not exist, as many suppose, an ore of steel; every good iron ore, if properly treated, can produce a good steel.

2d. The steelifying tendency of certain ores is not due to the presence of some mysterious substance, found only in certain privileged minerals, but solely to the purity of the ore and to the method by which it is reduced. A skillful engineer who knows how to eliminate hurtful substances and to supply those which are wanting, can employ almost any of the ores of iron for the manufacture of steel.

3d. If there has not heretofore existed a serviceable steel without carbon we must also remember that the combination of iron and carbon alone will not produce all the steels required in trade.

The steel manufacturer adds in certain cases to the compound of iron and carbon which form the base for steel, certain other substances, such as manganese, chromium, tungsten, cyanide compounds, silicon. These materials augment the hardness, tenacity, temper of the metal, and constitute the different steels of commerce.

Life of Steel Rails.—The *Railroad Gazette* says: The life of steel rails on a trunk line is said to be turning out to be from five to ten years, and the wear of the rails bought of late years indicates that the shorter rather than the longer period named will be their average life. The traffic is probably four or five times as great as the average of American railroads, but still the wear is more rapid than was expected, and more so, indeed, than experience with the rails first laid gave reason to expect. That is, steel rails appear not to be made so durable now as they used to be, and the roads are beginning to see the necessity of making and insisting upon the fulfillment of certain pretty strict specifications as to the quality of the steel in the rails delivered to them. Hitherto there seems to have been no very definite idea of the qualities required for the most durable rail; but there begins to be some knowledge on the subject.

Car and Passengers.—On the Boston and Albany railroad the average weight of the passenger cars is 28 tons, and with the seats filled the load is increased a trifle over seven tons.

Good Health.

Pull up the Blind.

Pull up the blind, Kitty; pull up the blind!
You say, "The sun will spoil the carpet."
Never mind, never mind.

Far better so than that your cheeks or mine
Should lose their worth or color, Kitty,
Let it shine, let it shine.

And you shall find new joy it will impart.
Pull up the blind, Kitty; pull it up!
The sun helps the heart.

—"*Pipes of Corn.*"

Purifying the Blood.

That impurity of blood, says a writer in the *Phrenological Journal*, is the cause of most of our ill-health is well understood by nearly every one; and as evidence of this, we are confronted at almost every step with so-called "medicinal preparations" for cleansing the purple tide of life, and thus restoring the waning powers of the system. So common is the idea that the thousand and one proprietary compounds possess the mysterious power of removing impurities from the circulation, that vast fortunes are amassed in the manufacture and sale of them. From the standpoint of the hygienist the widespread belief in the efficacy of these remedies has no foundation in fact, and the money so freely expended for them is worse than wasted.

The only way that we can remedy the consequences of an imperfect and feeble action of the blood-making organs, is to add to the vitality of the system, and thus give to the weakened organs the power of proper functional work; while we promote the highest activity of the organs of excretion, that as speedily as possible they may remove the useless impurities. The only way to avert the effects of morbid and poisonous materials which shall find their way into the circulation, is to give the eliminative organs the best possible facilities for removing the harmful agencies; while we increase the vital power that shall withstand the attack of evil.

We must learn that we cannot by any means at our disposal take from Nature's hands the work of blood-making; or, with our crude devices, improve upon her handiwork. Proper food in proper quantities, pure air and correct habits of breathing, plenty of healthful and vigorous exercise, a clean skin and a clean conscience—these will do more to purify the blood than all the drugs of the pharmacy. We must build up, not tear down; increase the vital forces, not weaken or destroy them; supply good, wholesome, unstimulating food; not drugs or liquors and tobacco. In short, we must always work *through* Nature, not over or *against* her.

The Advantage of a Clean Skin.

The functions of the skin, says a writer in *Sanitarian*, are too important to be ignored. When we consider how large a share of the fluids and solids that enter the body should find their exit by this great emunctory, together with broken cells, morbific waste, and disintegrated tissue, all of which by obstruction of this organ is thrown back to poison the whole man physically, mentally and morally, we have at once the key to much of the misery that afflicts our race.

Suppose, for instance, the conduits that drain our city and remove the waste from its dwellings are obstructed, how long could the occupants remain in the most palatial mansions. They would have to abandon their homes, or be confronted with disease and death. Every person with an obstructed skin is in similar jeopardy, and the obstruction must be removed, or he must retire from the house he lives in. Perspiration is the safety-valve of the heart, and the sewer of the excretions; and hot-air and its accessories, properly applied, are not only the best protection against disease, but they are among the most efficient means of prolonging life, and of protection against unnatural and untimely death; and in the same proportion that we build with intelligence sanitary structures, and employ them, we may dispense with hospitals and invalids; and in the same ratio we shall prolong useful lives.

Yellow Fever and the Germ Theory of Disease.—Dr. Choppin, of Louisiana, in his address before the Public Health Association recently, said that the germ hypothesis in relation to yellow fever will serve to throw light on some of its devious movements, and strange behavior. Grant that a certain number of the germs is needed to produce sickness; that these germs are reproduced either inside or outside the human body; that they multiply in rapid geometrical ratio by repeated generations at short intervals; that a new generation brought to life in hot weather is not only vastly more numerous, but more energetic individually than its predecessors; that these germs are capable, both of spontaneous locomotion along the ground and other surfaces, and of transportation in the clothing of persons; grant these conditions, which are quite in harmony with the known nature of animalcular beings, and the difficulty of missing links in the chain of evidence is reduced to mere cavilling. Add to this that no germs existed from the previous year to survive the winter of 1877-78, and that there is no suspicion of the introduction of yellow fever this year by other means than that of the *Souder*, and we are reduced to the necessity of fastening the guilt upon that particular vessel, unless we adopt the theory of the spontaneous production of the pestilence from local causes. The nature of these causes no one can explain, even to his own satisfaction, nor why they should exist one year rather than another, or should prevail along the shores of the Gulf of Mexico rather than the shores of the Indian Ocean. The truth is, any other theory of the *materies morbi* of yellow fever than the germ theory is speedily lost in inexplicable mystery.

Sanitary Science.—Mrs. Hobart writes to the *Inter-Ocean* as follows: "The wise mechanic, although impatiently anxious to perform quick work and achieve results speedily, will yet take time to put all machinery to be used in perfect order, knowing that the single drop of oil, promptly applied to prevent friction, is a much more economic expenditure than hours of time and an incalculable amount of patience to mend the machine after it is once broken. Many social scientists begin to realize that, better than legislation, prohibitory or penal, better than reformation and repentance, and all of those expensive pounds of cure, is the old-fashioned ounce of prevention. Give us well-ordered homes, universal sanitary knowledge, and cleanly children, and we believe crime as well as suffering will rapidly decrease Not until we have facts in regard to the number of children starved, abused, or poisoned into crime by poor food, had management and foul air, can we estimate the importance of sanitary science."

Thoughts for Winter.—A writer in the New York *Independent* says: Typhus, typhoid fever, and diphtheria are more abundant in winter than in summer; while, if the specific infective diseases get any foothold in the fall, they are apt to linger with continuous pertinacity until the late spring. It is quite apparent too that our population suffers from the winter confinement amid impure air, even where no special distemper is produced. One reason why it seems so necessary for our urban population to spend the summer on the seashore or in the mountains is just because there has been a reduction of vital force by surroundings, which must be thus repaired. These heated chambers beneath the basement do not send into these household lungs enough of the pure air of heaven. Nature struggles on, with her compensations and adjustments, until she institutes a longing for a change, and so restores the balance, at a disadvantage.

MINING AND SCIENTIFIC PRESS.

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NEW ADVERTISEMENTS.

Brush Electric Light, William Kerr, Agent, S. F.; Elephant Ore Stamp, Edmund White, S. F.; Ottokar Hofmann, Metallurgist and Mining Engineer, S. F.; Delinquent Notices—General Robert Allen, S. M. Co.; Mineral Fork, M. & S. Co.; Land Purchaser's Association.

The Week.

The mining outlook of California still continues unusually cheerful. In Nevada, activity is spreading over the State beyond from the Comstock. The Con. Esmeralda, in Reno district, has a shaft 97 feet in ore, 30 feet of which will mill $75 per ton. Copper mining seems to be assuming importance in Robinson district, the product being sent to Baltimore. Rich discoveries are reported from southern Humboldt and from the neighborhood of the Paradise mines. A strong vein of coal has been found in Coal Valley. From Utah the assertion comes that her yield in the precious metals will exceed that of any previous year, while less lead than usual has been shipped. Silver Reef produces $100,000 per month, and says she could, with capital, produce $400,000. From Colorado, reports are generally good. The *Reveille's* account of Leadville show that this camp is active. The debate as to the permanence of Silver Cliff continues. Such debate is the next thing in order after the discovery of a new deposit. In this case Silver Cliffers seem to have little fear of the decision. Caribou is producing a great deal of good ore. San Juan is wide awake. There is more deep mining in Gilpin county than ever before. In Lake City times are growing livelier. Bright prospects are shown for Idaho. New York capitalists are about to take hold of more of the Banner mines. Greater than any previous winter will be the operations in quartz. Montana has new strikes in old mines, and discoveries of new ledges. And lastly, Arizona is marching steadily forward all along the line.

Public Stock Exchanges.

In large cities, and in any towns of considerable importance, there is always a class of people whose business would seem to a casual observer to be simply seeking after chances to be "gulled." This class, though made in great part, no doubt, of the transient population, or greenhorns, is nevertheless large enough to furnish employment to a larger class of professional swindlers. Society tries to protect the former class, and prevent outrages upon it by the latter class of frauds, by laws against the faro bank and the strap game. But, however absurd it may seem, when the swindle assumes more imposing proportions than these petty games, there is no law to weed it out of the land; it is allowed to flourish in its rank and poisonous growth side by side with some of our greatest institutions.

Among this class of semi-gigantic, petty swindles, belong those establishments known as public stock exchanges, or "bucket-shops." "*Public* stock exchange" is an enticing name. It suggests the idea that a man buying or selling stock through its medium is managing his operation for himself, and is therefore making better bargains and "surer things," than if he entrusts his orders to a broker who belongs to a regular close exchange board. And on the face of it the public stock exchange is, as it appears to its victims, a perfectly fair and legitimate establishment. If there were no underhand performances, such an exchange would deserve no condemnation, further than that it admits of stock gambling in very small amounts, thereby inviting the very smallest earning into its charmed circle, and proving proportionately more demoralizing to the community. But the public stock exchange is not what it appears to be. It is a base fraud, and yet is allowed to exist in the very heart of our city.

This is the way the machine works. A telegraphic "indicator" is fixed in one corner of the large public room. This reports from time to time during the sessions of some of the larger stock boards the market prices of the various stocks, as determined by the purchases and sales in that board. A man tends this instrument, and as the prices are telegraphed he writes them in large figures on a blackboard, the latter being provided with a printed list of the most active stocks, with blank columns after the name of each, for the insertion of the price. The public are allowed to crowd into this room, and watch the changing figures on the blackboard. Meanwhile, if any one wishes to buy or sell, he can make arrangements with clerks that are in attendance, in some such way as the following: Suppose that the price of Alta, on the blackboard, is $5. Suppose the victim, B, decides to purchase 10 shares of Alta on a margin. He goes to one of the obliging clerks and the two contract as follows: B promises to buy 10 shares of Alta at $5 at some time before the price, as indicated on the blackboard, has risen to $7. As security that he will fulfill his contract he deposits with the clerk $5, or 50 cents a share margin. The clerk, on the other hand, promises for the company to sell B 10 shares of Alta at $5, at any time before the price as indicated on the blackboard has risen to $7. Now if the price of Alta rises to $6.50, B can go and present his contract at 5 shares which are worth $6.50, making thereby $1.50 profit per share. So far so good. But suppose the price as indicated on the blackboard sinks to $4.50. The 50 cents per share deposited is no longer security for the performance of the contract. The latter is declared off, without notice being given to B, and the public stock exchange company pocket the margin.

This seems as fair as any stock transaction. B enters it with his eyes open, risking the fluctuations of the market. The rules of the institution appear to be fair enough also. One of them is: "We reserve the right to refuse all orders." However just that may seem, by it hangs a tale. At times the company has in its possession a sufficient number of shares of certain stocks, to affect the market outside by means of "wash" sales. Orders on any other stocks they will refuse. Suppose that they hold considerable Alta, and that a great many victims have, like B, made contracts to buy at $5 before Alta is $7. The train being thus laid, the public stock exchange company set themselves to work to see that Alta shall never go to $7, or anything like it, while these contracts are pending; but, on the contrary, that it shall fall low enough to uncover all the margins so that the company may pocket the same.

They manage to get contracts on just the stock they can manipulate, by judicious use of cappers and stool-pigeons. These talk up that particular stock, make contracts with the company, buy and sell, and great show of passing money back and forth over the counter, and thus lure the victims in. Run by this means scores of men, yes, and women, too, are led to make these contracts, risk their money, and waste their time gazing anxiously from an atmosphere of tobacco smoke up to the face of the blackboard which is to "indicate" almost invariably the utter loss of whatever they may have risked.

Of course if the margins are increased as the stock goes down, they may be saved. But the object of the swindlers is to cause the price to fall so rapidly and alarmingly that the margins cannot be increased fast enough by the class of people that they wish to victimize.

This system, we understand, has been "imported" from New York. In our opinion it is for the interest of every legitimate business man to stamp out all put-up jobs and stock gambling operations—great or small.

If the large boards can in any way manage to crush out this evil, they will do society a great service, besides saving the name of stock broker from utter disgrace.

Notes on Contributions to Our Cabinet,*

New Mining District in Fresno County.

We have received a specimen of selected chloride ore from the Eureka mine, North Fork mining district, Fresno county, Cal. Judging from the appearance of the specimen it was taken from a surface outcrop. This ore is said to assay from $350 to $475 per ton, silver. Mr. J. S. Phillips, the metallurgist, pronounces very favorably upon the specimen. An old prospector who has examined it, says that it resembles very closely the rich ore from Cornucopia district, Elko county, Nevada.

Concerning the North Fork district, we give the following facts upon the authority of the Bodie *Standard:* "The North Fork mining district is situated about six miles northwest of Lake district, and on the western side of the summit of the Sierras, in Fresno county. It was discovered by Tom Agnew and M. M. Rice, and the district was formed June 17th, of this year. Mr. Rice was elected Recorder. The ledges crop out for a distance of three or four miles, and some of them are of great width, ranging from 12 to 100 feet and even greater. There is one ledge so extensive that the location of 600 feet in width does not cover the surface of quartz exposed. Up to this time about 40 locations have been made. Some of the best are the Advance, owned by Tom Agnew; the California Lion, owned by Rice & McCarty; the Lineretor, which is 40 feet wide, assays from which run from $40 to $147 per ton, all silver. In fact, there is no gold, apperently, in the district. The country has the advantage of being well watered and timbered. The main fork of the San Joaquin river runs within a mile of the main line of claim, and some locations are immediately on the bank of the river. The formation is porphyry and slate, the porphyry being of the same appearance and character as that of Lake district. West of the river the formation is granite." It is further stated that the country is not yet half prospected, in spite of the fact that there are excellent grazing meadows in the vicinity of the claims, rendering it a favorable locality for prospectors.

We catalogue the specimen as No. 565 of our collection.

*Under this heading we shall continue to mention and describe, according to merit, such specimens of ores, minerals, fossils, curiosities, etc., as may be sent to us by mail or express prepaid. Each article will be numbered, marked with the name of the donor and the locality, and safely kept. A full account of the place, occurrence, etc., adds much to the value of such contributions. In another column we will gladly answer any reasonable questions regarding specimens so contributed.

PACIFIC COAST POSTAL CHANGES.—Postoffices established: Corwin, Eureka county, Nevada; J. Chamhelain appointed Postmaster. Cascade Locks, Wascoe county, Oregon; Ashley H. Ball. Milton, King county, Washington Territory; Walter D. Cotton. Fremont's Camp, Iron county, Utah; James Veator. Aztec, Pima county, Arizona; Christian Foster. Tombstone, Pima county, Arizona; Richard Gird. Discontinued: Dardanelles, Jackson county, Oregon; St. Joseph, Yamhill county, Oregon. Names changed: Ellis, San Joaquin county, California, to Tracey; Philip Fahian appointed Postmaster. Huleyville, Tehama county, California, to Gleasonville; G. Gleason. Postmasters appointed: John Todkill, Coleville, Mono county, California; John B. Fishhack, Bristol, Lincoln county, Nevade; John S. Craig, Mason Valley, Esmeralda county, Nevada; Henry O. Coe, Hood River, Wasco county, Oregon; N. Albert Wheeler, Alpowa, Columbia county, Washington Territory; Friend W. Wilson, Coveland, Island county, Washington Territory; Mrs. Ruth Reese, Greenville, Beaver county, Utah; Rev. S. H. Young, Fort Wrangel, Alaska.

THE BRUSH ELECTRIC LIGHT.—We call attention to the advertisement of William Kerr, President of the San Francisco Telegraph Supply Company, and agent for the Brush Electric Light. This light is in daily use in this city in the Palace Hotel and at the Union Iron Works. This invention is said to possess great advantages in simplicity, economy and effectiveness over other patents, and is the result of a study of the weak points in the work of other inventors. English scientists have made comparative tests, which resulted in the favor of the Brush machine and lamp.

THE attorneys of the New Idria Quicksilver Mining Company have renewed their application to the Department of the Interior for a patent.

THE Reese G. & S. M. Co., are suing the Rye Patch Con. M. Co., for possession of the Alpha mine, and for $225,000 damages.

THE Commercial Convention at New Orleans has adjourned sine die.

Hardening and Tempering.

We have been favored by A. Roman & Co., San Francisco, with a late publication entitled "Wrinkles and Recipes." It is a collection of practical suggestions, processes and directions for the mechanic, engineer, farmer and housekeeper. It is quite fully illustrated. The editor is Park Benjamin, Ph. D., and among the revisers and contributors are names that establish at once a reputation for the work. Of these may be mentioned Prof. R. H. Thurston, C. E.; Prof. P. H. Vander Weyde, M. D.; Richard H. Buel, M. E., and Joshua Rose, M. E. The frontispiece of the book is a color-tempering scale, consisting of a scale of colors beginning with dark blue and passing through pink, red, orange to pale yellow. On the sides of this scale are printed the names of tools, each opposite the color to which the steel is heated in tempering at 10 different establishments. At the dark blue end are saws for wood, and springs; near the middle of the scale at about orange we notice penknives, punches and dies, rock drills and chasers. At the pale yellow end are steel engraving tools and scrapers for brass. On this subject we extract the following from the book:

The user has only to look for the name of the tool which he desires to temper on the scale, and note the color opposite the mark. To this color, or to as near an approximation to it as possible, the metal being worked must be tempered. Where special steels are employed, it is possible that these marks may need some slight change, as they are here adapted to good quality ordinary American tool steel. A little experimenting will soon, however, exhibit the amount of variation for any particular kind of metal, and this amount is easily applied as a correction to the indications here given.

If we heat a piece of cast-steel to redness, and plunge it into clean water until its temperature is reduced to that of the water, the result will be that the steel will be hardened. The degree of the hardness will depend upon the quality of the steel, the temperature to which it was heated, and to a small degree upon the temperature of the water in which it was cooled. In any event the operation will be termed that of hardening. If we reheat the steel, a softening process will accompany the increasing temperature, until upon becoming again red-rot it will assume its normal softness, and if allowed to cool in the atmosphere the effects of the first hardening will remain entirely removed. If, however, after the steel is hardened, we polish one of its surfaces and slowly reheat it, that surface will assume various colors, beginning with a pale yellow, and ending in a blue with a green tinge, each color appearing when the steel has attained a definite degree of temperature; hence by the appearance of the colors we are informed of the temperature of the steel, or, in other words, how far, or to what extent, the resoftening has progressed. This chemical fact is taken advantage of by the machinist to obtain in steel any required degree of hardness less than that of the absolute hardness obtained by hardening, and is termed tempering. The temperatures at which these respective colors will appear are as follows:

Very pale yellow	420° Fahr.
Straw yellow	460° "
Brown yellow	500° "
Light purple	530° "
Dark purple	550° "
Clear blue	570° "
Pale blue	610° "
Blue tinged with green	630° "

To say, then, that a piece of steel has been tempered to a straw color implies that it was first hardened and then reheated until the straw yellow appeared upon it, the temperature having arrived at 460° Fahr., and that the reheating process was then discontinued. If, then, a number of pieces of steel of the same grade be heated to an equal temperature and plunged in water until cooled, and are subsequently tempered to the same shade of color, they will all possess an equal degree of hardness; but if other pieces of steel of a different quality or grade (this may be further specified by saying "containing a different percentage of carbon") be subjected to precisely the same processes, leaving upon them the same temper-color, while this latter batch will be uniform in hardness, it will not possess the same degree of hardness as the pieces of the first batch; hence temper-color may be used as proof of equality in the degree of temper in pieces of the same steel, but is not indicative of any determinate and uniform degree of hardness. In tool-hardening this fact assumes but little practical importance, because for tools a special quality of steel, termed tool steel, is supplied, which will harden sufficiently to give accuracy to the color-test tempering, when heated to any degree of heat answerable to from a blood-red to a yellow-red, the difference of hardness in steel quenched, from either of these degrees of heat, being too small to be of practical moment in all tools comparatively inexpensive to make. In tools that are expensive it is desirable to give the exact degree of temper which experiment has determined as the best. It will be noted that in the color-test the shades of yellow alone extend over a range of 70° of temperature, and tool-users know that within these 70° lies a wide range of hardness; and when we bear in mind how widely different persons will differ as to what is any specified shade or tint of color, it will be seen that in the yellow alone there is considerable room for error if the temperer he simply told the color to which a tool is to be hardened.

Mines and Works of Almaden.—No. 13.

[Translated for the PRESS from "ANNALES DES MINES."]

I. Description of the Works of Almaden.

The works for distillation designated by the name of *ceros de Buitranes* (enclosure of Vantours) occupies the western extremity of the hillock upon which is built the town of Almaden. The enclosure forms an irregular rectangle 320 meters in length by about 240 in breadth, so that the area enclosed is about seven and a half hectares. The whole of this vast enclosure is surrounded by walls of great hight in order to protect the establishment, against attempts of theft.

The arrangement of the interior of this enclosure, at the disposition of the different groups of furnaces, does not merit a special study; the works constructed there during more than two centuries have accumulated gradually, so that while it is true the furnaces are grouped in the neighborhood of each other, at the same time they are grouped without any systematic and regular order.

At Almaden two types of furnaces are employed, both of which have been known for a long time. The oldest of these is the Bustamente furnace, which was invented by Lope Saavedra Barba, at Huapeavelica, and was introduced at Almaden in 1633 by Bustamente; the other was copied at the beginning of this century from the furnaces with condensation chambers then in use at Idria, and they have retained the name Idria furnace, although they have been abandoned in the latter locality.

The Bustamente furnaces, or furnaces with aludels are always united in pairs; there are 20 of them in operation at the works, and form ten groups of two furnaces each.

The furnace, properly speaking, is a cylindrical shaft of a diameter of two meters, and a hight of six and a half; it is closed at the top by a hemispherical arch, pierced by an opening for the charging of the ore. A floor, formed of arches (called the *red*) which run parallel to each other, divides the shaft at the middle of its altitude into two compartments. The arches of course act as a sort of grating.

The lower compartment serves as a fire-room, a door upon the side serving for the introduction of fuel and the management of the fire; it is called the *atizadero*. A chimney placed near the *atizadero* serves to facilitate the combustion in accelerating the draft, and in avoiding the passage of the greater part of the smoke into the condensers. Brush-wood called *monto-bajo*, which is found in abundance on most of the mountains which surround Almaden, is burned in the furnaces.

The upper part of the furnace is that which receives the charge; it communicates by a series of flues, with two parallel series of jointed tubes of clay, called *aludels*, which fit the one in the other in such a manner as to form a continuous tube of variable section; the joints are luted as closely as possible. The aludels to the number of 40 to 45 are arranged upon two planes which incline downwards to the center; the first of these is called the *cabeza* or first half-plane, the other, the *rabera* or second half-plane. The aludels upon the first half-plane have at their belly or middle part an opening of from two to four millimeters in diameter, which permits the mercury condensed in the belly of the aludel to escape and to run down this inclined plane till it meets a gently inclined canal which runs along the line of intersection of the two half-planes. The aludels of the second half-plans do not have these openings; they discharge into two chambers for condensation, (a chamber for six rows of aludels); these chambers are surmounted by small chimneys arranged with dampers which may be opened more or less, so as to be able to regulate the draft at any point which is judged advisable.

The mercury flows from the canal down below this first half-plane to a receptacle of stone, called *pila*, or *pileta*. By underground tubes of iron it is conducted directly to the storehouse.

The furnace properly speaking, has a diameter of three meters, and a hight of seven and a half; in it, as in the furnace with aludels, the fire is separated from the ore by a perforated arch. The upper compartment communicates by five flues from each side with two systems of condensers with six chambers each; these chambers communicate, the one with the other, by openings placed alternately above and below. The last of each of these series of chambers is higher than the others in such a manner as to form a chimney.

The condensation chambers are lined with a bed of Portland cement, to prevent the loss of mercury through the joints of the masonry. Their base has the form of a reversed truncated pyramid, the bottom serves to collect the mercury, so as to allow its discharge by a small canal to the stone receptacle, and thence by subterranean tubes to the central reservoir.

The works of Almaden have only two of these Idria furnaces, which are united in a single structure.

The system of subterranean canals which allows the mercury from all the furnaces to descend by its own weight to the store-house, is certainly a very simple arrangement; it was, nevertheless, only established in 1871; by this arrangement loss during transport is avoided, and, above all, fraud is rendered much more difficult than it was formerly.

The store-house is an isolated building, closely guarded, containing 12 iron vats to receive all the mercury which comes from a group of two furnaces. The vats are accurately graduated in such a manner, as that a simple inspection of the level determines the weight of mercury contained in any one of them.

When we have mentioned, besides, a few shops for repairs, a small shop for the manufacture and baking of the aludels, and some buildings which serve for offices, we have finished the description of the extremely simple arrangements which are seen at the works of Almaden.

II. Treatment of the Ore.*

The reaction upon which is founded the metallurgy of quicksilver is itself of very great simplicity. In the presence of the air, at a temperature sufficiently elevated, the sulphide of mercury burns, giving rise to metallic mercury in the state of vapor, and to sulphurous acid. The roasting is effected in the furnace, while the condensation of the vapors takes place in the aludels of the Bustaments furnace, or in the condensation chambers of the Idria furnace.

Let us see in what manner this work is accomplished:

First.—With the Bustamente furnace. Each operation with the furnaces with aludels lasts three days.

The charging is accomplished by placing upon the *red* (or the grate of bricks) a bed of poor *solera*, of about 0.40 meters thick, or in the absence of the latter of stones from the quarry entirely sterile. Upon this first layer are thrown the largest fragments of the poor ore, then a certain quantity of poor *china* and of *requiebro*, upon this is heaped the *metal* (or rich ore) to the level of the flues. Upon the top of the *metal* is placed the fragments of the aludels, broken in previous operations, and the charging is completed with bricks or balls of *bacisco*. Sometimes with the material of these bricks is mixed the richer mercurial powders which come from the condensation chambers, or is taken from the aludels after preceding operations. In such cases, these balls or bricks are naturally richer than when they are made only of the broken ores and earth.

The charges are neither weighed nor measured; the workmen have such a familiarity with the furnaces as never to make even a small variation in the composition of the charge. It is composed somewhat as follows:

	Cubic Meters.	Weight in Kilograms.
Metal	1.0	1.840
China	3.0 to 3.5	5.290
Solera	1.5 to 3.0	2.070
Balls of Bacisco	200 balls	2.300
Total		11.5000

That is:

Metal	16%	of the charge.
China	46%	
Solera	18%	
Fragments	20%	

The charging is begun at the lateral charging door, which is bricked up as fast as the bed of ore is raised. The charging is finished by the upper opening, which is likewise closed when the furnace is full, with a paste formed of ashes and water; the same paste serves to lute the joints of the aludels and the charging doors wherever the mercurial vapors might escape.

When the furnace is thus prepared, the fire is lighted below and is continued during eight to ten hours; the consumption of fuel during this time is from 2.20 tons to 2.50 tons of wood.

After 10 hours of fire, the period of spontaneous roasting begins, called the *brasa* (embers) in opposition to the first, which is called the period of *llama* (flame). This lasts 45 to 46 hours. During this time the roasting of the ore continues and the temperature is maintained, owing to the combustion of the sulphur of the ore.

Then the period of cooling the furnace begins; the door for charging and that for firing are opened. The fire-room is cleaned and the ashes removed; the workmen then enter the place and discharge the residus of the roasting, and then begin immediately to charge. These last two operations do not take more than two hours.

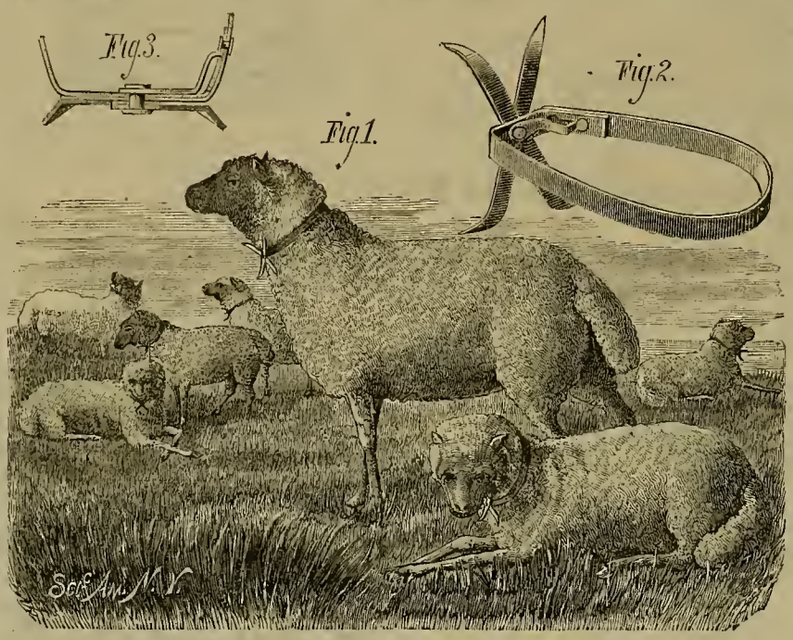
The whole operation of a roasting takes the name of *cochura* (production); each cochura lasts three days, divided as follows:

Charging	1.00 hours
1st period, firing	8.10 "
2d period, roasting	45.40 "
3d period, cooling	18.00 "
Total	72.50 hours

The residues of the roasting go improperly by the name of *scories* (slag). They are examined to separate any fragments of badly roasted ors; the rest is charged into mule carts and taken to the dumps outside the limits of the works.

Every 15 days, *i. e.*, after every five operations, the aludels are taken up from the first half-plane, in order to detach the thick layer of mercurial soot (*hollines*) which lines them, also to remove the mercury which is in the belly of each aludel. This operation is undertaken with the aludels of the second half-plane only every two months; the quantity of mercury which condenses there is, in fact, very small. The soot obtained in these cleanings is submitted to a sort of mechanical preparation upon an inclined plane; it is agitated with water, so that the small drops of mercury which it contains may be mechanically separated. The residues, formed with ashes often as strongly impregnated with mercury or with mercurial salts, are employed in the preparation of bricks for further treatment.

*They distill only in winter, and I visited Almaden in summer; this is not, therefore, a description from my own observation, but only from the explanations that the engineers and firemen have given me, with untiring kindness, and from the books of the establishment.



DEVICE FOR PROTECTING SHEEP FROM DOGS.

2. Work with the Idria Furnace.

The work with the Idria furnace resembles very much that with the Bustamente furnace; the amounts only are changed.

Each charge is about 28.75 kilograms, composed of:

	Cubic Meters.	Kilograms.		
Metal	2.50 or	4.600	16%	to the charge.
China	8.75 or	13.225	46%	
Solera	3.64 or	5.175	18%	
Bricks of fragments	480 or	5.750	20%	

The duration of an operation is six days: The first serves for cleaning and charging; the second, for the combustion of wood in the fireplace; the third and the fourth, for the roasting of the ore without exterior fire; the fifth, for cooling; and the sixth, for the removal of the "slag."

Three only of these days requires the presence of occupied workmen: one for the charging, which lasts 3 hours; one day for the firing, a third for the discharging. The three others require hardly any manipulation; it is only necessary to watch that no leakage of fumes occurs, and to open the doors the fifth day. At night the furnaces are abandoned entirely to themselves, and not even a watchman is allowed them; this latter is a mistake.

The consumption of wood is from 4.2 to 4.5 tons for each operation.

The soot deposited in the condensation chambers is washed in the chambers themselves; the residues serve as do those of the Bustamente furnace for the manufacture of bricks of fragments, and a part at least of the mercury that they contain is thus reutilized.

The mercury collected at the storehouse is enclosed in the well-known bottles of wrought-iron, of a hight of 0.30 meters, and a diameter of 0.13 meters, whose neck is arranged to receive a cork with a thread cut upon it so as to make a perfectly tight joint. These bottles, which go by the name of *frascos*, weigh (when empty) from 5.5 to 6.5 kilograms, and contain 34.507 kilograms of mercury (three *arrobes*, or 75 Castillian pounds). The empty *frasco* costs from 6.50 to 7 francs.

Let us now render an account of the results obtained by these two methods of treatment.

In the winter season of 1875-6, from October 12th, 1875, to April 27th, 1876, the 10 groups of twin Bustamente furnaces worked without interruption, at the rate of one roasting every three days; they made, therefore, a total number of 1,320.

The average charge was 11,220 kilograms. The average of mercury produced, 824.716 kilograms per operation. The average yield of the ore, 7.35%.

The fuel is furnished by contract; that is to say, a workman undertakes the firing at a fixed sum per charge.

The price was, in 1875, about 23 francs per operation, for a consumption of 2.2 tons to 2.5 tons. The aludels are manufactured at the works by a contractor, who sells them at the rate of 0.30 francs; their consumption represents but a small figure.

[To be Continued.]

A Sheep Protector.

We illustrate on this page a device which a South Carolina shepherd, Capt. C. Gilbert, of Bucksville, South Carolina, has contrived for protecting sheep from seizure and injury by dogs. The value of the protector depends, of course, upon the disposition of the dog to seize his victim by the neck. We have seen sheep seized otherwise, but probably there is a considerable percentage in favor of neck seizure, and to this extent the protector may be invaluable. The inventor, Capt. Gilbert, testifies that his sheep were safe amid a pack of evil curs, and thus gives his own testimony in favor of his invention: Fig. 1 shows the protector in proper position around the sheep's neck. Fig. 2 shows the button-head properly drawn into the small part of the slot, and the protector firmly locked by the latch-button, which holds it permanently fast around the sheep's neck. Fig. 3, with Fig. 2, shows the relation of the button and lock-latch to the other parts.

The invention consists in a metallic collar or neck-band, which is fastened together by means of a slot and rivet or button, and is provided with cross pieces, having pointed ends. This is the sheep protector proper. The band or cross pieces may be stamped with the owner's name and the year it was placed upon the sheep, so as to keep a perfect record of every member of the flock. It may also be painted in colors by which one may at a glance distinguish his own from every other person's sheep at a distance, without the difficulty often experienced of ascertaining the ear marks. This band also comes into use when the animal is to be caught for shearing. By means of a hook somewhat resembling the ancient shepherd's crook, the sheep is taken by the collar and gently controlled by the shearer.

The serious losses which flock-masters suffer by the inroads of worthless dogs are well known. Laws and dog taxes have availed something, but the evil is still of alarming extent. The most careful statistics that could be gathered by the Agricultural Department at Washington, show the present estimate of sheep in the United States to be 35,740,500 head, valued at $80,603,062. This is a problem worthy the attention of inventors, as the lawmakers have failed thus far to solve it. For this reason we are disposed to show the device which the South Carolina flock-master has brought forward, so that those interested may examine and test its efficacy. Those who wish to know more of the protector can obtain particulars by addressing Thomas W. Beaty, Conwayboro, South Carolina.

PURCHASING AGENT.—Perhaps some of our readers who need articles from the city, and cannot come to buy them, may be aided by attention to the advertisement of Wheeler Martin in this issue of the PRESS. Mr. Martin is recommended by a long list of our leading merchants, and we doubt not will give satisfaction to interior residents who trust him to fill their wants.

IT is said that the Union and Central Pacific railroads are moving for consolidation. They may then establish complete monopoly by purchasing or leasing the Pacific Mail.

ON the 9th inst. the Secretary of the Treasury issued the 74th call for redemption of 5-20 bonds of 1865, consols of 1865. Interest ceases March 9th next.

INDIANS are said to have done as well as white men in Government freighting between the Missouri river and the Rosebud Agency.

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We invite the acquaintance of all parties connected with inventions and patent right business, believing that the mutual conference of legitimate business and professional men is mutual gain. Parties in doubt in regard to their rights as assignees of patents or purchasers of patented articles, can often receive advice of importance to them from a short call at our office.

Remittances of money, made by individual inventors to the Government, sometimes miscarry, and it has repeatedly happened that applicants have not only lost their money, but their inventions also, from this cause and consequent delay. We hold ourselves responsible for all fees entrusted to our agency.

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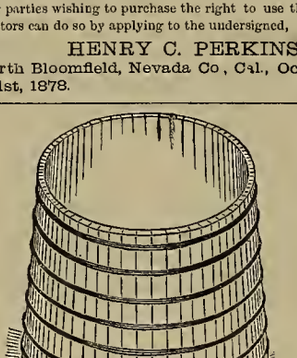
HENRY C. PERKINS,
North Bloomfield, Nevada Co., Cal., October 1st, 1878.



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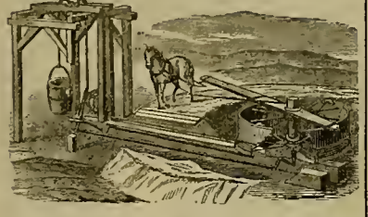

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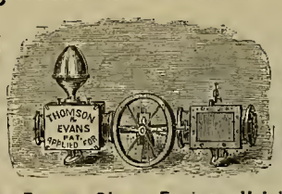

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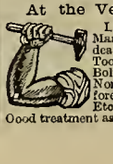

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Continued from page 373.

the drift now being run on the 2000 level from the Ophir. On the 1950 level north drifts No. 1 and No. 2 have been connected. No. 1 is now being driven vigorously forward, the face still in a favorable vein formation. The daily yield of ore is 330 tons, keeping the California mill steadily at work crushing.

OPHIR.—The extraction of ore from the 1900 and 2000 levels is going steadily forward. There are now 600 tons of ore in the dump ready for shipment. It is the intention, in a very few days, to start up the Brunswick mill on this ore, there being now ample ore in sight to keep the mill running for some time to come.

SIERRA NEVADA.—Sinking the south incline winze is being pushed vigorously forward, the bottom still in the same lively, healthy looking cap formation, carrying all the favorable features heretofore reported, even to an occasional rich assay of ore from the bottom and sides. At the 2200 level no work has been done of any consequence in either the north or south crosscuts. The north crosscut penetrated 14 feet of rich ore and then, striking low grade ore, was stopped. The north drift from this station, to connect with the north winze from the 1700 level, is being pushed steadily forward, running outside of and parallel with the ore vein.

CON. VIRGINIA.—The south drift, on the 1950 level, is steadily advancing, the face still in a fine vein formation. The main east drift, on the 1400 level, has reached the ore body, and an upraise is now being made preparatory to extracting ore.

YELLOW JACKET.—On the 2400 level of the old mine the main drift south is in vein porphyry with streaks of quartz and clay.

BELCHER.—Sinking the main incline is making good progress. The south drift on the 2360 level continues to show a slight increase of water and a gradual improvement in the character of the quartz. The east crosscut, No. 2, on the 2360 level, shows a slight improvement. The west crosscut, on the 800 level, is making steady progress without change of valne.

NORTH BONANZA AND FLOWERY.—The east drift in the North Bonanza croppings has reached, after passing through 50 feet of ore interspersed with ribs of hard, flinty quartz, what appears to be the east clay wall. The last seven feet before reaching this clay wall was rich ore of a free milling character.

NORTH CON. VIRGINIA.—The new side track of the Virginia & Truckee railroad is completed and the cars are running to the shaft. The water pipe is also laid so as to connect with the water works on Cedar hill. The boilers are inclosed, the smoke-stack up, all ready to turn on the steam. Sinking the shaft has been somewhat delayed by the putting in of a pump station and tank at the 1500 level.

BULLION.—The main incline is now down 149 feet below the 2050 level station. The combination drift on the 2400 level is now in hard blasting porphyry. The west crosscut on the 2,000 level is making steady progress, the face in hard blasting rock. The east drift on the 2050 level is making good progress, the face in fine vein matter. A drift north has been started on this level at a point 75 feet east of the main incline.

GOULD & CURRY.—Sinking the joint shaft has not made the usual rate of progress on account of an increase of water in the bottom, which has given considerable trouble. This is probably only a pocket, and will, no doubt, soon be drained.

SOLID SILVER.—The crosscut west from the winze below the tunnel level will not have to run more than 10 feet to reach the great west ore vein.

CROWN POINT.—Sinking the main double incline winze below the 2300 level is making steady progress. The east crosscut on the 2300 level, from the winze, is in 400 feet, the face in quartz of low grade, mixed with porphyry. The north crosscut is in 50 feet, the face in soft porphyry.

CALEDONIA.—The flow of water from the east drift on the 1600 level is still quite strong. This drift is advancing at the rate of four feet per day, the face in vein porphyry, streaked with quartz. The north drift on the 1600 level is making good headway, the face still in hard blasting rock.

HALE & NORCROSS.—The water stands in the main incline 49 feet below the 2300 station, the joint cast drift on the 2000 level not making as fast speed as heretofore, having struck a belt of very hard rock. The machinery is all in good working order and everything is working nicely.

SUCCOR.—Sinking the main shaft is making the best of progress. The prospecting drifts on the ore vein, on the 1050 level, are looking well and are being rapidly advanced.

SUTRO TUNNEL.—The south lateral branch towards the Julia shaft is making improved progress.

TROJAN.—The ore stopes on the second station level continue to yield good ore. The mill was started up on the first of the month with a supply of 1,150 tons of ore on hand.

OVERMAN.—There are no changes of value to report of any portion of the mine. Good progress everywhere.

SAVAGE.—The joint east drift on the 2000 level is making good progress, the face being in much harder rock than for some time past. The east crosscut on the 2100 level is making steady progress, and the face is still in very soft favorable vein matter. The water stands at a point about 40 feet below the 2000 level.

JUSTICE.—The extraction of ore is more than sufficient to keep the Pappoose mill steadily running. The ore is of a fair grade and will pay well for milling. There are no particular changes to note in any of the ore-producing sections of the mine.

UNION CON.—Sinking the joint Mexican winze is going vigorously forward, the bottom in good blasting porphyry. The flow of water from the east drift gives no trouble in handling. The repairs to the main north drift on the 1600 level are making rapid progress.

Machine-Shop Rambles.

The machine shops share the general depression in business, but still there is a great deal to be learned from visits among them. We have lately looked through the establishment of

William Deacon,

On Main street, in this city. He has just completed the machinery for the new tug, *Hercules*. This machinery is after the model of that in the *Governor Irwin*, manufactured by the same maker, but is twice as large. The engine will weigh about 13 tons, and the entire machinery about 22 tons. The engine has two 24-inch cylinders; 18-inch stroke. The screw is 9½ feet in diameter; pitch, 13½. The tug will probably make a trial trip in a few days. The machinery of

A New Steam Launch,

Built for the Alaska Fur Company's steamer, *St. Paul*, is at the shop. The engine is, of course, miniature, weighing only about 500 pounds. The boiler work will weigh about 1,900 pounds, and has been tested to a pressure of 260 pounds to a square inch. The screw is 26 inches in diameter. The launch is 27 feet from stem to stern, and 6 feet beam. It will be hung on the same davits as the ordinary ship's boats. Both boiler and engine are so fixed that they may be taken in and out of the hulk in a very few moments by the use of light tackle. The boiler, for instance, rests on a cast-iron saddle which is fixed in the bottom of the launch. To this saddle it is clamped by keys that may be readily removed. On top of the boiler is a hole for the insertion of an eye-holt. The keys below, removed, and the eye-bolt once in its place, the removal of the whole boiler is a very simple affair. It is the same with the engine, which is similarly keyed down. In order to facilitate such removal of the engine, the latter is connected to the shaft by means of a compensating-joint, so that no coupling-bolts have to be unscrewed before attaching the tackle to the eye-bolt above the cylinder, and lifting the engine out. In Deacon's shop is the

Longest Single Lathe

In the city. The length from center to center is about 26½ feet. Upon this, at the time of our visit, they were turning the thread on 2¼-inch shafting to be used in making presses for whaling vessels. These presses are worked by hand, and are carried with the whaler for pressing out the scrap. Mr. Deacon has made a great many of them; but whaling vessels have an inconvenient way of getting wrecked so often, that there is a considerable number of new presses demanded every season. The screws are made about 5 feet long. The shafting is turned in pieces about 10 feet in length, each piece supplying two presses.

Other Notes.

Engine No. 1, of the San Francisco Fire Department, was standing near the doorway of the shop, waiting for repairs. A coupling was being put on a 3-inch shafting, for the upright shaft of a flour mill. Occasional repairing is done in the shop upon many steamers that frequent the harbor, among them a number of Government vessels, as the *Shubrick* and *MacPherson*.

News in Brief.

EARTHQUAKE in northern counties Dec. 9th.

BLAINE has been shaking hands with Blackburn.

THE fall of the Italian ministers is said to be inevitable.

THE Mexican excursion party leave Chicago, Jan. 4th.

INDIAN depredations continue to be reported from Nebraska.

A CANADAIN loan of £3,000,000 has been placed on the London market.

IT is reported that the Ameer has fled because of a revolution in Cabul.

THE Turkish Ministry have been dismissed and new ministers appointed.

GENERAL ROBERTS has gained a complete victory over the Afghan forces.

THE Throckmorton land case has been decided in favor of Throckmorton.

HON. ALEX. H. STEPHENS met with a painful accident at Washington, Dec. 4th.

MONCASI, who attempted to kill the King of Spain, has been granted a new trial.

An ex-member of the Ohio Legislature, has been convicted at Cincinnati of perjury.

FLOURDUST explosion has caused the distruction of another Minneapolis flour mill.

A GRAIN GRADER, the first ever built in this State, is being constructed at San Francisco.

IT is proposed by the Austrians to appropriate 20,000,000 florins as occupation expenses in 1879.

HENRY TAYLOR & SONS, grain and flour merchants, Glasgow, have failed. Liabilities, $650,000.

PREPARATIONS for the Sydney International exhibition of 1879 are progressing very satisfactorily.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch from Washington, D. C.

FOR THE WEEK ENDING NOVEMBER 26TH, 1878.

MACARONI MACHINES—Giocomo Grondona, S. F.

FRUIT AND PACKING BOXES—Matthew Cooke and Robert J. Cooke, Sacramento, Cal.

BOX FASTENERS—Matthew Cooke and Robert J. Cooke, Sacramento, Cal.

HOSE CARRIAGES—John Wibz, Santa Cruz, Cal.

MEN AND BOYS' CLOTHING—Trademark—Banner Brothers, New York, New York and San Francisco, Cal.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of special mention:

BLIND SLAT ADJUSTER.—Wm. Cruse & John D. Isaacs, West Oakland.—Dated November 19th, 1878.—The invention relates to an improved mechanism for operating the slats of blinds, by which the ordinary rod connecting the slats may be dispensed with. The improvements consist in providing at the ends of the slats a ferule carrying a pin or lug, which lug engages with an oblique slot in a strip which slides in a rabbit on the back of the head carrying the slats. This rabbit is formed on the side of the head opposite to that on which the slats are, so that it is entirely out of sight. A thin projecting handle is fastened to the strip which has the slots in which the pins travel, so that by sliding said handle up or down the strip turns the slats in any desired position simultaneously. By thus giving a rectilinear motion to the strip, a rotary one is imparted to the slats. The operating mechanism is easily accessible, and is not likely to get out of order; nor are any slots necessary in the wood work to set in escutchion plates as is usual.

MACARONI MACHINE.—Giacomo Grondona, S. F. Dated, November 19th.—This invention relates to an improved machine for making macaroni and other articles, from flour paste. It consists of an upright double cylinder, bolted to the outer side of a vertical frame, which also carries a piston operated by screw and lever. The cylinder is made double, so that steam or hot water may be admitted to the space between the two, in order to keep the paste in the inner cylinder in proper condition. The piston is operated by a screw and hand lever, with ratchet and pawl connections, means being provided so that the piston may be moved in either direction by means of a hand-wheel, independent of the pawl and ratchet. The bottom of the inner cylinder is provided with a strong hinged door or movable plate, which receives the perforated dies of any style to form the desired article. This device is mainly intended for use in families, where small quantities of macaroni, or other articles from flour paste may be made without the use of steam power.

The "Press" in Arizona.

Henry R. Ewald left San Francisco on Tuesday of this week for Arizona. He will visit various parts of that promising Territory in the interest of our paper, receiving subscriptions, taking notes for publication, etc. He is well and favorably known in Oakland, California, as well as in the Territory, where he has resided for years. It is our intention, as far as we can gain facts, to give prominence to the real and permanent interests of our neighboring Territory. With her our State is becoming more and more intimately connected every day, and that literally; for it is said that, as early as the day after the publication of this notice, regular trains will be running from Yuma to Gila City. This is only the first short step in a progress which is to reveal to the outside world more clearly than ever before the vast resources—mineral, agricultural and grazing—of Arizona. Any assistance given to a gentleman, who, like Mr. Ewald, will have it in his power to publish to the world what he sees and hears, will be an act of friendship to the Territory, whose advancement we all wish to encourage.

FRESH attractions are constantly added to Woodward's Gardens, among which is Prof. Gruber's great educator, the Zoographicon. Each department increases daily, and the Pavilion performances are more popular than ever. All new novelties find a place at this wonderful resort. Prices remain as usual.

EXAMINE the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.94. Lewis C. Grover, President; L. Spencer Cohle, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by SUTRO & Co.]

SAN FRANCISCO, December 11, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 99¾@99.95. SILVER, 2 @1⅝. GOLD in New York, 100⅛.

GOLD BARS, 890@910. SILVER BARS, 8@22 ₱ cent. discount.

EXCHANGE on New York, ½%, on London bankers, 49¼@49⅜. Commercial, 50; Paris, five francs ₱ dollar; Mexican dollars, 89½@90⅜.

LONDON Consols, 94 1-16; Bonds, 103¼.

QUICKSILVER in S. F., by the flask, ₱ lb, 40@41c.

METALS.

[WHOLESALE.

WEDNESDAY M., December 11, 1878.

IRON.—	
American Pig, soft, ton	25 00 @26 00
Scotch Pig, ton	25 50 @26 50
American White Pig, ton	23 00 @— —
Oregon Pig, ton	26 50 @— —
Refined Bar	2½@ 3
Horse Shoes, keg	5 00 @— —
Nail Rod	—@ 7½
Norway, according to thickness	6½@ 7
COPPER.—	
Sheathing, lb	34 @ 35
Sheathing, Yellow	19 @ 20
Sheathing, Old Yellow	—@—
STEEL.—	
English Cast, lb	16 @ 17
Black Diamond, ordinary sizes	16 @— —
Drill	16 @ 17
Flat Bar	16 @ 19
Plow Steel	8 @ 12½
TIN PLATES.—	
10x14 I C Charcoal	8½@ 9
10x14 I C Coke	7 @ 7½
Banca Tin	18 @— 20
Australian	15½@ 17
ZINC.—	
By the Cask	9 @— —
Zinc, Sheet 7x3 ft, 7 to 10, lb, less than cask	9½@— 10
NAILS.—	
Assorted sizes	2 90@3 00

LUMBER.

WEDNESDAY M., December 11, 1878.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE RETAIL PRICE.	
Rough, M	13 00	Rough, M	18 00
Refuse	9 00	Fencing	18 00
Clear	23 00	Flooring and Step	28 00
Clear Refuse	13 00	Narrow	30 00
Rustic	23 50	2d quality	25 00
Refuse	18 00	Laths	3 50
Surfaced	20 00	Furring, lineal ft	¾
Refuse	14 00	**REDWOOD.** RETAIL PRICE.	
Flooring	20 00	Rough, M	18 00
Refuse	12 00	Refuse	14 00
Beaded Flooring	23 00	Pickets, Rough	15 00
Refuse	13 00	Pointed	16 00
Half-inch Siding	16 00	Fancy	22 50
Refuse	14 00	Siding	20 50
Half-inch Surfaced	20 00	Surfaced & Long Beaded	30 00
Refuse	14 00	Flooring	30 00
Half-inch Battens	16 00	Refuse	22 50
Pickets, Rough	11 00	Half-inch Surfaced	30 00
Rough, Pointed	12 50	Rustic, No. 1	30 00
Fancy, Pointed	18 00	Battens, lineal ft	
Shingles	1 75	Shingles M	2 00

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

General Robert Allen Silver Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Globe Mining District, Pinal County, Arizona.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 1) levied on the 20th day of October, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
John J Cushing	8	3000	$750 00
Robert Allen	12	1000	250 00
Robert Allen	13	440	110 00
Wm N Grier	23	200	50 00
Rufus Ingalls	31	100	25 00
Rufus Ingalls	32	100	25 00
R M Batchelder	35	200	50 00
H Prince	30	200	50 00
W H Jameson, Jr	37	200	50 00
W H Duryea, Trustee	46	10	2 50
W V Kingsbury, Trustee	56	500	125 00
S Simon, Jr	57	500	125 00
S Simon, Jr	58	500	125 00
S Simon, Jr	59	500	125 00
S Simon, Jr	60	500	125 00
S Simon, Jr	61	500	125 00
S Simon, Jr	62	500	125 00
S Simon, Jr	63	500	125 00
S Simon, Jr	64	500	125 00
S Simon, Jr	65	500	125 00
S Simon, Jr	66	500	125 00
S Simon, Jr	67	100	25 00
S Simon, Jr	68	100	25 00
S Simon, Jr	69	100	25 00
S Simon, Jr	70	100	25 00
S Simon, Jr	71	100	25 00
S Simon, Jr	72	100	25 00
S Simon, Jr	73	100	25 00
S Simon, Jr	74	100	25 00
S Simon, Jr	75	100	25 00
S Simon, Jr	76	100	25 00
Julius Fay	77	300	75 00
W H Duryea, Trustee	79	5000	1250 00
E Heller	81	25	6 25
John D Wilson	82	25	6 25
Robert Allen	84	100	25 00
John D Wilson, Trustee	88	500	125 00
Marie Pascal	91	600	150 00
H H Lawrence, Trustee	113	335	88 75
H H Lawrence, Trustee	114	50	12 50
H H Lawrence, Trustee	118	250	62 50
H H Lawrence, Trustee	119	100	25 00
H H Lawrence, Trustee	120	150	37 50
Wm V Kingsbury	121	500	125 00
Jacob Hardy, Trustee	122	20	5 00
Jacob Hardy, Trustee	124	20	5 00
Jacob Hardy, Trustee	128	115	28 75
Jacob Hardy, Trustee	129	50	12 50
C E Stevens, Trustee	130	10000	2500 00
C E Stevens, Trustee	131	10000	2500 00
C E Stevens, Trustee	133	10000	2500 00
C E Stevens, Trustee	134	10000	2500 00
John D Wilson, Trustee	139	1550	387 50
Thomas Arthur	140	100	25 00
C Stevens	141	100	25 00
H H Lawrence	142	10	2 50
Jos G Wilson	47	10	2 50
U Simon	149	1000	250 00
U Simon	150	1000	250 00
U Simon	151	1000	250 00
U Simon	152	1000	250 00
U Simon	153	1000	250 00
U Simon	154	1833	458 25
C E Stevens, Trustee	155	5000	1250 00
C E Stevens, Trustee	156	50	12 50
C E Stevens, Trustee	157	783	195 75
C E Stevens, Trustee	159	4000	1000 00
C E Stevens, Trustee	161	2000	500 00
C E Stevens, Trustee	163	2000	500 00
M C Southard, Trustee	164	7890	1972 50
H H Lawrence	158	1400	350 00
John D Wilson	138	10	2 50

And in accordance with law, and an order of the Board of Directors made on the 29th day of October, 1878, so many shares of each parcel of such stock as may be necessary will be sold at public auction, at the office of said association, 411½ California street, San Francisco, California, on Thursday, the second (2d) day of January, 1879,

at the hour of 12 o'clock of said day, to pay said delinquent assessment thereon, together with cost of advertising and expenses of the sale.

M. C. SOUTHARD, Secretary.

Office, Room 11, 411½ California St., San Francisco, Cal.

Land Purchaser's Association. — Office,

No. 318 Montgomery Street, San Francisco, California.

NOTICE—There are delinquent upon the following described stock, on account of assessment (Installment No. 43) levied on the 5th day of November, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount
Mrs Matilda Stohr	38	1	$4 00
James L Beyen	43	1	4 00
V Chevallier	64	1	4 00
Geo S Dickey	98	1	4 00
W G Koch	178	1	4 00
Asa Fisk	220	1	4 00

And in accordance with law, and an order of the Board of Directors, made on the 5th day of November, 1878, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the Secretary, No. 318 Montgomery street, San Francisco, California, on Saturday, the fourth (4th) day of January, 1879, at the hour of 10 o'clock A. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

C. S. WRIGHT, Secretary.

Mineral Fork Mining and Smelting Com-

pany.—Location of principal place of business, San Francisco, California. Location of works, Big Cottonwood District, Salt Lake County, Utah Territory.

NOTICE.—There are delinquent upon the following described stock on account of assessment (No. 1) levied on the 31st day of October, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
G Areskog	156	50	$ 1 00
G Areskog	157	50	1 00
W H Atwood	185	100	2 00
W H Atwood	186	100	2 00
W H Atwood	187	100	2 00
W H Atwood	188	100	2 00
W H Atwood	189	100	2 00
Wm Atwood	190	100	2 00
Wm Atwood	191	100	2 00
Wm Atwood	192	100	2 00
Wm Atwood	193	100	2 00
Wm Atwood	194	100	2 00
G Bearson	105	100	2 00
G Bearson	115	100	2 00
G Bearson	116	100	2 00
G Bearson	117	100	2 00
G Bearson	118	100	2 00
G Bearson	119	100	2 00
G Bearson	136	66	1 32
H L A Culmer	295	50	1 00
H L A Culmer	296	50	1 00
H L A Culmer	297	100	2 00
H L A Culmer	298	100	2 00
H L A Culmer	299	100	2 00
Wm H Culmer	378	10	20
Wm H Culmer	379	50	1 00
Wm H Culmer	380	50	1 00
Chs G Denicke	434	50	1 00
Chs G Denicke	435	50	1 00
Chs G Denicke	436	50	1 00
Chs O Denicke	437	50	1 00
A S Easton	4	75	1 50
A S Easton	365	350	7 00
E E Elliott	195	100	2 00
E E Elliott	196	100	2 00
E E Elliott	197	100	2 00
E E Elliott	198	100	2 00
E E Elliott	201	17	34
E E Elliott	271	25	50
E E Elliott	272	25	50
E E Elliott	274	10	20
E E Elliott	275	10	20
E E Elliott	217	50	1 00
E E Elliott	218	50	1 00
E E Elliott	220	50	1 00
E E Elliott	222	200	4 00
E E Elliott	224	200	4 00
E E Elliott	225	200	4 00
E E Elliott	226	200	4 00
E E Elliott	228	200	4 00
E E Elliott	229	200	4 00
E E Elliott	230	200	4 00
E E Elliott	231	200	4 00
E E Elliott	233	100	2 00
E E Elliott	234	100	2 00
E E Elliott	371	50	1 00
E E Elliott	372	50	1 00
E E Elliott	373	50	1 00
E E Elliott	374	50	1 00
E E Elliott	375	100	2 00
E E Elliott	376	100	2 00
E E Elliott	377	100	2 00
E E Elliott, Trustee	503	10	20
E E Elliott, Trustee	504	10	20
E E Elliott, Trustee	505	10	20
E E Elliott, Trustee	506	10	20
E E Elliott, Trustee	507	10	20
E E Elliott, Trustee	508	10	20
E E Elliott, Trustee	509	10	20
E E Elliott, Trustee	510	10	20
E E Elliott, Trustee	511	10	20
E E Elliott, Trustee	513	10	20
E E Elliott, Trustee	514	10	20
E E Elliott, Trustee	515	10	20
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E E Elliott, Trustee	521	10	20
E E Elliott, Trustee	522	10	20
E E Elliott, Trustee	523	10	20
E E Elliott, Trustee	524	10	20
E E Elliott, Trustee	525	10	20
E E Elliott, Trustee	526	10	20
E E Elliott, Trustee	527	10	20
E E Elliott, Trustee	528	25	50
E E Elliott, Trustee	529	25	50
E E Elliott, Trustee	530	25	50
E E Elliott, Trustee	531	25	50
E E Elliott, Trustee	532	25	50
E E Elliott, Trustee	533	25	50
E E Elliott, Trustee	534	25	50
E E Elliott, Trustee	535	25	50
E E Elliott, Trustee	536	25	50
E E Elliott, Trustee	537	25	50
E E Elliott, Trustee	538	50	1 00
E E Elliott, Trustee	539	50	1 00
E E Elliott, Trustee	540	50	1 00
E E Elliott, Trustee	541	50	1 00
E E Elliott, Trustee	542	50	1 00
E E Elliott, Trustee	543	50	1 00
E E Elliott, Trustee	544	50	1 00
E E Elliott, Trustee	545	50	1 00
E E Elliott, Trustee	546	50	1 00
E E Elliott, Trustee	547	50	1 00
E E Elliott, Trustee	512	10	20
W W Elliott	208	100	2 00
W W Elliott	209	100	2 00
W W Elliott	210	100	2 00
Frank Foote	381	250	5 00
B A M Troisith	568	20	40
B A M Troisith	569	20	40
Edwin Gardner	202	100	2 00
Edwin Gardner	203	100	2 00
Edwin Gardner	204	100	2 00
Edwin Gardner	205	100	2 00
Edwin Gardner	206	100	2 00
S J Jonasson	181	25	50
S J Jonasson	182	25	50
S J Jonasson	184	67	1 34
Peter Jhonson	333	100	2 00
Peter Jhonson	334	100	2 00
Peter Jhonson	336	100	2 00
Peter Jhonson	338	100	2 00
Peter Jhonson	340	100	2 00
Peter Jhonson	342	100	2 00
Peter Jhonson	346	50	1 00
Peter Jhonson	348	50	1 00
Peter Jhonson	349	50	1 00
Peter Jhonson	350	50	1 00
Peter Jhonson	351	50	1 00
Peter Jhonson	353	50	1 00
Peter Jhonson	354	50	1 00
Peter Jhonson	356	50	1 00
Peter Jhonson	357	50	1 00
Peter Jhonson	358	50	1 00
Peter Jhonson	359	50	1 00
T F Nystrom	247	100	2 00
T F Nystrom	248	100	2 00
T F Nystrom	249	50	1 00
T F Nystrom	250	50	1 00
T F Nystrom	251	33	66
R B Noyes	270	300	6 00
Samuel Purdy	259	100	2 00
W C Pease, Trustee	607	18	30
W C Pease, Trustee	608	18	36
G Peterson	75	100	2 00
G Peterson	85	100	2 00
G Peterson	87	100	2 00
G Peterson	88	100	2 00
G Peterson	89	100	2 00
G Peterson	96	50	1 00
G Peterson	100	50	1 00
G Peterson	102	50	1 00
William Russell	276	10	20
William Russell	277	5	10
William Russell	278	5	10
P H Sumner	19	5	10
P H Sumner	20	70	1 40
P H Sumner	180	66	1 32
Edgar Sheldon	291	250	5 00
Edgar Sheldon	292	250	5 00
Edgar Sheldon	293	250	5 00
Edgar Sheldon	294	250	5 00
F C Thompson	243	50	1 00
F C Thompson	244	50	1 00
F C Thompson	245	33	66
Theodore Tangwell	328	50	1 00
C F Winslow, Trustee	556	500	10 00
C F Winslow, Trustee	556	277	5 54
C F Winslow, Trustee	561	50	1 00
C F Winslow, Trustee	562	100	2 00
C F Winslow, Trustee	563	100	2 00
C F Winslow, Trustee	564	100	2 00
C F Winslow, Trustee	565	100	2 00
C F Winslow, Trustee	566	100	2 00
C F Winslow, Trustee	567	50	1 00
C F Winslow, Trustee	570	250	5 00
C F Winslow, Trustee	571	250	5 00
C F Winslow	237	5150	103 00
C F Winslow	301	1000	20 00
C F Winslow	308	1700	34 00
C F Winslow	309	1000	20 00
C F Winslow	310	1000	20 00
C F Winslow	311	1000	20 00
C F Winslow	312	1000	20 00
C F Winslow	314	250	5 00
C F Winslow	318	100	2 00
C F Winslow	324	100	2 00
Ronde N Walter	246	84	1 68
A Wingnist	56	100	2 00
A Wingnist	62	100	2 00
A Wingnist	66	50	1 00
A Wingnist	67	50	1 00
A Wingnist	68	50	1 00
A Wingnist	69	50	1 00
A Wingnist	70	50	1 00
William Schade	24	50	1 00
William Schade	25	50	1 00
William Schade	53	100	2 00
William Schade	54	100	2 00
William Schade	55	100	2 00
Otto Metchke, Trustee	609	14	28

And in accordance with law, and an order of the Board of Directors, made on the 31st day of October, 1878, so many shares of each parcel of such stock as may be necessary, will be sold at public auction at the office of the Company, Room 20, Safe Deposit Building, No. 328 Montgomery Street, San Francisco, California, on Monday, the thirtieth (30th) day of December, 1878, at the hour of 12 o'clock M. of such day, to pay delinquent assessments thereon, together with costs of advertising and expenses of the sale. OTTO METCHKE, Secretary.

Office, Room 20, Safe Deposit Buildiug, No. 328 Montgomery St., San Francisco, California.

Mount Jefferson Milling and Mining Com

pany.—Location of principal place of business, San Francisco, California. Location of works, Garrote Mining District, Tuolumne County, Cal.

NOTICE.—There is delinquent upon the following described stock on account of assessment (No. 5) levied on the Seventeenth day of October, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amt.
OLD ISSUE.			
E B Pond	44	80	$ 16 00
E A Richardson	69	100	20 00
E A Richardson	75	100	20 00
E A Richardson	77	100	20 00
E A Richardson	84	200	40 00
E A Richardson	89	50	10 00
E A Richardson	92	50	10 00
J H Nelson	15	100	20 00
Edward R Mundelins	118	50	10 00
Edward R Mundelins	119	50	10 00
NEW ISSUE.			
A J Adams	19	2000	100 00
B F Baker	5	5000	250 00
F G Cleland	14	2000	100 00
F G Cleland	15	5000	250 00
G M Condee, Trustee	28	2000	100 00
G M Condee, Trustee	32	3000	150 00
G M Condee, Trustee	34	1000	50 00
N C Fassett	21	500	25 00
N C Fassett	22	500	25 00
N C Fassett, Trustee	7	500	25 00
N C Fassett, Trustee	8	500	25 00
D D Shattuck	23	10000	500 00
D D Shattuck	24	10000	500 00
D D Shattuck	25	10000	500 00
D D Shattuck	26	5000	250 00
D D Shattuck	35	11080	554 00

And in accordance with law, and an order of the Board of Directors, made on the seventeenth day of October, 1878, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of the Company, on Tuesday, the seventeenth day of December, 1878, at the hour of two o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

J. W. CLARK, Secretary.

Office, 318 Pine street, Room 6, San Francisco, Cal.

Summit Mining Company.—Location of

principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the nineteenth day of November, A. D., 1878, an assessment, (No. 6,) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of said Company, 318 Pine street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the sixth (6th) day of January, A. D., 1879, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the fourth day of February, A. D., 1879, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W CLARK, Sec'y.

Office, Room 6, No. 318 Pine Street San Francisco, Cal.

The California Fruit Growing Association.

—Location of principal place of business, San Francisco, California. Location of property, El Dorado County, California.

Notice is hereby given, that at a meeting of the Directors held on the first day of August, 1878, an assessment (No. 9) of three ($3) dollars per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, No. 641 Sacramento street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 30th day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Monday, the 21st day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

D. A BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco, Cal.

POSTPONEMENT.—At a meeting of the Board of Directors of the California Fruit Growing Association, held September 23d, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till Saturday, the 26th day of October, 1878, and the day of sale of delinquent stock is hereby postponed to Friday, the 22d day of November, 1878. D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco.

POSTPONEMENT.—At a meeting of the Board of Directors held on the Nineteenth day of October, 1878, it was resolved that the day of above assessment becoming delinquent be postponed till November 30th, 1878, and the day of sale of delinquent stock is hereby postponed to December 21st, 1878.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento Street, San Francisco, Cal.

Vigorit Powder Company.— Location of

principal place of business, City and County of San Francisco, California. Location of works, California City, Marin County, State of California.

Notice.—There are delinquent upon the following described stock, on account of assessment (No 1) levied on the first day of August, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. of Cert.	No. Shares	Amount
Louis McLane, Trustee	30	437½	$218 75
Louis McLane, Trustee	32	½ of 875	218 75
O W Grayson, Trustee	62	1312½	656 25
H H Shinn, Trustee	91	400	200 00
H H Shinn, Trustee	92	400	200 00
H H Shinn, Trustee	93	400	200 00
H H Shinn, Trustee	94	112½	56 25

And in accordance with law, and an order of the Board of Directors, made on the First day of August, 1878, so many shares of each parcel of stock as may be necessary will be sold at public auction, at the office of the Company, Room No. 1, 109 California street, on Wednesday, the second day of October, 1878, at the hour of 2 o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the salo. JAS. W. BAKER, Sec'y.

Office, No. 109 California street, Room 1, San Francisco, California.

POSTPONEMENT.—By an order of the Board of Directors made on the First day of October, 1878, the above sale is postponed until Monday, October 21st, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

POSTPONEMENT.—By an order of the Board of Directors made on the Eighteenth day of October, 1878, the above sale is postponed until Friday, November 1st, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

POSTPONEMENT.—By an order of the Board of Directors made on the first day of November, 1878, the above sale is postponed until Monday, November 18th, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

POSTPONEMENT.—By an order of the Board of Directors made on the eighteenth day of November, 1878, the above sale is postponed until Monday, December 2d, 1878, at the same hour and place. JAS. W. BAKER, Sec'y.

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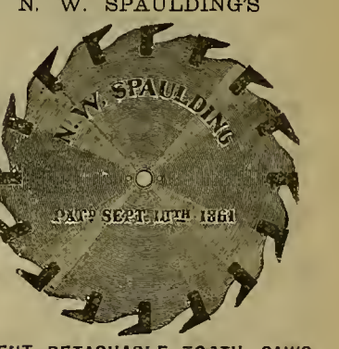

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We beg to call your attention to this engraving representing the Elephant Ore Stamp. The advantages claimed for this Stamp are as follows:

CAPABILITIES.—The "Elephant" is capable of crushing as much stuff as a 12-Stamp Battery of the present system, having crushed as high as 1½ tons of tough copper ore in one hour, through a No. 4 punched screen. The undersigned, however, will guarantee 20 tons per day of ordinary quartz through the same size screen.

WEAR.—The 'Elephant' having only two pairs, Shoe and Dies, the wear in this instance is equal to one-sixth of a 12-Stamp Battery. There being no Cam Tappets, Cam Shafts or Guides, the consequent wear on these parts is done away with; the leather thoroughbrace, uniting the lever with the spring, would only require replacing at most, once a year.

POWER.—The "Elephant" only requires a seven horse-power engine to drive it, where a 12-Stamp Battery would require from 18 to 20 horse-power.

PORTABILITY.—The entire Battery, including Mortar, will weigh about six tons, thereby causing an immense saving in the way of freight to such places as Arizona, Mexico, Cariboo and Bodie. As no part of the Machine weighs more than 1,800 pounds, the handling of the Machine is comparatively easy, and in places where it would be necessary to pack the Machine on mules, it could be easily made in pieces not to weigh over three hundred pounds.

The above engraving shows the Machine in exactly the position it would be placed in a mine; the reader will therefore see that all wood work is done away with, and that once the Machine is on the ground it will take but a few days to set it up and have it in full working order. The "Elephant" can be seen working every day from 2 to 4 P. M. at No. 242 Main street, near Harrison, San Francisco. For particulars apply to

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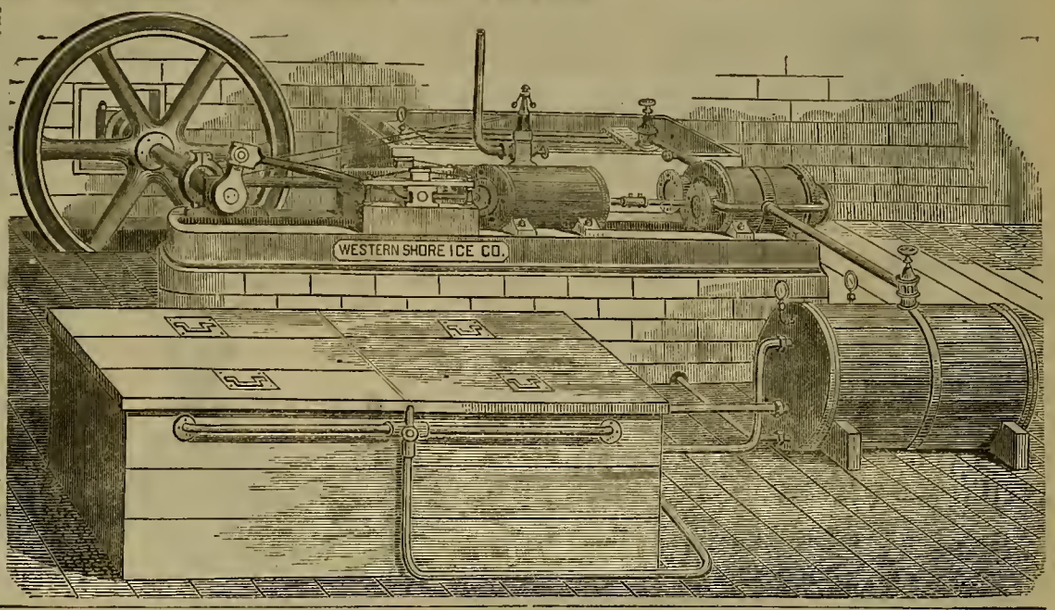
The accompanying drawing illustrates one of the patent transparent block ice making machines manufactured by the WESTERN SHORE ICE COMPANY. To this apparatus a very plain and simple Steam Engine is attached for working the Air-pump. This is made direct acting, by which means the use of all belts or gear-wheels is avoided. Where, however, a separate motor exists, the Machine may be had without the Steam Engine, in which case there is of course a consequent proportionate reduction in the cost.



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BREWERIES.—The eminent success which has attended the introduction of this patent apparatus is ample proof of its great superiority over every other known invention of the kind. The most eminent brewers in the world, including Allsop & Sons, Truman, Hanbury, Buxton & Co., and Guinness & Co., have adopted this system, and have eleven of these Machines of the largest kind in use, while 38 of them are employed in various other Breweries in Great Britain.

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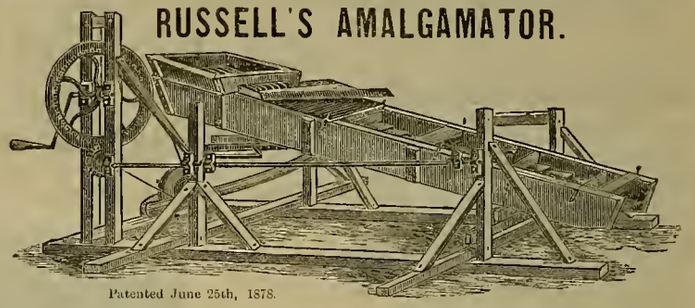

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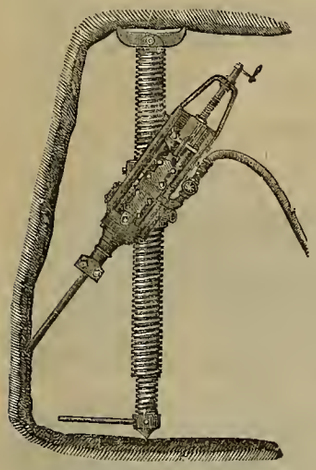
To be obtained of CROSS & CO., San Francisco.



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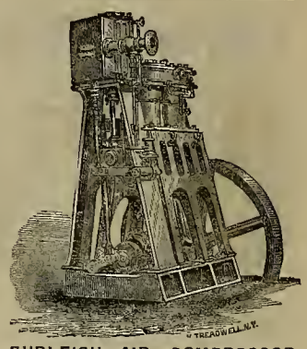

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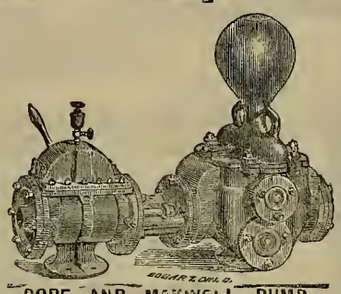

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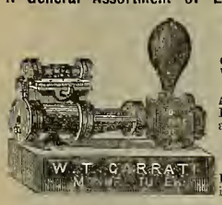

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Publishers.

SAN FRANCISCO, SATURDAY, DECEMBER 21, 1878.

VOLUME XXXVII Number 25.

Picturesque Arizona.

Mr. E. Conklin has presented us with a copy of his "Picturesque Arizona," lately published by the Continent Stereoscopic Company, of New York, and for sale by A. L. Bancroft & Co., and Billings, Harbourns & Co., San Francisco. The book has faults and merits, but is written in an easy, chatty style and is in parts very readable. Our readers can best judge of it from an extract. The following is taken from the chapter beginning with the topic, "Mining Capital in Arizona:"

Up to January 1st, 1874, American mining capital in Arizona had never even paid expenses. Bearing this in mind, the traveler is struck by the marvel in the last four years. During this time there have been many mines opened, and some of them paying large dividends. Bearing in mind these facts, it was a matter of some surprise to me when coming down the Colorado on one of the Colorado River Navigation Company's boats, to find 14 bars of silver bullion, representing in the aggregate a value of about $20,000. This was from the McCracken mine in Mohave county. My surprise gave way to satisfaction when I learned from Mr. Burke, the purser, that this was getting to be "quite a common occurrence along the river now," and I then concluded, as I had before surmised, that there was yet a land where the old spirit of '49 might find a new vent. The ambitious have now a chance to revive the old spirit of early California without doubt. They have an opportunity of vindicating their pluck now, and their fortunes too, in this land of the Apaches.

After having crossed the Colorado river at Ehrenberg, and going east, information comes to you thick and fast of the future prospects of this section, and of the very flattering one of the region round about Prescott. You hear of the McCracken mine which now, and in a space of only two years, has a 50-stamp mill on the grounds, extensive tunnels, with shafts down 50 to 75 feet, and producing $100,000 per month. Leaving the McCracken mine and the Hope district to the northwest, you are approaching the Hassayampa district near Prescott, where it is said genuine black metal is reached at a depth of seven feet. This region of rich silver deposit near Prescott is the second in the vast mineral belt extending from the extreme southeast corner to the northwest corner of the Territory. Some distance before reaching Prescott you pass the abandoned works of the famous Vulture mines, in which abandonment is again re-echoed the too often repeated story of the attacks and murders by the Indians. This is the story with all like cases of abandonment of mines in the Territory, and they abound on every hand. The country is full of them, and invariably the Indians are the cause.

The mines themselves never give out, it is said—a peculiar feature of the mines in Arizona and the Southwest. This remark would seem to be substantiated in an opinion once given by Prof. Ehrenberg, that there was a continuous range of gold-bearing rock from the Vulture mine to a point 10 miles north of Prescott, embracing an area of at least 1,000 square miles.

We are now in the region, too, which promises to turn out its vast quantities of cinnabar; and also in a region where the old pastimes of picking up nuggets threatens to draw those less willing to work or dig. To the southeast again, along this same continued belt of rich mineral, over the Mazahyal range, you enter the Globe and Pioneer districts. In this district is the famous Stonewall Jackson discovered by McMillen. The history of this mine is well known, and is being perpetuated in the minds and memories of men as one of the leading events in the history of mines in the Territory. The mine was discovered in 1874, and shortly after the discoverer sold it for $120,000. No sooner had he sold it than word reached his ears that the parties who purchased it would have given him $250,000 had it been necessary to obtain it; and also that others behind them again stood ready to give $300,000 rather than not obtain it. A shaft in these mines, down only 90 feet, gave ore running as high as $24,000 to the ton in 1876. It is said that since the purchase, the mine has been estimated to be worth $8,000,000.

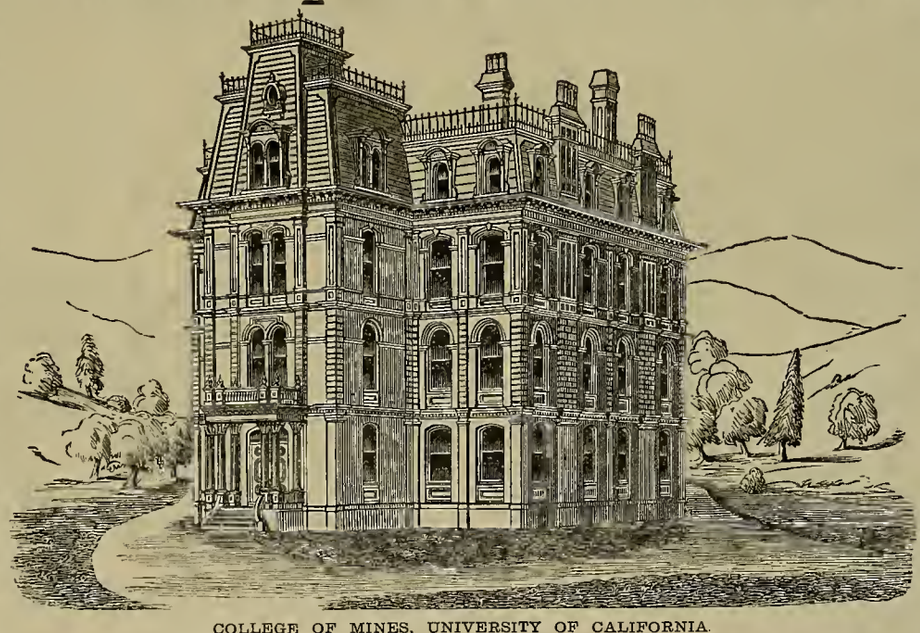
Southeast again, into the Santa Ritas and the Oro Blanco districts, we strike the "last but not least" of the mines of this great natural metalliferous belt which lies within the boundary of Arizona. We say "last but not least" and support our claim with substantial evidence; for in a continuous course of these mountains over the boundary line, and into Sonora, you have what is, and has long been known as, the greatest silver-bearing country on the North American continent. In this section, a little to the east of Santa Cruz valley, is the famous placer mines, long known to exist, in and around the Baboguivari mountains. These stories are brought to us with the name of Col. J. D. Graham. The progress Arizona has made within the past few years may be realized to some extent by the fact that in 1877 she yielded up over $4,000,000 in gold and silver. It has been said on good authority that "no one of the mineral-bearing Territories of the Pacific slope is richer than Arizona, though the mines have not been generally worked."

Like stories confront the traveler on every hand in Arizona; and the most of them are substantiated upon better acquaintance. Not only in relation to gold and silver are they confined, but minerals of most all known usefulness are being discovered. Many such cases lie dormant for means of transportation. With the introduction of the steam car and rail a great blockade will be raised and Arizona will flood the world with its riches. Our Emma mines will never rise to the surface again, and our Crown Points and Consolidated Virginias will sink much below. Even now it is a noted fact that mines which would receive much attention further north, are allowed to lie undisturbed here. Copper enough exists in the mountain in the eastern part of the Territory to cause one man alone to say, if he had railroad facilities, he would employ 1,000 men in his mine. This is in the southeastern part of Yavapai county. In another section evidences of tin are reported. The species found consists of both nugget and stream tin.

We have had occasion, by dint of narrative, to simply refer to the Stonewall Jackson mine and the richness of the McMillen mining district. These narratives of golden fleece and shining nuggets being so rife in Arizona, entertaining the traveler on any and every trip or route he may propose or select, one can scarcely avoid asking the question why, if all these stories are true concerning the mines of Arizona, and their richness, they have not already been worked. I have been asked these questions myself over and over again; and after narrating what I saw, and having converted by actual knowledge, those fairy-like stories into absolute existences concerning the fabulous wealth of her mines, I would here offer a defence for Arizona for the seeming lack in her mining developments.

Arizona has had more than her share to contend with. She was the last acquired, and, of all our Territorial lands, situated to the further end of our national domain; until at present she was off the beaten track of our country's physical progress, and consequently the hardest to guard and protect, bordering a country proverbially noted for its conquests, revolutions and the ungovernable traits of its rapacious subjects; filled with one of the fiercest and most warlike tribes of America's aborigines; and a victim to the most unrelenting force of circumstances of perhaps any other portion of our country. It is a marvel that the Territory shows the progress it does.

The Apaches are the most powerful and warlike tribe of Indians that the Government has perhaps ever had to bring its forces against. Ever since 1853, we have been more or less afflicted with them, for as early as that had the American pluck found its way into that rich seclusion of the Sonora country. In that year and with the purchase of our last acquisition to the Territory we also got, in the bargain, or as a legacy, a powerful tribe of wild, ferocious, unsubdued Indians, whose daily life consisted in hunting after, killing or torturing all human victims not of their own kind or kin. They had been at this since the time of the Spanish conquest, and had excelled. They had successfully repelled Mexico after her independence and until our purchase in 1853. Since then they have, we might say, fought us successfully also. It would have been money in our pockets if after the purchase we had turned around and offered the Mexicans the price of the whole purchase over again to have taken their munificent legacy back, if this could have been done.



COLLEGE OF MINES, UNIVERSITY OF CALIFORNIA.

The Colleges of Mines and Mechanic Arts, at Berkeley.

We present in this issue a cut of the new building on the grounds of the University of California, at Berkeley. This building is to be occupied by the Colleges of Mines and Mechanic Arts. Both of these colleges are to be great factors in the advancement of the industries of our coast. The necessity of some high authority on mining subjects is very apparent to all. In the midst of a country with such mineral resources as ours possesses, is it not preposterous to think of our yielding for many years longer to Germany as authority on matters relating to mining? Germany herself has to come all the way to the Rocky mountains to obtain information on many ores and processes. The Germans work the subjects up and our young men spend years in Europe studying what they should be able to learn at home. High reference, authorities and educators, our universities should be.

And it is the aim to make the College of Mines of the University of California such an authority and educator. It is in the hands of men who have studied their departments both in Germany and America.

As this should be a subject of absorbing interest to our readers, we do not hesitate to give quite fully the general remarks on the college found in the "Register of the University" for the current year: The four years' course of instruction leads to the degree of Bachelor of Philosophy. Students who desire to receive the degree of Mining Engineer must continue their studies for at least two years more, and must exhibit to the Faculty satisfactory evidence of their power to apply, in actual work, the knowledge they have acquired.

During the first two years of under-graduate work, the studies of the course are the same as those of the other scientific colleges in the University of California. During the last two years the attention is directed chiefly to chemistry, metallurgy, mining, geology, mineralogy, and mechanical and civil engineering, though the study of modern languages is also kept up. The scientific studies are taught, as far as possible, with reference to their applications in mining, and the entire work of the last two undergraduate years and the post-graduate course is overlooked by the lecturer on metallurgy and mining, under whose special guidance the mining students come.

The post-graduate years are devoted mainly to the study of mining and metallurgy, including studies on the spot of mines and smelting-works, and essays embodying the results of observation.

Opportunities will be afforded to the class to visit some of the industrial establishments of San Francisco, and they will be encouraged to extend their visits to mining and metallurgical works at a distance.

The laboratories for work in chemistry are new, extensive and well furnished. They afford excellent opportunities for becoming proficient in analytical chemistry.

A metallurgical laboratory, designed to offer the very best facilities for the study of assaying, and to contain machinery and other appliances for the study of metallurgical processes, has been built during the past year. Its equipment will be commenced immediately.

The engineering instruments and the physical apparatus are also of the best kind.

There is a collection of beautiful models of furnaces, as well as one of furnace products.

The collection of ores, fossils and minerals are remarkable.

We may also add that endeavors are now being made to increase the efficiency of the mining college, by the procuring of an ore deposit collection.

PARLIAMENT has adjourned until Feb. 13th.

CORRESPONDENCE.

We admit, unendorsed, opinions of correspondents.—EDS.

How to Avoid Failures in Lixiviating.

By OTTOKAR HOFMANN.

The lixiviation proosss is without doubt one of the best and cheapest processes we have for beneficiating argentiferons ores, especially as it is adaptable to a certain class of ore ou which amalgamatiou proved to be a failure, or too expensive to be profitable, hut like any other process it is not suitable for all kinds of ore; and to avoid failure it is necessary that the person te whom the process is intrusted should be a first-class metallurgical chemist. But this is very frequently not the case, and Mr. W. T. Rickard, in his communication, is correct to attribute the failures in Utah, Nevada and California to this fact. Our mining companies, instead of engaging an accomplished metallnrgist, as a rule prefer, for the sake of saviug a few hundred dollars' salary, the so-called practical millmen—men without any chemical knowledge, hut good, strong muscles to give a helping hand around the mill wherever it is needed. If our mining companies wonld appreciate scientific knowledge more, and would not expect it combined with the ability of hard manual labor in the same individual, they wonld do much better, and save thousands of dollars. I know men without the least chemical knowledge, hnt practical millmen of the sort as above mentioned, who worked for me in Mexico, where I introduced first the lixiviation process, to have been intrnsted with the erection of lixiviation works, and made a hrilliant failure, and with ore, too, which could be treated to the best of advantage by this process. The inability of the men in charge is the only cause of failures.

As mentioned above, not all kinds of ore can be treated by the lixiviation; some work better by amalgamation, some by smelting; and in order to avoid failnre, the proper process has to be selected before the works are erected, and not afterwards, as it is often done.

The principle on which the lixiviation process is based, consists in the property of hyposulphite of lime or soda to dissolve readily chloride of silver. The extraction of the chloride of silver is performed by permitting the solution of either of these salts to filter through the ore, but the solutiou dissolves only that part of the silver which is in the state of chloride; and therefore, in examining an ore of its qualificatiou for this process, we have to find first how many per cent of the silver can be chloridized by roasting. This cau be done with a few ponnds of ore, and the resnlt obtained by experimenting, if favorahle, is guaranty for snccess in a large scale, as the chloridizing roasting with a larger quantity of ore is usually better, while the result of the leaching is in hoth instances ahont the same. In fact, the lixiviation process is nothing else but our chloridizing test executed on a large scale, and extracts the chloride of silver as close as the latter.

If the ore contaius more than 12% to 14% of lead, lixiviation is not the proess for it, for two reasons: first, lead ores do not chloridize well; and, second, the chloride of lead formed in roasting dissolves very slowly in water, but readily in hyposulphite of lime or soda, which increases greatly the consumption of chemicals, and decreases the finsness of the bullion. Ores oontaining argentiferous fahl ore, iron-pyrites, eopper-pyrites, zincblende, silver-eopperglance, and some galena, can be worked successfully by the lixiviation.

If the ore has beeu found by experiment to roast well, the next important question to deeide is, how it filters. The time required for extracting the silver depends greatly on the rapidity of filtration. The quicker the filtration, the shorter the operation. Experience tells us, that if leaching is interrupted, and the ore left in contact with the solntion over night, the solution dissolves but very little more silver during this long contact, thau it would have done by simply passing through the ore. Again, the small stream from a slow filtering ore is hut a trifle more concentrated than the lively stream of a good filtering ore. There are several devices for improving the filtration, as: connecting the space under the false bottom with a suction pump, or a syphon; applying pressure, or using agitators; but all these improvements might fail to work if there is too much clay or slate in the ore. The safest way will be to remove the cause of the non-filtration. At Trinidad, Sonora, Mexico, the ore contaius so much clay that loaching was almost out of the question. To mix it with sand or fine cut hay did not remove the obstacle. In order to obtain sucoess I had to crush coarse, change dry crushing into wet crushing, separate the slimes from the sand, treat the slimes by amalgamation and the sand by lixiviation. Good, concentrating machinery does away with the necessity of using amalgamation; but, as the case was at Trinidad, where I had bsen obliged to use only common tanks of different sizes for separating, amalgamation was necessary.

Roastod ore filters much better than raw ore, and therefore, in ascertaining the quality of an ore in regard to filtration, it ought to be subjected to the test after it is roasted. The experiment should be made in a small hox or hucket with false hottom, and not in a paper filter and funnel.

Coarser crnshing facilitates filtration greatly, without injnring the resnlt. In 1868, when I erected the first leaching works at La Dura, Mexico, I used screeu No. 60, gnided by the principle, that fine pulp would permit a closer extraction of the chloride of silver; but gradually substituted coarser screens till I reached No. 30, and afterwards No. 27, obtaining in each case the same resnlt. Even screens No. 18 are used successfully. The advantages of coarse crushing are: increase of the crushing capacity of the battery, less formation of dnst, and improved filtration, consequently qnicker operation.

Of great importauce, too, is to ascertain the loss in roasting. Some antimonious ores sustain a loss of from 10 to 20 and more per cent. In such a case a proper modification of the roasting has to be adopted in the beginniug.

If these precautions are taken, and the result ohtained by the experimeut is favorable, the lixiviatiou will prove a success, provided it is intrusted to the hands of a competent metallnrgist; for even the best working ore can he maltreated by incompetency to such an extent as to cause failure.

The construction of lixiviation works and the mechanical operations of the process are very simple, which iuduces many amateurs to try their expertship, for which, as a rule, the companies have to pay very dearly. There is a large leaching work in Nevada, where the water extracting the base metals carries out so much silver, that the whole of the base metals are precipitated with sulphide of calcium, in order to avoid a heavy loss in silver. The precipitate that is obtaiued assays up to $1,600 per ton. The ore containing only $40 to $50 per ton, and, being rich in base metals, the consnmption of chemicals in proportion to the ponnd of silver produced is not a very favorable one. The hase metals (of the chloride) always dissolve some silver, which loss, however, can be reduced to a minimum if properly managed, and the idea of precipitatiug the whole of the base metals is ridiculous.

At the Advance mill, Monitor, Alpine county, California, where I treated coucentrations, obtained by Frue's concentrators, and consisting of iron-pyrites, silver-glance, silver-copperglance, zincblende and some galena, assaying $250 silver and $30 gold per ton, the water containing the base metal chlorides dissolved some silver. The burned precipitate, obtaiued by precipitating a part of the base metal solution with sulphide of calcium, showed by assay a content of $103.70 per ton. After a slight modification of the process, without any increase of cost, the precipitate contained only traces of silver. The result obtained with Advance ore by lixiviation was 96% and the bullion 864 fine.

A combination of the lixiviation process with concentration works is in successful operation, at the Old Telegraph works, Utah. The ore containing chloride of silver is snbjected first, to lixiviation and then to concentration, in order to extract the chloride of silver, which previously was lost in concentration. This combination would work to great advantage at many of our Arizona mines.

Reclaiming Land from Shifting Sand.

EDITORS PRESS:—Some years sinee, on the coast near San Francisco, I had eccasion to inquire into the cause of so much sand heing drifted inlaud from the ocean, and a means of preventing its drifting. I observed that the waves were at all times making for the shore, which brought clean fine sand, and deposited it by slow degrees on the long, sloping, sandy beaches, and when the water receded, as it does with every ebb tide, the new deposit is dried by the sun and constant breeze; and as the wind is mostly inland, the sand which is dried is drifted by a slow process, but which is daily increasing and in years will make the great sand hills and drifting sands that are to be seen near to, and even in, the city.

It being desirable to stop fnrther drifting of sands on the coast, and you having suggested planting protecting trees, has induced me to bring forward a plan that may be worthy of a trial. It is to bnild a stone wall at, or near the highest point to which the tide rises, and the waves extend in, and with the wall sufficiently high to prevent the sands from blowing over the top. The hight could be soon learned from the dry sands which would drift inward to it. I believe the wall would not be costly, and that it would be an effectnal barrier to the drifting sand, also a protection to the growing trees and grasses. Respectfully, ENGINEER.

Eureka, Nev., Dec. 9th

THE PARIS AND THE CENTENNIAL SHOWS.—The Paris exhibition, which was kept open 194 days, did not produce as much money from admission fees as the Centennial exhibition, which was opened only 159 days. The reported receipts at Paris (12,653,746 francs) would represent the number of paid admissions at one franc each, the general price of admission was doubtless somewhat less, as there were higher rates of admissiou for some days, and for some hours of each day. The receipts of the Centennial exhibition from admission fees amounted to over $3,800,000, against $2,530,000 at Paris, during a one-third greater number of days.

Tracking Crime with the Microscope.

H. C. Hyde, Presideut of the California Microscopical Society, in a paper recently read before the society, on the subject of "The Microscope in Medical Jurisprudence," mentions the following cases in which the microscope aided in the detection of the criminal.

Some years ago there was a case of child-murder in France. The child had been killed by cutting its throat, and a knife supposed to have been used in the commissiou of the deed, was found in the possession of the accused. A careful examiuation showed what were believed to be blood stains, in a crevice between the blade and handle, which had been overlooked in the cleausing process which the knife had gone through, and the substance was submitted to an able microscopist, who, after a thorough investigation declared that the snbstance was human blood; that it was blood from the regiou of the throat—this fact determined by the presence of the epithelial scales peculiar to the fances, and, furthermore, there were found fragments of rabbit fnr. This array of facts was conclusive of the use of that knife in cutting the throat of the murdered child—the additional circumstance being elicited that at the time of the killing the child had a rabbit-fur tippet abont its neck. Confronted with these discoveries, the prisoner confessed her guilt (this unnatural monster was a woman) and was executed.

Another case, which I have met somewhere in my reading, but cannot now recall all the facts, was where the accused attempted to prove an alihi, and would have been successful, but for the fact that his boots were covered with a whitish mud, and it occurred to the authorities to have this examined hy a competent microscopist. The examination showed that the whitish mud was diatomaceous earth, and absolutely identical in its contained forms with a deposit close to the spot where the crime had been committed. This conclusively disproved the alihi; at least, so far as the boots were concerned. The general result of the case I have forgotten.

Bullion Product of Montana.

Mr. W. C. Childs, Wells, Fargo & Co.'s agent at Helena, furnishes the company with the following estimate of gold and silver product of the Territory during the fiscal year, as shown hy the shipments by express and other sources:

BY EXPRESS FROM	GOLD.	SILVER.
Helena	$ 780,000	$ 495,000
Butte	77,000	660,000
Deer Lodge	315,320	55,700
Virginia	416,000	.....
Bannock	92,150	6,350
Salisbury and Lovell's	1,450	14,544
	$1,681,920	$1,231,594
Amount carried out privately	100,000	
Amount remaining in hands	100,000	
Silver in base bullion		450,000
Silver in ores (shipped)		400,000
Total	$1,881,920	$2,081,594
Grand total	3,963,514	

While the above is douhtless a correct showing of the shipments, it is not a correct showing of the localities where the gold and silver was produced. The Penohscot ore is all credited to Helena. Nearly the entire silver product of Philipsburg goes to Helena by private hands, and shows in the shipments only from that point. We believe all the product of the Lexington mill at Butte first shows as hullion in the shipment from Helena, and the same is largely the case with the gold melted and put in bars at the Government assay office. Dear Lodge county is much the largest bullion-producing county in the Territory, but the abeve method of reporting the shipments does not convey the fact.—*Exchange.*

HOW TO TEST GLUE.—Glue to resist well a damp atmosphere should contain as little saline matter as possible. When buying the article, ventnre to apply your tongue to it, and if it tastes salt or acid, reject it for any but the commonest uses. The same operation will also bring out any bad smell the glue may have. Those are very simple and ready tests and are the usual ones by which dealers and large consumers form their judgment. Another good test is to soak a weighed portion of dried glue in cold water for 24 hours, then dry it again and weigh. The nearer it approaches to its original weight the better glue it is, thereby showing its degree of insolubility. Other practical tests may easily be devised, such as glueing up tests pieces of wood and submitting them to trial. In short, "the proof of the pudding," etc. Color is not a safe criterion for glue. Its adhesion and lasting properties depend more upon what it is made from, and the method of securing purity in the raw material, for if that is inferior, and not well cleansed, the product will have to be unduly charged with alum, or some other antiseptic, to make it keep during the drying process. Weathered glue is that which has experienced unfavorable weather whilst drying, at which time it is a rather delicate substance. The Scotch makers attend particnlarly to the purification of the raw material, and put a comparatively small proportion of antiseptics in their glue—not snfficient to be apparent to the taste afterwards, bnt which, in ordinarily good weather, is enough to carry it through the drying process. Should foggy or drizzly weather intervene, however, moldness sets in, and the glue becomes weather-beaten.

Colorado Geology.

Some New Discoveries Concerning It.

Prof. Denton, the eminent geologist, contributes the following interesting article to the Denver *Tribune:*

Having recently found a bed of interesting fossils, which shed additional light upon the formation of the Rocky mountain chain, I take this opportunity of placing the facts before your readers.

At the close of one of my lectures in Fort Collins, Dr. Bennet, of that place, informed me that small fossil shells had been found near Bonner spring, immediately above and almost close to the granite. On visiting the spot, 18 miles northwest of Fort Collins, I found in a short time a number of casts and impressions of shells, principally spirifers, with some specimens of the orthis and impressions of bryozoa, in pebbles of fine-grained quartzite and, judging hy the contained fossils, apparently of devoniau age. After a careful examination of the snrrounding rocks, I discovered that the pebbles had been derived from a bed of conglomerate, lying directly upon the granite, in the imbedded pebbles of which I found other fossils of a similar character to those found in the loose gravel.

This discovery assists in filling up a wide gap which previously existed in the geological history of the Rocky mountain range.

The geological formations below the tertiary are generally represented in the following order: Cretaceous, jurassic, triassic, *carboniferous, devonian,* silurian, *laurentian,* metamorphic, granitic.

Those in italics had not been discovered in the Rocky mountain range of Colorado, and a great gap existed between the silurian and the triassic. For a large portion of the space on the eastern slope of the range in Colorado, the silurian had not even been identified, and between the metamorphic and triassic was a space entirely vacant representing many millions of years, during which we possessed no history of a large portion of the Rocky mountain chain. This discovery enables us to fill up a considerable portion of the chasm.

The conglomerate in which the pebbles are found, I regard as subcarboniferous. It resembles the conglomerate which underlies the coal measures in various portions of our own country and in Great Britian, and above it is a limestone composed almost exclusively of crinoidal fragments, resembling limestones of undoubted carboniferous age.

We are carried back then, first, to the devonian age, when the shells lived, whose remains have been found in the quartzite pebbles. We find an ocean where now mountains exist at a hight of 8,000 feet above the sea level. To the west there were mountainous islands wearing away, and the fine, sandy sediment was deposited by streams in the sea where shells abounded, and coral-like ,bryozoans spread their fans; one gencration living and flonrishing, becoming hnried hy fine, sandy sediment, followed by others in their turn. In process of time this fine sand, by the pressure of superincumbent material, was converted into sandstone, then by heat from helow into quartzite, and the buried shells and bryozoans became fossils. What had been the hed of the ocean became rocky mountain peaks and ranges, on which the rain fell and over which the rapid mountain torrents swept, breaking up the rocks and making pebbles of them, which were swept down into the carhoniferous sea at the bottom, of which the conglomerate containing the fossiliferous pebbles was formed.

I subsequently found similar fossils in the conglomerate several miles nearer to the north fork of the Cache-la-Poudre, and I have no douht that they occur over a wide extent. Captain Berthoud informs me that pebbles containing devonian fossils have been found in the Box Elder, though the locality from which they had been carried had not been found. As the locality where I found the fossils is within a few miles of Box Elder, that was probably their original home.

THE CON. ESMERALDA MINE.—We have just been shown a letter from T. V. Julian, the superintendent of the above mine, in which he says that at the bottom of their shaft, which is down in the vein to the depth of ahout 100 feet, they have cut into a body of ore that surpasses in richness everything heretofore found in their mine. The certificate enclosed of assays made in Reno make the average $518.59 per ton silver, with only a trace of gold. The silver is chloride, principally, and the gangue carries but a small percentage of base metal. Three hundred tons of ore taken from this shaft and worked by mill in the city, yielded $32.50 per ton. The pulp assay being $56.00 per ton, shows that it was worked only to 57%. The body of ore from which this rock was taken is 25 feet thick, but in width and depth its extent is not known. This property is situated in Reno mining district, Washoe county, Nevada, and incorporated in this city, office 309 Dupont street.

ASPHALT FOR SKATING RINKS.—A Philadelphia paper says that roller skating over the asphalts has become popnlar, and the attendance of ladies and gentlemen at the rink, twenty-third and Chestnut streets, to indulge in this pastime increases constantly.

FORTY-FOUR indictments have been found at Yanktown, D. T., against Livingstone and other Indian agents.

MECHANICAL PROGRESS.

The Philosophy of Welding.

Alexander L. Holley recently read a very interesting paper before the Philadelphia Institute of Mining Engineers, from which we give the following extracts: The generally received theory of welding is that it is merely pressing the molecules of metal into contact, or rather into such proximity as they have in the other parts of the bar. Up to this point there can hardly be any difference of opinion, but here uncertainty begins. What impairs or prevents welding? Is it merely the interposition of foreign substances between the molecules of iron, or of iron and any other substance which will enter into molecular relations or vibrations with iron? Is it merely the mechanical preventing of contact between molecules, by the interposition of such substances? This theory is based on such facts as the following:

1. Not only iron but steel has been so perfectly united that the seam could not be discovered, and the strength was as great as it was at any point, by accurately planing and thoroughly smoothing and cleaning the surfaces, binding the two pieces together, subjecting them to a welding heat, and pressing them together by a very few hammer blows. But when a thin film of oxide of iron was placed between similar smooth surfaces, a weld could not be effected.

2. Heterogeneous steel scrap, having a much larger variation in composition than these irons have, when placed in a box composed of wrought-iron side and end pieces laid together, is (on a commercial scale) heated to the high temperature which the wrought-iron will stand, and then rolled into bars which are more homogeneous than ordinary wrought-iron. The wrought-iron box so settles together, as the heat increases, that it nearly excludes the oxidizing atmosphere of the furnace, and no film of oxide of iron is interposed between the surfaces. At the same time the enclosed and more fusible steel is partially melted, so that the impurities are partly forced out and partly diffused throughout the mass by the rolling.

The other theory is, that the molecular motions of the iron are changed by the presence of certain impurities, such as copper and carbon, in such a manner that welding cannot occur or is greatly impaired. In favor of this theory it may be claimed that say 2% of copper will almost prevent a weld, while, if the interposition theory were true, this copper could only weaken the weld 2%, as it could only cover 2% of the surfaces of the molecules to be united. It is also stated that 1% of carbon greatly impairs welding power, while the mere interposition of carbon should only reduce it 1%. On the other hand, it may be claimed that in the perfect welding due to the fusion of cast-iron, the interposition of 10% or even 20% of impurities, such as carbon, silicon and copper, does not affect the strength of the mass as much as 1% or 2% of carbon or copper affects the strength of a weld made at a plastic instead of a fluid heat. It is also true that high tool steel, containing 1½% of carbon, is much stronger throughout its mass, all of which has been welded by fusion, than it would be if it had less carbon. Hence copper and carbon can not impair the welding power of iron in any greater degree than by their interposition, provided the welding has the benefit of that perfect mobility which is due to the fusion. The similar effect of partial fusion of steel in a wrought-iron box has already been mentioned. The inference is, that imperfect welding is not the result of a change in the molecular motion due to impurities, but of imperfect mobility of the mass—of not giving the molecules a chance to get together.

Should it be suggested that the temperature of fusion, as compared with that of plasticity, may so change the chemical affinities as to account for the different degrees of welding power, it may be answered that the temperature of fusion in one kind of iron is lower than that of plasticity in another, and that as the welding and melting points of iron are largely due to the carbon they contain, such an impurity as copper, for instance, ought, on this theory, to impair welding in some cases and not to affect it in others.

The obvious conclusions are: 1st. That any wrought-iron, of whatever ordinary composition, may be welded to itself in an oxidizing atmosphere at a certain temperature, which may differ very largely from that one which is vaguely known as "a welding heat." 2d. That in a non-oxidizing atmosphere heterogeneous irons, however impure, may be soundly welded at indefinitely high temperatures.

The next inference would be that by increasing temperature we chiefly improve the quality of welding. If temperature is increased to fusion, welding is practically perfect; if to plasticity and mobility of surfaces, welding should be nearly perfect. Then how does it sometimes occur that the more irons are heated the worse they weld?

1. Not by reason of mere temperature, for a heat almost to dissociation will fuse wrought-iron into a homogeneous mass.

2. Probably by reason of oxidation, which, in a smith's fire especially, necessarily increases as the temperature increases. Even in a gas furnace a very hot flame is usually an oxidizing flame. The oxide of iron forms a dividing film between the surfaces to be joined, while the slight interposition of the same oxide, when diffused throughout the mass by fusion or partial fusion, hardly affects welding. It is true that the contained slag, or the artificial flux, becomes more fluid as the temperature rises, and thus tends to wash away the oxide from the surfaces; but inasmuch as any iron with any welding flux can be oxidized till it scintillates, the value of a high heat in liquefying the slag is more than balanced by its damage in burning the iron.

3. But it still remains to be explained why some irons weld at a higher temperature than others; notably, white irons high in carbon, or in some other impurities, can only be welded soundly by ordinary processes at low heats. It can only be said that these impurities, as far as we are aware, increase the fusibility of iron, and that in an oxidizing flame oxidation becomes more excessive as the point of fusion approaches. Welding demands a certain condition of plasticity of surface; if this condition is not reached, welding fails for want of contact due to mobility; if it is exceeded, welding fails for want of contact due to excessive oxidation. The temperature of this certain condition of plasticity varies with all the different compositions of irons. Hence, while it may be true that heterogeneous irons, which have different welding points, can not be soundly welded to one another in an oxidizing flame, it is not yet proved nor is it probable that homogeneous irons can not be welded together, whatever their composition, even in an oxidizing flame. A collateral proof of this is, that one smith can weld irons and steels which another smith can not weld at all, by means of a skillful selection of fluxes and a nice variation of temperatures.

PROTECTING IRON.—A new method of protecting iron has recently been introduced, which is described as follows, by *Iron:* The method is to coat the surface to be protected with a thin film of borate of lead having a little oxide of copper dissolved in it, and having also suspended in it bright scales of precipitated platinum. A red heat is employed to fuse the composition, which is either applied with a brush or employed as a bath, in which small articles may be dipped. Its effect is, to cover the iron with a thin glassy coating of a bright gray tint, not far removed from that of polished iron itself, and unaffected by sewer gases, dilute acids and alkalies, and the heat of a kitchen fire. Modifications of the compositions give the means of imparting different colors to the coating, and these are as easy of application as the platinum gray just mentioned. The effects are really very good, and show how ornamental an iron grating of neat pattern, or an iron frieze might be in front of a gallery in a large building, or in any equally elevated position. Cost is in all cases a most important feature of preservative operations. We are told that the cost of platinizing is about equal to that of applying three coats of paint, and about one-tenth of that of electro-plating with nickle.

STEEL BOILERS.—We lately alluded to the use of steel in boiler making. A late number of *Engineering* sums up the result in England of the employment of steel as follows; "That of some 80 boiler makers who have fairly tried steel plates, only some eight or nine can be said to have persevered with its use and used it extensively; that when the use of steel plates has been persevered in against the advice and feeling of the boiler maker the result has generally been unsatisfactory; that it may be taken for granted that the prejudice on the part of boiler makers against the use of steel, is, as a rule, inversely proportionate to the extent of their acquaintance with it." The same article estimates that there are working in the United Kingdom about 2,500 boilers with steel shells and 7,000 with steel furnaces and fire-boxes. It is impossible to tell, says the *Iron Age*, how many are in use in the United States, but the number is far in excess of this, and steel for this purpose is rapidly growing in favor with boiler makers. This is also true in England. The great facility with which low steel can be made by the Siemens-Martin process is doubtless one cause of this increased favor, put the breaking down of prejudice is another.

STEEL WIRE ROPES are coming more and more into use on shipboard, in mines and for other purposes. An Eastern exchange, in alluding to their introduction on the great lakes as tow lines, speaks of one 660 feet long, and weighing only 800 lbs. Steel traction ropes are used by three street railroads in this city to haul the cars over our high hills. The California Street railroad employs a wire 1,800 feet long, which was made in two pieces of 900 feet each, 1¼ inches in diameter. The Clay Street road employs a wire made in a single length, 11,000 feet long and one inch in diameter. All these wires were made by A. S. Hallidie, of this city, from the best English crucible steel.

ORNAMENTAL WORK ON ENGINES.—The movement to replace the brass ornamental work on engines with plain black finish has progressed very rapidly within a few years, effecting a saving which in the aggregate must be very considerable. It is true that an engine presenting to view an unrelieved black from pilot to tender does not have that splendor of appearance given by highly colored brass and brilliant gilding and striping, but it seems to draw just as well, and the road does not show any falling off of passengers or freight on account of the plainer finish.—*Railway Age.*

SCIENTIFIC PROGRESS.

New Researches into Chemical Action.

Prof. Dewar recently read a most interesting and instructive paper before the British Association of Science, wherein he gave a somewhat detailed account of some late researches into the chemical action which takes place under great degrees of heat and pressure. This study, accompanied by numerous and carefully conducted experiments, has been most fully pursued by Prof. St. Clair Deville, of Paris, and has resulted in greatly modifying many previous ideas of metallurgical interactions. It has enabled chemists to study with much precision the action of high temperatures and pressures as they exist in the sun, and to explain many apparently abnormal reactions in the earth's crust, which have heretofore been quite inexplicable. These reactions relate to both gases and solids. Experiments show that every vapor has a certain curve that represents all its relations—namely, the increase or diminution of pressure to the temperature; and that the behavior of solid bodies is strictly analagous to that of vapors.

In a limekiln, where heat is employed without pressure, caustic lime is produced, and carbonate of lime cannot exist. In experiments made with a tube, when great heat can be applied under a pressure of some 80 or 100 atmospheres, carbonate of lime is readily produced. This experiment shows how carbonate of lime may have been formed in the presence of great heat in the early geological ages of the earth, when such heat might have been accompanied with the required pressure. Similar abnormal chemical reactions were shown by the lecturer in the treatment of gases and vapors.

We continually hear of discoveries, by astronomers, with reference to the condition of the solar atmosphere. These discoveries and experiments under consideration open a new and important field for investigation into the character and conditiou of the body and atmosphere of the sun. They tell us of the efficacy of sudden explosions and reactions under enormous pressures and in the presence of high temperatures. The result may be, and doubtless is, that hundreds of bodies are formed to-day and decomposed to-morrow, into an enormous number of still other new ones, simply from variations in pressure and temperature, as the masses of matter ascend from the lower to the higher regions of the sun's body and atmosphere. No doubt we shall have proof of the truth of these assumptions, in the discovery that there are certain lines in the solar spectrum suddenly produced and as suddenly disappearing, so soon as the spectroscope is turned to a careful study of the sudden explosions which the telescope has recently informed us are constantly taking place upon the sun's surface. Such lines can only be due to the sudden formation and transformation—not of elementary bodies—but of temporary compounds. This subject is one of wide generality, and promises to add much to the interest and importance which attaches to the many brilliant and important discoveries which have recently characterized chemical and philosophical research.

A Third Form of Carbon in Steel.

The subject of a third form of carbon in steel is beginning to attract considerable attention among practical chemists and metallurgists. It is considered a very important matter, and one which is worthy of receiving a much larger share of attention than has hitherto been accorded to it.

It appears to have been first noticed by Mr. S. A. Ford, a practical chemist of Philadelphia, as early as 1875, and was explained by him at a meeting of the American Institute of Mining Engineers, in June, 1876. Mr. J. Blodgett Britton, of Philadelphia, also noticed the fact at about the same time, and reference was also made to it in the *Metallurgical Review* for October, 1877.

Mr. Henry G. Debruner, of Pittsburg, Pa., in a recent communication to the American Iron and Steel Association, in alluding to this new form of carbon in steel, says:

If crucible or Bessemer steel is dissolved in nitric acid, 1.2 sp. gr., a brown flocculent body is observed to float in the resulting solution, which, on the heating of the latter, will prove soluble, as every one is well aware who ever made an Eggertz carbon test. If graphitic or non-combined carbon be present it will remain undissolved, even on heating for hours on the water-bath, and will neither be affected by alcohol nor on treating with diluted solutions of alkali.

If "German steel," blister bar, or converted steel be subjected to the action of nitric acid as above, a greenish solution is obtained, in which a heavy velvet black powder is observed to accumulate in the bottom of the vessel. It looks exactly like graphitic carbon, but essentially differs from the latter by being perfectly soluble on the heating of the solution.

These facts led me to further investigations, and finally made me adopt the theory of a third allotropic modification of carbon in steel, in which I consider it to exist in this case in a semi or half-combined form or state. Mr. Debruner does not seem to have been aware of the previous notices of this new form of carbon in steel.

Wine-Testing by Aid of Photography.

Probably one of the most curious of the many uses to which photography may be applied is that of which we read in a recent number of the *L' Italia Agricola.* A few drops of wine are dropped upon card-board and photographs taken of the stain. These, when examined under a microscope, will not only reveal what particular kind of wine they represent, but also the exact condition in which the bulk of such wine may be at the moment of observation. It is known that wines have a sort of second life, not only when in bottle, but also under other conditions, and it seems that these photographs of wines possess the same nature, and at various epochs in their vegetative life exhibit in a similar manner the successive stages through which the wine itself is passing. Every year the wine undergoes a transformation, which the photograph faithfully indicates, and which can be studied on the latter, by the aid of a microscope, in its minutest details. It is a fact not generally known that in wine-testing the eye is far superior to the palate as a guide. The dealers of Bordeaux, for instance, in busy seasons have so many varieties to sample that their sense of taste soon loses its sensibility, and the "palate" refuses to serve them, but the eye will preserve its delicate discriminating power unimpaired for days and days together. And this system of photography of wines, which is capable of rendering immense services, will sooner or later be generally adopted.

HEAT EXPERIMENT.—In the French Academy, recently, M. Hirn called attention to a curious case he had observed of heating of a bar of iron. The bar (about 1m. long and 0.08m. diameter) was being held by a workman on another piece, while a second workman hammered its free end. At each stroke the workman holding the bar found that it suddenly became greatly heated, then suddenly cooled. M. Hirn, on holding the bar, had a like experience, and, to his great surprise, the sudden variation of temperature seemed to him nearly thirty-five degrees. He was surprised because a calculation of the work done did not seem to give any thing like a heating effect. The phenomenon is best observed when the bar is seized very near the free end. M. Hirn considers the effect in question to be of a wholly subjective character—that is, one of sensation. The source of heat, indeed, on careful observation, seemed to reside in the interior of the hand, not at the surface of the metal. He thinks sonorous vibrations may, in certain circumstances, cause, at the periphery of the body, a sensation of heat, just as a blow on the eye or pressure there may awaken the sensation of light. He suggests, however, to make the experiment of examining the state of the bar (when struck) by means of a Melloni thermometer.—*Eng. Mechanic.*

INTERESTING EXPERIMENT.—M. de Chancourtois, Professor of Geology at the School of Mines in Paris, has devised an experiment to illustrate the formation of ridges of hills by risings in the crust of the globe while still soft from the primitive heat. M. de Chancourtois represents the globe by an inflated rubber ball, which takes the place of the terrestrial nucleus in fusion, destined to contract on cooling, and, by its shrinking, to produce on the surface the elevations and depressions which constitute the mountains and valleys of the existing earth. The ball is dipped in a bath of melted wax, and, when that has partially set, a small portion of the air is allowed to escape by the tap. The surface of the sphere then contracts slightly, and sinks in portions, wrinkling the wax. When a little more air is allowed to escape, these slight wrinkles become more distinct, and form ridges and hollows precisely analogous to the ranges of hills and valleys on the face of our planet, except that their relief is relatively greater. M. de Chancourtois lately presented to the Academy of Sciences two of these balls, one in the first stage of the operation and the other in the second or final one.—*Engl. Mech.*

ABSORPTION OF CARBONIC OXIDE BY LIVING ORGANISMS.—N. Grehaut has experimented with mixtures of air and minute portions of carbonic oxide. He finds that a man or an animal, when compelled for half an hour to breathe an atmosphere containing only 1-779 of carbonic oxide, absorbs that gas in sufficient quantities to saturate about half of the red globules of the blood, so that they become incapable of absorbing oxygen. In an atmosphere containing 1-1449 of carbonic oxide, about a quarter of the red globules are similarly saturated. These results are interesting and important in relation to physiology and hygiene.—*Comptes Rendus.*

IMPROVEMENT IN WATCHES.—A notable improvement in watches is reported from Chaux de Fonds, Switzerland. By a peculiar process the figures on the dial are rendered luminous, so that if exposed once during the day to the sunlight they remain phosphorescent and visible throughout the night. According to *Nature*, preparations are being made for the production of these watches on a large scale.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending Nov. 27.	Week Ending Dec. 5.	Week Ending Dec. 12.	Week Ending Dec. 19.
Alpha	11½ 9½	10½ 8¾	10 6	9½ 8½
Alta	9 7½	7½ 5½	7½ 5½	6 5¼
Andes	75c 50c	75c 40c	65c 40c	60c 50c
Alps	... ...	30c ...	25c ...	20c ...
Argenta	4½ 3	3¼ 2.80	2.60 2.40	3 2½
Atlantic	... ...	... ...	... ...	... ...
Aurora Tunnel	... ...	50c ...	50c ...	50c 40c
Baltimore Con	1½ ...	1½ ...	1½ ...	1½ ...
Belcher	6 4	5 4	4.90 4	4.10 3.60
Belmont	1.10 60c	50c 30c	35c 25c	45c 30c
Best & Belcher	17½ 16	21½ 17	20½ 17½	19½ 17
Bullion	7½ 6	6¾ 4.40	5¾ 4.40	5 4½
Bechtel	65c 50c	65c 30c	80c 45c	60c 50c
Belle Isle	30c ...	40c ...	20c 15c	30c 20c
Bodie	17 16½	16¾ 16	14¾ 12½	13½ 9
Benton	3 ...	3 2	4¼ 2¼	4.10 3
Bulwer	16 15	16½ 16	16 15	16 15¼
Boyle	... ...	... ...	... ...	... ...
Black Hawk	50c ...	1 50c	1 90c	50c ...
Belvidere	1½ 90c	1 50c	1 20c	75c 30c
Booker	1 75c	1 90c	1 75c	80c 50c
Caledonia	3½ 2.60	2¾ 2	2¼ 1¾	2.80 2
California	9¼ 8½	10 9	11 9¼	10¼ 9½
Challenge	1.35 1	1½ 90c	2 1	1.65 1.40
Chollar-Potosi	41 36	38¼ 35½	40½ 35	39¼ 33
Comanche	... ...	... ...	... ...	... ...
Confidence	5½ 5	7¼ 5	9¼ 7½	9 7¼
Con Imperial	85c 75c	80c 55c	75c 55c	70c 65c
Con Virginia	8½ 7	8½ 7	8½ 7½	8 4
Crown Point	6¾ 5	5½ 4	5 4.40	3¾ ...
Con Washoe	3.05 ...	3.05 1	2.90 2¼	3¼ 2.10
Champion	45c 40c	40c 15c	15c 5c	25c 15c
Concordia	... ...	... ...	... ...	50c ...
Dayton	... ...	... ...	... ...	... ...
DeFrees	25c 5c	25c 10c	20c 15c	20c 15c
Daney	... ...	... ...	... ...	... ...
Day	35c 30c	35c 20c	35c 30c	30c 25c
Eureka Con	35 33	37 35	37 34½	36 34
Exchequer	5¾ 4	4¾ 3½	3.50 3	3¼ 3
Endeavor	50c 30c	40c 25c	30c 10c	20c 10c
Gen Thomas	... ...	... ...	... ...	... ...
Grand Prize	11 9¾	10½ 8½	8¾ 8¼	8¼ 7½
Cila	25c 20c	10c ...	25c 15c	... ...
Golden Chariot	... ...	... ...	... ...	... ...
Golden Terra	5 ...	5 ...	6 5½	6 ...
Goodshaw	50c 35c	45c 30c	50c 30c	50c 40c
Could & Curry	9¾ 8½	9¾ 7¾	8¾ 7¾	8 6¾
Hale & Norcross	13¾ 12½	13¾ 10	12 10½	11½ 9¾
Hillside	3¾ 3¼	3.60 3.40	3¼ 2¾	2.60 2½
Highbridge	2.15 2	2¼ 2	2¼ 2.10	2.30 2¼
Homestake	... ...	... ...	... ...	... ...
Hussey	40c 35c	40c 30c	40c 30c	30c ...
Independence	1½ 1¼	1.40 1¼	1.30 1¼	1.45 1.30
Julia	3¼ 2¾	3.60 2¼	4.60 2¼	3.80 2.90
Justice	6 4.40	5 4	4¾ 3.90	4¾ 3.90
Jackson	6¼ 5¼	6 5¼	7¾ 6	9¾ 7
Joe Seates	... ...	... ...	... ...	... ...
K K Con	1 ...	1¼ ...	1¼ ...	... ...
Kentuck	5 4½	5¼ 4	4¾ 4	4½ 3¾
Kossuth	... ...	25c 15c	15c ...	20c 15c
Keystone	... ...	... ...	... ...	... ...
Lady Bryan	2¼ 1.30	2 1.10	2.10 1¼	1¼ 1.05
Lady Wash	1½ 1¼	1¼ 1¼	1¼ 1¼	1.10 90c
Leopard	1.05 1	1¼ 1.15	1.20 1	1¼ 1
Leviathan	50c 45c	50c 30c	50c 35c	40c 30c
Leeds	1¼ 1	1¼ 1.20	1¼ 1	1.20 1
Lee	... ...	... ...	... ...	... ...
May Belle	75c ...	... ...	50c 40c	50c ...
Modoc	30c 20c	20c 10c	15c 5c	... ...
Manhattan	4.60 4	4¼ 4	4¼ 4.15	4¼ 4
Martin White	8½ 8	10 8½	8½ 7¼	6 4½
McClinton	55c 50c	75c 40c	50c ...	60c 50c
Meadow Valley	... ...	... ...	... ...	35c 30c
Mexican	30½ 30	35 23½	28½ 22½	23½ 27
Midas	1½ ...	... ...	15 ...	... ...
Morning Star	... ...	3 2	3 2¼	2¼ ...
North Con Virginia	8 5	7¾ 4½	6¼ 4	7¾ 4
New York	90c 60c	70c 50c	55c 40c	70c 60c
Northern Belle	10½ 9½	10 9¼	9¼ 9½	10 9¼
New Cosso	25c ...	40c 25c	35c ...	30c 25c
Navajo	50c 40c	75c 40c	50c 40c	50c 45c
Occidental	... ...	... ...	... ...	1 ...
Ophir	43½ 35	43¾ 34	43½ 34	42 36¼
Oriental	45c 25c	45c 40c	30c 25c	30c 15c
Overman	13½ 11½	13 9½	11 9½	10¾ 9
Panther	... ...	... ...	... ...	... ...
Phenix	... ...	... ...	... ...	... ...
Phil Sheridan	75c 55c	75c 50c	55c 45c	40c 30c
Prospect	... ...	... ...	... ...	... ...
Raymond & Ely	9½ 7	10½ 9	9½ 7½	10¾ 8
Richer	80c ...	... ...	... ...	30c 25c
Rock Island	... ...	... ...	... ...	... ...
Rye Patch	... ...	... ...	... ...	... ...
Rough & Ready	... ...	... ...	... ...	... ...
Savage	11¾ 10	11¾ 9	11 9¾	10 9
Seg Belcher	26 17	25 20	20 18	20 ...
Sierra Nevada	65 39	55 33	51¾ 39	51¼ 46
Silver Hill	2 1¾	1¾ 1¾	1 1¼	1¼ 1¼
Silver King	15 ...	15 ...	12 ...	... ...
Silver Prize	... ...	... ...	... ...	... ...
Succor	80c 40c	1 75c	85c 65c	65c 50c
Sumnit	1.80 85c	1.60 1	1¼ 1.10	1¼ 1.05
Scorpion	1 1.65	1 1	1 ...	1 90c
Solid Silver	65c 50c	70c 50c	50c ...	50c ...
South Bodie	55c 50c	50c ...	... ...	45c 40c
South Standard	10c 5c	10c 5c	40c 25c	30c 25c
Star	50c ...	45c 25c	40c 25c	50c ...
St. Louis	... ...	... ...	... ...	... ...
Syndicate	... ...	... ...	... ...	... ...
Tioga Con	1.80 1½	2 1¼	1½ 1.10	1.60 1½
Tiptop	1¼ 1¼	1½ 1¼	1½ 1.30	1½ 1¼
Trojan	30c 25c	30c 25c	25c 30c	25c 25c
Union Con	65 48	64 37½	60 38¼	61 54¼
Utah	22½ 17	21 13	16½ 13	15 12½
Vermont Con	... ...	... ...	... ...	... ...
Ward	80c 70c	75c 50c	1¼ 50c	75c 55c
Wells-Fargo	40c 20c	60c 25c	35c 25c	25c 20c
Woodville	30c 25c	25c ...	25c 20c	25c 20c
White Cloud	... ...	... ...	... ...	... ...
Yellow Jacket	17¼ 14½	15 11½	15 11¼	16 13½

Sales at S. F. Stock Exchange.

Friday A. M., Dec. 13.

380 Alta	5½@5¾
25 Alpha	9@9¼
350 Andes	50c@60c
95 Best & Belcher	18½@18¾
100 Bullion	5@5½
365 Belcher	4@4.10
1070 Benton	3@3¼
800 Brilliant	1¼
325 Con Virginia	7¾
350 California	10¼@10½
60 Cbollar	38@38½
165 Crown Point	4.40@4.30
770 Con Imperial	70@65c
655 Caledonia	2.20@2.30
70 Confidence	8½
1800 Con Washoe	3¼
225 Exchequer	3.80@3.85
1100 Flowery	60@50c
540 Could & Curry	8¾@8½
130 Hale & Nor	11¼@11
140 Justice	4.10
400 Juha	3½@3.80
220 Lady Wash	1.55@1.80
1510 Lady Bryan	1.80
200 Leviathan	35c
230 Mexican	23½@23¾
200 N Sierra Nevada	10c
160 North Con Vir	5
550 N Bonanza	1.30@1.20
140 New York	70@60c
30 Overman	10½@10¾
485 Ophir	42¼@41¾
1100 Phil Sheridan	30@40c
100 Senator	20c
400 Succor	50c
240 Sierra Nevada	48¾@49
45 Savage	9¾@9¾
240 Scorpion	1¼
220 Solid Silver	55c
360 Silver Hill	1.30@1¼
100 Trojan	23c
530 Union Con	60@59½
220 Utah	13¾@13¾
1175 Wells Fargo	25c
1000 Woodville	26@20c
825 Ward	75@70c
215 Yellow Jacket	14@13¾

AFTERNOON SESSION.

650 Argenta	3
350 Alton	50c
210 Bechtel	50@60c
255 Bodie	13¾@13
180 Belmont	45c
15 Bulwer	16
70 Black Hawk	50c
250 Belle Isle	20c
850 Booker	80@75c
50 Belvidere	50c
100 Champion	25c
170 C Pacific	1.90@2
240 Dudley	11
100 Day	30c
320 Eureka Con	35@35½
750 Endowment	20@15c
665 Grand Prize	8¼
350 Goodshaw	50c
150 Highbridge	2¼@2.20
260 Hillside	2¾
600 Hamburg	75c
750 Independence	1.45@1.40
10 Jackson	8
50 Leopard	1.10
230 Mexican	23¼@23
200 Mono	4
450 Modoc	10c
300 Manhattan	4¼
340 May Belle	50c
30 Meadow Valley	35c
525 Navajo	45@50c
300 Oriental	30@25c
400 Paradise	2@2.10
230 Raymond & Ely	10¼@10¾
75 Red Cloud	11
100 Richer	25c
150 Summit	1¼
1250 Sitting Bull	60@55c
500 S Standard	30c
350 Star	50c
150 Tiptop	1.35
250 Tioga Con	1.60

Saturday A. M., Dec. 14.

30 Alpha	9¼@9
85 Alta	6¼@5¾
546 Argenta	2.90
20 Andes	60c
70 Belmont	40c
140 Best & Belcher	18¼@18¾
410 Bullion	4.90@4.60
585 Belcher	4@4.05
820 Bodie	12@11¾
50 Benton	3.40
200 Belle Isle	20c
390 Bulwer	16
50 Belvidere	75c
560 Con Virginia	4
1505 California	10¼@10¾
155 Confidence	8¼@8¾
20 Chollar	39
820 Crown Point	4@3.90
950 Caledonia	2¼@2
500 Caledonia (B H)	1.40
1100 Con Imperial	65@70c
620 Challenge	1.65
200 C P Ravine	25c
50 Champion	25c
315 Con Pacific	2@2.10
250 Dardanelles	1
300 Day	30c
150 Giant & O A	5
355 H & Norcross	10¼@10¾
500 Highbridge	2¼@2.30
500 Hillside	2¼
450 Independence	1.40@1.45
545 Justice	4@4.05
1735 Julia	3½@3.10
130 Jackson	7¼@7
20 Kentuck	4
400 Kossuth	15c
150 Leviathan	40c
140 Leopard	1
1000 Liberty	50c
590 Mexican	28¼@28¾
60 Manhattan	4¼
50 Martin White	4¼
140 Meadow Valley	30c
15 May Belle	50c
175 Mono	4@3.90
915 New York	70@65c
20 N Con Vir	7¼@7¼
100 N Sierra Nevada	10c
1005 N Bonanza	1¼@1.10
1880 Navajo	45@50c
10 Northern Belle	9¼
730 Ophir	40½@39¾
200 Occidental	1
20 Paradise	2
25 Red Cloud	11
235 Raymond & E	10@10¼
20 Real del Monte	3.90
150 Savage	9¾@9¾
720 Sierra Nevada	49½@50
500 Silver Hill	1.40@1.30
400 Senator	20c
100 Solid Silver	50c
200 Summit	1¼@1.10
300 Sitting Bull	60@55c
50 South Bodie	40c
195 Tiptop	1¼@1.35
50 Tioga Con	1¼
500 Trojan	25@30c
620 Union Con	59¼@60
60 Utah	14¾
1345 Ward	75@70c
990 Wells-Fargo	25c
475 Yellow Jacket	13¾@13¾

Monday A. M., Dec. 16.

325 Alta	5¾@5¾
20 Andes	50c
80 Alpha	8¼@8¾
240 Best & Belcher	18@18¼
390 Belcher	3.85@3.90
430 Bullion	4¼@4.60
835 Bouton	3¼@3
465 California	9
170 Con Virginia	7¼@7¾
260 Crown Point	4@3.95
515 Con Imperial	65c
30 Chollar	38
200 Challenge	1.60
800 Caledonia	2¼@2
1800 Con Washoe	2.10
90 Confidence	8@7¾
300 Dardanelles	1
435 Exchequer	3¾@3.70
1035 Could & Curry	7¼@7¾
350 Hale & Nor	10¾@10¼
125 Justice	4.20@4.10
965 Julia	3@2.90
155 Kentuck	3¾@3.80
625 Lady Bryan	1¼@1.05
100 Lady Wash	1
100 Leviathan	40c
1410 Mexican	27¼@28¼
350 North Con Vir	4@4¼
365 N Bonanza	1.05@1.10
200 New York	70@65c
440 Ophir	39@38¾
80 Overman	9¾@9¼
75 Solid Silver	50c
130 Scorpion	90c@1
230 Sierra Nevada	48¾@48¾
620 Silver Hill	1¼
100 Trojan	25c
170 Utah	14¾
1050 Union Con	58¾@59
550 Ward	70c@60c
500 Wells Fargo	20c
100 Woodville	25c
345 Yellow Jacket	13¾@13¾

AFTERNOON SESSION.

300 Adenda	65c@70c
400 Aurora T	50c@40c
800 Argenta	2.80@2¾
435 Bodie	10¾@10
245 Bulwer	15@16
225 Belcher	3.85@3.80
150 Booker	65c
150 Belvidere	50c
280 Bechtel	60c
250 Belle Isle	25@20c
100 C Pacific	2
1100 Caledonia (B H)	1@1¼
300 Concordia	50c
100 Champion	15c
25.0 Dudley	90c@1.05
100 Day	30c
100 Eureka Con	35¼@35
135 Eureka Con	35¾@36
300 Endowment	15c
100 Giant & O A	6
410 Grand Prize	8¼@8
650 Goodshaw	50@45c
300 Hussey	30c
200 Hamburg	90c@85c
20 Hillside	2.60
800 Highbridge	2.20@2¼
265 Independence	1.45@1.40
415 Jackson	7¼@8
550 Leopard	1¼@1
100 Liberty	60c
200 Manhattan	4.10
385 Mono	3
200 Martin White	3¾@3.35
100 Liberty	60c
70 Northern Belle	9¼
1955 Navajo	50c
215 Oriental	25c
750 Paradise	2
30 Raymond & Ely	9¼
125 Red Cloud	11
280 Richer	30c
300 Summit	1.10
320 Sitting Bull	50c
200 South Standard	25c
250 Seg Belcher	19@18¾
930 Tiptop	1.35@1.30
250 Tioga	1.60

Tuesday A. M., Dec. 17.

70 Alpha	9¼
215 Alta	6¼@6
55 Best & Belcher	18½@18¾
350 Belcher	4@3.95
290 Bullion	5¼@4.90
450 Benton	4@4.10
300 Baltimore Con	1¼
515 California	9¾@9¾
430 Caledonia	2¼@2.80
575 Con Virginia	7¾@8
1100 Con Imperial	70c
205 Challenge	1.60@1.65
110 Crown Point	3.95
150 Confidence	8¾@8¾
50 Con Washoe	2¼
270 Challenge	1.60
60 Dardanelles	1
345 Exchequer	3.90
30 Flowery	60c
235 Could & Curry	7¾@7¾
245 Justice	4¼@4¾
350 Julia	3
90 Kentuck	4
365 Lady Bryan	1.60@1.45
800 Lady Wash	1.10@1
350 Leviathan	40c
280 Mexican	29¼@29¾
310 New York	70c@65c
1385 N Sierra Nevada	10c
1385 N Bonanza	95c@1
370 N Con Virginia	4¼
690 Ophir	39¾@40¼
45 Overman	9¾
200 Phil Sheridan	30c
10 Seg Belcher	20
2.5 Sierra Nevada	50¼@51¼
205 Savage	10@9¾
320 Solid Silver	50c
80 Scorpion	1@1.10
523 Silver Hill	1.40@1.30
350 Trojan	30@25c
315 Utah	14¼@15
570 Union Con	61@59½
700 Ward	70@65c
150 Wells-Fargo	25c@20c
1560 Yellow Jacket	16@15¾

AFTERNOON SESSION.

100 Alps	20c
1000 Argenta	2.80@2.90
200 Adenda	65@70c
100 Belmont	35c
110 Bodie	9
65 Bulwer	15¾@16
175 Bechtel	50c
380 Black Hawk	50c
400 Booker	65c
100 Belvidere	50@30c
125 Champion	20c
100 C Pacific	2.05@2¼
250 DeFrees	20c
240 Day	30c
210 Dudley	1.20
210 Eureka Con	35¼@35½
1200 Endowment	15@10c
35 Golden Terra	6
325 Grand Prize	7¾@7¾
350 Goodshaw	45@50c
100 Hillside	2
50 Hamburg	75c
730 Highbridge	2.30@2¼
450 Hussey	30c
1100 Independence	1.40@1.35
100 Jackson	8
1850 Liberty	60c
145 Leopard	1
350 Leeds	1
280 Mono	2¼@2¼
85 Manhattan	4¼@4.10
200 McClinton	50c
150 Navajo	50@45c
250 Oriental	20@25c
450 Paradise	2
470 Raymond & Ely	9¾@8
450 Sitting Bull	50c
250 Summit	1.10@1.05
300 Star	50c
400 Tuscarora	5c
355 Tiptop	1.35@1.40
665 Tioga Con	1¼@1

Wed'sday A.M., Dec. 18.

10 Alpha	9
415 Alta	5¾@6
400 Andes	60c@50c
315 B & L	18@17¾
480 Bullion	4.60@4¾
140 Belcher	3.85@3.95
200 Benton	3¼
185 Chollar	39
250 Con Virginia	7¾@8
300 California	9¾@9¾
95 Crown Point	3.95@3.85
540 Caledonia	2¼@2.60
1080 Con Imperial	70@65c
280 Con Washoe	2¼
175 Confidence	8¼@8¾
1600 Challenge	1.40@1.60
270 Exchequer	3.80@3.85
470 Flowery	60c
970 Could & Curry	7¾@8¼
695 Hale & Nor	11@11¼
1015 Julia	4.10@3.90
425 Julia	2.95@3
80 Kentuck	4@3.85
1190 Lady Bryan	1¼@1.30
380 Leviathan	40@30c
1215 Mexican	28¾@28
795 N Bonanza	1.05@1¼
75 New York	60@65c
230 North Con Vir	4¼@4
130 Overman	9¾@9¾
315 Ophir	38¾@38¾
200 Phil Sheridan	40c
350 Succor	60@55c
405 Solid Silver	50c
10 Scorpion	95c
100 Savage	9¾@9¾
25 Seg Belcher	20
1020 Sierra Nevada	49¾@49
450 Silver Hill	1¼@1.35
100 Trojan	25c
40 Utah	14@13¾
430 Union	58@57½
50 Woodville	25c
110 Wells Fargo	20c
500 Ward	65@60c
460 Yellow Jacket	14¼@14¼

AFTERNOON SESSION.

30 Aurora T	40c@50c
580 Argenta	2.85@2.90
300 Albion	2
350 Adenda	60c
810 Belmont	30c
120 Bulwer	15¾
530 Bodie	8@9
5 Bechtel	50c
240 Belvidere	30@35c
125 Booker	50c
275 C Pacific	2¼@2
300 Dudley	1
300 Del Fresno	15c
350 Day	25c
370 Eureka Con	35¾@34¾
650 Endowment	15c
470 Grand Prize	7¾@7¾
200 Giant & O A	6
550 Goodshaw	40c
15 Hussey	30c
1000 Highbridge	2¼@2.20
150 Hamburg	80c
930 Independence	1.40@1.30
100 Jackson	8@7¾
1450 Liberty	60@55c
100 Leopard	1
100 Leeds	1.20@1¼
60 Martin White	3¾@3.80
30 Manhattan	4@4.10
100 Modoc	10c
85 Mono	2@3
40 Northern Belle	9¾
505 Navajo	50@45c
550 New Coso	30@25c
250 Oriental	15c
765 Paradise	1.90@1.80
150 Richer	55c
255 Raymond & Ely	8¾
200 Sitting Bull	50c
300 Summit	1.10@1.05
300 Tuscarora	10c
770 Tiptop	1.40@1¼
250 Tioga Con	1.45@1.40
330 Goodshaw	45@50c
110 Golden Terra	6
325 Giant & O A	5¼@5¾
500 Hussey	30@35c
200 Hamburg	75c
450 Hillside	2¼@2¾
500 Highbridge	2.40@2.45
1310 Independence	1.40@1.35
200 Jackson	8@8¼
500 Leeds	1.10@1.20
425 Leopard	1@1.20
1000 Liberty	60c
250 Meadow Valley	40c
160 Manhattan	4@4¼
1480 Modoc	10c
895 Martin White	6
50 Mono	3
100 Nevada Block	9@9¼
1700 Navajo	45@50c
50 Oriental	30c
750 Paradise	2.35@2¼
240 Raymond & Ely	10@10¼
320 Summit	1.10@1.05
150 S Standard	25@30c
100 Sitting Bull	65c
100 S Bodie	40c
930 Star	40@50c
305 Tioga	1¼@1.60
550 Tiptop	1.30@1.45
2000 Tuscarora	5c

Thursday A.M., Dec. 12. Thursd'y A. M., Dec. 19.

150 Andes	60c
460 Alta	6@6¼
110 Alpha	9
230 Best & Belcher	19
490 Bullion	5@5¼
165 Belcher	4.20@4.40
300 Baltimore Con	1¼
1635 Benton	2¼@3
165 Brilliant	1
300 Con Washoe	2.90
610 Caledonia	2.30@2.45
880 Con Imperial	65@70c
365 California	10¼@10¾
300 Challenge	1.60@1.65
750 Con Virginia	8
110 Confidence	8¾@8¾
185 Chollar	37@37¼
315 Crown Point	4.30@4¼
270 Exchequer	3¾@4
245 Flowery	60@55c
490 Could & Curry	8¼@8¾
635 Hale & Nor	11¼@11¾
280 Justice	4.10@4.20
480 Julia	3.90@4
325 Kentuck	4
1410 L Bryan	2@2.10
170 Lady Wash	1@1.05
300 Leviathan	35c
815 Mexican	28¼@28¾
730 New York	40@50c
60 N Con Virginia	4@5
700 N Sierra Nevada	10c
530 N Bonanza	1.30@1.40
880 Ophir	41¾@42
170 Overman	10@10¼
25 Phil Sheridan	45c
630 Sierra Nevada	49@50
100 Succor	9@10
930 Silver Hill	1¼@1¾
50 Succor	70c
300 Solid Silver	55c
1300 Union Con	58@60
105 Utah	15
550 Wells-Fargo	25c
580 Ward	75@85c
785 Vellow Jacket	13¾@14

AFTERNOON SESSION.

1300 Argenta	2.60@2¾
250 Aurora T	50c
350 Belle Isle	20@35c
90 Bodie	13¾@14
50 Belmont	40c
1330 Booker	80@60c
200 Bulwer	15
100 Bechtel	60c
100 Champion	25c
170 C Pacific	2
200 DeFrees	20c
125 Dudley	1¼
230 Eureka Con	35¾
400 Endowment	15c
945 Grand Prize	8¼@8¾
250 Gila	15@20c
500 Adenda	65c
115 Bulwer	15@15¾
250 Bodie	9¼@10
50 Bechtel	60c
200 Booker	50c
550 Belle Isle	20c
720 Belvidere	30@40c
300 Champion	15@20c
360 Atlanta	25c
25 Alexander	11¼
30 Alta	5¾
100 Amador Q	75
559 Atlas	12¼@15c
160 Alps	25c
30 Belcher	3.80
50 Best & Belcher	17¾
55 Bullion	4¾@4.80
50 Bullion	5
30 Crown Point	3.85
45 California	9¾
40 Con Virginia	7¾
200 Con Imperial	67c
100 Caledonia	2¼@2.56
400 Coso Con	3c
55 Exchequer	3¾@3¾
30 Gould & Curry	8¼@8¾
50 Hale & Nor	11¼@11¾
40 Julia	3
100 Mexican	27¼@27¾
100 North Carson	24c
100 N Scorpion	30c
60 Ophir	39¼@39¾
65 Savage	9¾@9¾
55 Sierra Nevada	48¾@48¾
150 Santiago	1.05
30 Union	59¼@59¾
130 Woodville	25c
100 Wash Bon	5c

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in Mining and Scientific Press and other S. F. Journals

ASSESSMENTS—STOCKS ON THE LISTS OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business
Alta S M Co	Nevada	13	1 00	Dec 10	Jan 13	Jan 31	W H Watson	302 Montgomery st
Aurora T & M Co	California	2	50	Dec 7	Jan 10	Feb 15	C V D Hubbard	312 California st
Belmont M Co	Nevada	19	50	Nov 27	Jan 3	Jan 27	J W Pew	310 Pine st
Bechtel C M Co	California	3	25	Nov 5	Dec 11	Dec 30	W H Lent	327 Pine st
Belvidere M Co	California	2	20	Dec 7	Jan 20	Feb 20	C V D Hubbard	312 California st
Benton Con M Co	Nevada	1	50	Dec 11	Jan 15	Feb 3	W H Watson	302 Montgomery st
Bullion M Co	Nevada	8	1 60	Dec 3	Jan 7	Jan 23	Joseph Cruss	418 California st
Caledonia S M Co	Nevada	25	50	Nov 15	Dec 20	Jan 10	E Wegener	414 California st
Champion M Co	California	1	50	Nov 22	Dec 27	Jan 16	Jno Crockett	203 Bush st
Concordia M Co	California	1	10	Oct 31	Dec 5	Dec 26	C A Holden	310 Pine st
Crown Point C & S M Co	Nevada	36	1 00	Dec 12	Jan 16	Feb 6	James Newlands	203 Bush st
De Frees M & M Co	Nevada	8	15	Oct 25	Dec 2	Dec 23	T E Atkinson	310 Pine st
Endowment M Co	Nevada	2	25	Nov 21	Dec 30	Jan 21	R H Brown	327 Pine st
Equitable G & M Co	Utah	19	05	Nov 7	Dec 9	Jan 2	S Healy	45 Merchant's Ex
Gila Con M Co	Arizona	3	03	Oct 17	Nov 18	Jan 9	W J Pettigrew	419 California st
Gen Lee S M Co	Arizona	3	25	Oct 19	Dec 3	Dec 31	T E Atkinson	310 Pine st
Could & Curry S M Co	Nevada	34	1 50	Nov 18	Dec 23	Jan 14	A K Durbrow	309 Montgomery st
Hale & Norcross S M Co	Nevada	60	50	Dec 10	Jan 15	Feb 7	J F Lightner	58 Nevada Block
Julia Con M Co	Nevada	7	1 00	Nov 1	Dec 6	Dec 28	A Noel	419 California st
K K Con M Co	Nevada	1	1 00	Nov 3	Dec 10	Dec 30	B B Minor	309 Montgomery st
Martin White M Co	Nevada	5

30 Yellow Jacket 14½
AFTERNOON SESSION.
250 Alpha .....9@9½
30 Union Con.....53@53½
70 Yellow Jacket...14½@14¾

Pacific Board—Latest Sales.

Wed'sday A.M., Dec. 18.
50 Alpha.....2
245 Best & Belcher...18@17½
145 Belcher.....3.90@3.
20 Bullion.....4½
150 California.....9½
295 Crown Point..3.85@3.80
150 Con Virginia.....7½
20 Challar.....39
550 Exchequer.....3½@3.80
520 Gould & Curry.....7@6½
220 Hale & Nor.....10½@10.
100 Justice.....3.95@3.90
130 Kentuck.....3.90@3.
280 Mexican.....25½@25
420 Ophir.....38½@38½
20 Overman.....9½
110 Savage.....9½
160 Sierra Nevada ..48½@48½
60 Silver Hill.....1.35
120 Union Con.....57½@57
130 Yellow Jacket...14½@14¾
AFTERNOON SESSION.
10 Alpha.....9½
20 Bullion.....4.45
50 Best & Belcher.....17½
5 Belcher.....3
20 Con Virginia.....7
90 Crown Point.....3.80@3
40 Con Imperial.....65@67c
100 California.....9½
280 Gould & Curry.....6½@6
200 Highbridge.....2
25 Julia.....2.90
80 Mexican.....27@27½
50 Manhattan.....4
80 Ophir.....37½@37
340 Raymond & Ely.....8
500 San Pedro.....1.05
10 Savage.....9½
10 Union Con.....53½
10 Yellow Jacket.....14

Mining Share Market.

People are thinking more of Christmas and New Year's, than of the bundles of certificates in their safes. The market is extremely dull with scarcely any fluctuations from the level reached in the crash. Stocks gradually settle lower and lower, if they move at all, and the great break seems to have been sufficient lesson for two or three weeks at least. There is no noticeable falling off in bullion shipments, and no remarkable increase of assessments. Dividends are not startling in number. On the whole, a general quiet seems to have settled down upon that part of the mines that exists in our city—a quiet more apparent than real, and to be broken, the insiders know when. Such state of things might exist for a long time and yet, we believe, orders for mining supplies would come just as thick and just as fast, in fact would improve. "The market is not the mine." We have received a specimen of metal for determination, from the southern part of California. Mr. J. S. Phillips, 508 Washington street, reports it to be antimony, with traces of lead and iron and a *slight trace* of silver.

News in Brief.

INDIAN Territory is improving.

BUSINESS is prostrated in Odessa.

FRESH freshets at the East.

THE British government is sustained by Parliament.

THE Russians will evacuate Adrianople in January.

ONE hundred thousand dollar robbery at St. John, N. B.

HENRY WELLS, of Wells, Fargo & Co's., express, is dead.

THE Russians have decided to leave 50,000 men in Bulgaria.

THE Argentine States and Chile have settled their territorial differences.

THE President has nominated L. A. Hildreth to be Postmaster at Chico.

A JUDGE of Elections has been convicted in Memphis for hallot-box stuffing.

THE last Fenian prisoner confined in Irelaud will he released before Christmas.

THE fall of Plevna was commemorated in the churches at Bucharest, Dec. 10th.

THE new budget shows that the revenue of Turkey is 16,000,000 Turkish pounds.

THERE were 42,000 pounds of wool shipped from Scottsburg, Oregon, during the year.

A MAN has been taken into custody in London for threatening tho life of the Queen.

A FRIEND of Bayard Taylor writes from Dresden that Taylor is hopelessly sick with dropsy.

THE Directors of the Commercial Bank of Odessa, Russia, have decided to go into liquidation.

TWO Philadelphia stock over-issuers have been sentenced each to 10 years in the Penitentiary.

JOHN RUSKIN will declino a re-election to the Slade Professorship of Fine Arts in Oxford University.

THE colliers in South Yorkshire and North Derbyshire, England, are to be reduced 12½% in their wages.

A MAN at Leominster, Mass., has been killed by inhaling the sulphur from friction matches to cure at attack of diphtheria.

LAST week the barge *Grand Island*, en route from Colusa to San Francisco, grain laden, sprung a leak and sunk while passing Red Rock.

IN the Cuban elections the Liberal Conservatives were successful in the greater bart of the island.

THE manager of a private bank, in England, lost $3,000,000 of the bank's money during November.

EFFORTS are making to impeach Henry W. Blodgett, Judge of the United States Court at Chicago.

MRS. APPLEGATE made an unsuccessful attempt to take her own life lately at Walla Walla. W. T.

A SINGULARLY well-executed counterfeit of the standard silver dollar has made its appearance at Chicago.

IT is reported that Coukling announces himself as irrevocably for Grant as the next Presidential candidate.

THE Northern Pacific Railroad Company have struck an eight-foot nine-inch vein of coal at Wilkeson, W. T.

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

CALIFORNIA.

AMADOR.

THE VOLCANO TUNNEL.—*Dispatch*, Dec. 14: The work on this gigantic structure is progressing steadily but slowly—being pushed in at the rate of only about one foot and a half per day. The tunnel is eight feet in the clear, and is now in a little over 1,200 feet, being a fraction over one-half the whole distance to be run. The expenditure thus far has reached $70,000, and it will take nearly as much more to reach the basin for which they are drifting.

STEWART'S QUARTZ MILL.—This mill, which is situated about two miles below Volcano, and which has been lying idle for about a month undergoing a thorough renovation and repair, was again set in motion last Tuesday afternoon. It is now probably one of the neatest and best little ten-stamp mills in the county. A large quantity of rock from the Downs mine is now being crushed at this mill, which, to judge from the looks of the ore, will yield at least $40 or $50 per ton. The mill will be kept running on custom rock for some time to come, as there are several quartz mines being opened in the vicinity.

THE MOORE MINE DITCH.—Work was commenced on the ditch which is to convey water from the Oneida mine to the Moore mine, last Wednesday morning. We understand that about 45 or 50 men are employed on this work, at $2.25 per day per hand. As the ditch cannot be more than 4 or 5 miles in length, it will not require much time to complete it. The More M. Co. will construct the ditch, when, it is understood, the Amador Canal Co. will buy the ditch and pay for it with water furnished to the mine. The ditch will be of sufficient capacity to furnish water for other mines when required—being built two feet in depth, and three feet wide at the top and two on the bottom.

ITEMS.—Work has again been commenced on the East Keystone and Niagara mines. At the depth of about 12 feet, a 7-foot ledge has been struck running through both these mines. Work on the Tellurium mine, situated at the edge of Pine Grove, on the road leading to Volcano, is rapidly progressing, and the prospects continue very flattering. The company seem to have confidence in the permanency and richness of the lead. Work has again been commenced on the Bismarck mine, situated between Jackson and the Mokelumne river, by Messrs. Vaughn & Champion.

BUTTE.

BIG BAR.—Oroville *Mercury*, Dec. 13: Big Bar H. Co. is the title of a corporation at present engaged in operating on North Fork, 30 miles above here. The stockholders are principally residents of this city. Organized two years ago, the company purchased the ground now being worked, but has labored under great disadvantages. During the past summer, however, it was decided to change the base of operations, and instead of attempting to reach the main deposit in a roundabout way to construct the necessary flumes, etc., and attack the bank direct. This plan has been carried out, and two chiefs are now in position ready for water. It was by reason of a belief in the richness of this bank that the company was induced to buy the property. As an evidence that this opinion was well-founded, it is only necessary to state, upon the authority of Mr. J. J. Smith, that two men recently panned out $70 in one-half day; while a lot of seven pans yielded an ounce each. The latter is regarded about the average quality of the ground.

CALAVERAS.

THE COLLIER MINE.—*Citizen*, Dec. 14: The Collier mill near Murphy's, has just started up, on some of the richest rock ever worked in the county. This enterprise will give a new impetus to the mining interests of that section, which is now filled with prospectors, who report the country wholly undeveloped, but one of the most promising districts in the State.

THE WILLARD MILL.—A new mode of working and milling ores is about to be introduced in Calaveras county. The Willard mill at Robinson's ferry, in the Carson mining district, now in course of erection, is likely to create a revolution in the mode of working ores heretofore found rebellious, but which under treatment of the Willard process readily yields from 90% to 95% of the assay value. The process is not an expensive one, just what has long been needed in Calaveras county to make quartz mining a profitable business. Many a mine can be opened and successfully worked when it is certain that even 90% of all the gold contained in the ore can be saved.

MARIPOSA.

HORNITOS.—Mr. Joseph Frank Thorn of Hornitos reports to the Mariposa *Gazette* of Dec. 14th, as follows: The Jersey mine, owned by A. Campodonico, the mill upon which was destroyed by fire not long since, has been bonded for six month to Mr. Thomas McGlew. Mr. McGlew has erected a new five-stamp mill, which it is expected will be ready for crushing rock by the middle of next week. This mine is looked upon as being one of the best in that section. No. 9 vein and mine is one of the oldest and best known mines in the districts of Hornitos and Quartzburg. It is owned by Frank Thorn. He has recently erected thereon a 8-stamp mill, which is expected to crush from eight to 10 tons of rock per day; the rock from this mine pays about $10 per ton, and is taken from a shaft 40 feet deep, sunk on the side hill, which strikes the vein 250 feet below its outcrop.

NORTH FORK MERCED.—*Gazette*, Dec. 14: The mining interests of this neighborhood are looking up. There are a number of mines being successfully worked at present, among which may be named as the principal ones, the Banderita and Martin Walling, both owned by Joshua Hendy & Co., of San Francisco. Mr. Hendy employs at present at the Banderita, about 25 men. He is building a 10-stamp mill, which will be provided with all the modern improvements. The new mill will be ready to commence crushing rock about the middle of January. The mine is looking well, as they have a vein of rich rock, three feet wide, and about 200 tons of ore on the dump, and are taking it out at the rate of 10 tons per day. At the Martin Walling mine they have a force of about 20 men at work; they have sunk the main shaft 70 feet deeper, which gives it a present depth of 350 feet. They have started two levels from the bottom of the shaft, one north and one south, to strike the pay chutes. They are also sinking a winze in the north second level, and have a vein two and one-half feet in width, of rich rock; they have about 150 tons of ore on the dump. The Thomas mine has out 100 tons of rock, and will start their mill as soon as the rains furnish sufficient water.

MONO.

CON. PACIFIC.—*Alpine Chronicle*, Dec. 7: The two principal veins in this ground, so far as known, and the only ones which the company have thoroughly developed, the Pacific No. 1 and Pacific No. 2. The Pacific No. 1 lies about 20 feet west of the boundary line between the Con. Pacific and Belvidere ground. It is a fine, strong, well-defined, true fissure vein of gold-bearing quartz, unmixed with porphyry or other barren rock, and varies from 18 inches to 3½ feet in width. This ledge has been developed by an open cut along the croppings for nearly 100 feet from the McClinton line, south to a depth of from 10 to 20 feet. Many thousands of dollars were taken from this open cut, the ore having worked in the old bull team and arastra days over $200 per ton. At the south end of the open cut a shaft has been sunk on the ledge, 45 feet deep, from the bottom of which, drifts have been run about 25 feet north and south, all in good milling ore. The ledge has been cut also in a crosscut from the No. 2 tunnel at a point under the bottom of the shaft, and a winze is now being upraised from this crosscut into the shaft for air. The ore from this vein is being mixed with ore from the Pacific No. 2, and hauled to the Miner's mill for crushing, and there can be but little doubt that after the air connection is completed the No. 1 alone can furnish good milling ore enough to keep this mill running constantly. The Pacific No. 2 has been well developed by a tunnel commencing nearly 400 feet down the hill southward from the north end of the claim, and which runs theuce north along the vein into the hill a distance of 255 feet, where the crosscut above mentioned branches off east to the No. 1. The No. 2 is a small, rich ledge, varying from 10 to 16 inches in width. Free gold may be seen in this with the naked eye, all through the dump, and a great proportion of the rock assays well up in the thousands. The company is now breasting out a station on the east side of the tunnel for the purpose of sinking a winze in rich ore body, and we may expect magnificent results as greater depth is attained. The Pacific No. 3 and the Sharon ledges, belonging to the same company, lie west of the No. 2, but have not been developed further than by the amount of work required by the mining laws of the United States and the local regulations. The Sharon, however, is a well-defined vein of 10 inches, and prospects throughout in fine gold, but the ore is low grade. Thorough development may prove it equal to the No. 2, which it very much resembles in appearance.

The following is from the Bodie *Standard*, Dec. 11:

CHAMPION.—The shaft is down 486 feet. The bottom of the shaft is in favorable working ground. The formation has entirely changed; are in ledge matter, which is improving as advance is made. Both the east and west crosscuts are looking well. Will open station and commence crosscutting on the 500 level. Everything is looking well and running in fine order. The winter supplies are all laid in, which insures that work will be prosecuted with energy during the coming winter.

SYNDICATE.—The south drift has been advanced 28 feet during the week. The rock has become harder. The small seams of quartz running in the drift are enlarging as advance is made south. In the west crosscut a progress of 17 feet has been made during the week. The rock is growing softer, of birds-eye porphyry. The seams that are crossed show more quartz and less feldspar, and the indications are better. The mill is running steadily on Bodie ore.

WINDSOR.—Shaft down 60 feet, struck the foot-wall at a depth of 30 feet, from which point an incline was run following the wall. At 60 feet a drift was commenced east and run in 10 feet, where a well-defined hanging wall was struck. Material passed through composed of quartz mixed with clay and resembling that found in Bodie mine.

SITTING BULL.—The company are engaged in stoping out the ore from the old shaft, and shipping it to the mill. About two tons per day are taken out. The new shaft has struck the ledge at a depth of 81 feet. The ledge is about two feet wide, and is of about the same character as in the old shaft.

MAYBELLE.—The west crosscut from the 300 level is in 42 feet. Have cut two or three streaks of ore, which prospect in gold. Three shafts are working in this crosscut, and work is being advanced as rapidly as possible.

SHASTA.

FURNACEVILLE.—Reading *Independent*, Dec. 12: The Peck and also the Afterthought mine were several years ago located as copper mines; but it has been found that the ores yield a much greater profit by working them for the silver and gold that they carry in addition to the copper. The Peck mine, in quantity and quality of ore, is second to none on the coast. There is over 15,000 tons of ore in sight, and over 2,000 tons of ore out and ready for reduction. The ore assays on an average $25 per ton in gold and silver, and 4% of copper. The ledge is from 20 to 50 feet wide, the best ore laying against what is supposed to be the hanging wall. The hanging wall is porphyry, and the foot wall slate. The ore is a carbonate and sulphuret, and some oxides and chlorides near the surface; but at 20 feet in depth it becomes mostly sulphurets, with a very little gangue which is spar. The Peck mine, and also the Afterthought, had tried several different processes for working their ores, but none gave satisfaction until the Afterthought Mining Co. erected reduction works for reducing the ore and obtaining the gold, silver and copper separate. But they had only time to prove the process a success, when, unfortunately, the works took fire and burned down. They have now started to rebuild their works, with greater capacity to work, with some little improvements and the addition of the Peck mine.

COPPER CITY.—The Extra mill is running day and night on good ore, and there is plenty of this kind of ore in sight to keep the mill busy for a long time to come, to say nothing of the new strike in the way of copper ore, which is four feet wide and will average 25% copper. The Potter mine improves finely as greater depth is reached, holding its uniform thickness and good quality of ore. When this mine is opened to a depth of 500 feet, and its levels all properly run, there can be 200 tons of ore extracted from it daily with the greatest ease. The tunnel at the Northern light mine is being driven into the mountain as fast as possible, and everybody is anxious to see Messrs. Whitney and Dunn strike their ledge, as they feel sure of an immense bonanza at this depth, as the ledge was very large and rich in the tunnel above. The Winthrop company are pushing their tunnel ahead.

DEADWOOD.—McConnell & Dorr are now taking from their mine on the west fork of French Gulch creek some excellent ore. Mr. McConnell hand-crushed 14 pounds of rock that yielded two ounces of gold. Kearn & Shay, on the east fork of French Gulch creek, have a well-developed mine and are now running their arastra on high-grade ore. They are now running a tunnel 150 feet to strike the ledge over 100 feet below where they are now working. George Klein is not working his ledge at present, but is crushing ore with his two arastras for Phillips & Wiley. They have out ready to mill nearly 100 tons of ore. M. Sebastiau has probably the best developed ledge on Deadwood. The face of the ledge now shows 10 feet in width of rich ore. He has now sacked and ready to haul to his arastra 60 or 70 tons of ore. I understand his last run netted him $150 per ton. Frick & Davis have just struck a rich ledge; it is now over two feet in width, and assays $70. Should it hold out it will be one of the best mines in Deadwood. James Trotter has got a good prospect in his mine. He has a seam in one of his tunnels which is widening and produces ore enough to run his arastra.

SIERRA.

ITEMS. — Downieville *Messenger*, Dec. 14: The Pliocene shaft is within a few feet of pipe-clay. The company are running a short tunnel, about 50 feet long, to intersect the shaft some 30 feet below the mouth into which they will, when completed, pump the water. We understand that some work is being done on the Mt. Veruon claims, in Mt. Veruon ravine.

NEVADA.

WASHOE DISTRICT.

CALIFORNIA. — Gold Hill *News*, Dec. 18: Daily yield, 360 tons of ore. The face of the south drift from the Ophir has passed into a much softer and more favorable character of ground, showing quartz plentifully mixed with porphyry. The north drift on the 1950 level is now in a distance of 233 feet, the face is still in a very fine vein formation. The upraise from the west drift, from No. 6 winze on the 1650 level, is up 26 feet, the face is still in quartz and ore of a low grade.

OPHIR.—Daily yield, 60 tons of ore. This amount will probably be gradually increased during the coming week to between 70 and 80 tons per day. The ore is of a good quality, and is being shipped to the Brunswick mill, on the Carson river, for reduction as fast as it is taken out.

UTAH.—Sinking the main incline is making good progress, the bottom having passed into bird's-eye porphyry of a favorable character.

NEW YORK.—The west crosscut for defining the width of the ore vein, 200 feet north of the main shaft, has reached the west wall and has

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The Martin White Case.

[Continued from last week.]

But the rules of the district were revised on the 1st of October, after the passage of the act of Congress, and the provisions with respect to the notice and record of claims were readopted without any additional provision for bringing them into sensible relation to the law. They do not purport to supply a means of holding a claim pending the marking of the location on the ground, but stand as substantive and independent requirements, a compliance with which is essential to the validity of a claim. We are not willing under the circumstances to go to the extent of holding that their observance can be dispensed with, even where a location has been plainly marked before the making of an adverse claim. We will assume that it was necessary for the locators of the Paymaster not only to have marked their location before the Shark locators complied with the law, but also to have posted and recorded a notice of the claim. Did they do so?

There can be no question that the original Paymaster notice was all that the law requires. The only objection to it is that it did not contain in itself a description of the claim by reference to some natural object or permanent monument. It was not necessary that it should. It is only the record of the claim that is required to contain such a description; and there are excellent reasons for making a distinction between the notice and record in this particular. A notice is generally, and for safety ought always to be, posted immediately upon the discovery of the vein, before there is any time to survey the ground and ascertain the bearings and distances of natural objects or permanent monuments in the neighborhood; and besides, the claim referred to by the notice is always sufficiently identified by the fact that it is posted on or in immediate proximity to the croppings. A notice claiming a location on "this vein" has only one meaning. But the notice is exposed to the danger of removal by adverse claimants, or destruction by the elements, and for permanent evidence of the location its record is provided for. The record, if it consisted of a mere copy of the notice, would not identify the claim, and there would be an opportunity as well as a temptation to the locators, upon the discovery of a more valuable mine in the vicinity, to prove, by perjured witnesses, that their notice was posted on that mine. The floating of claims was by no means an infrequent occurrence prior to the act of 1872, and if such attempts were seldom completely successful, they were always vexatious and often the means of levying a heavy blackmail. It was on this account that the *record* (not the notice) was required to contain "such a description of the claim or claims located by reference to some natural object or permanent monument as will identify the claim" (R. S. 2324). It is a sufficient compliance with this provision of the law if the description of the *locus* of the claim is appended to the notice when it is recorded. But by reference to the foregoing statement of facts, it will be seen that not only did the record of the Paymaster location contain the necessary description—it was also contained in the body of the notice as posted on the ground: "Situated about 1,500 feet N. W. by N. of the 'Mountain Pride lode,'" is the description in the notice; and as no objection to it was made upon the ground that the "Mountain Pride lode" was not a well-known natural object, at that distance and in that direction from the Paymaster location monument, we presume it was, in fact a good description. The record also contained the names of the locators and the date of the location, and thus fulfilled every requirement of the Act of Congress. (R. S., 2324.) But was changed by Ward and Henry, and it is contended that after those changes it was no longer a good record.

The argument in support of this point is about as follows: Pearson, whose name was in the original notice, as first recorded in the little book, was one of the locators of the claim; he had a vested right, and could not be deprived of his interest by the erasure of his name from the notice and record, and consequently after his name was scratched out the record no longer contained the names of the locators, and was void. We do not think it is by any means clear that Pearson ever acquired an interest in the claim. It does not appear that he ever assented to the use of his name as a locator by Ward, who actually made the discovery and posted and recorded the notice, and it does not appear that there was some sort of argument by which Ward was to divide his discoveries equally among those whose names were afterwards signed to the notice. If Pearson had no right to share in the discovery, and if Ward merely inserted his name by mistake or under some misapprehension, and erased it before the claim had been perfected by work or the marking of its boundaries, it is difficult to see upon what ground he could claim to have ever had any vested right as a locator. But whether he had or not is a question between him and the other locators of the Paymaster. As to outsiders, the notice and record were sufficient. They contained the names of those who claimed to be the locators and served every purpose of the law—that is, they identified the claimants and the claim.

The subsequent alteration of the notice by changing the words westerly and easterly to northerly and southerly had no effect upon the rights of the parties. The only purpose of those words was to show in which direction from the discovery point the claim extended 1,200 feet, and in which direction its extent was only 300 feet. Either set of words served the purpose equally well. No doubt when the vein was first discovered its course seemed to be east and west; after a certain amount of development it seemed to run north and south, and the notice was changed for the perfectly innocent and even laudable purpose of giving to all whom it might concern a better description of the claim. The corresponding alteration in the record was made with the same motive, at least the court finds that it was done without any fraudulent intent; and certainly it was immaterial. There was no swinging of the location effected by this change in the notice and record. The claim was never fixed until the stakes were set; and so far as the notice was concerned it claimed 1,500 feet of the vein, no matter where it might run. If it was good for anything it was good for what it claimed pending the marking of the location. The changes and erasures in the record were certainly irregular, and if they had been material, or if they had not been satisfactorily explained, might have afforded good grounds for excluding it from evidence.

But they were satisfactorily explained. They were not designed to defraud anyone, and had no such effect. We think that the comments of the District Judge on this matter are very just. Mining recorders are a class of officials that must be treated with a great deal of forbearance and indulgence. They are often entirely ignorant of legal forms, and have no appreciation of the horror with which an ordinary lawyer views the erasure or alteration of records and other documents. Where no fraud or deception is intended their blunders must not be construed into crimes.

Man's Place in Nature.

In "Man's Place in Nature," by Prof. Joseph LeConte, the writer contends that evolution is the grandest idea of modern science, embracing every department of nature, its law as universal as the law of gravitation, the one being the universal law of time, as the other is of space. In the evolution of the organic kingdom, there may be much difference of opinion as to the causes or factors, and also as to the rate of evolution, whether always uniform or more or less paroxysmal; but of the fact of the progressive movement of the whole organic kingdom to higher and higher conditions, there is no longer any doubt. The formal laws of continuous movement are the essential elements of the evolution theory, and for these we are indebted to Agassiz. Although to his latest utterances Agassiz contested modern views, he was himself, according to Prof. LeConte, "the great founder and apostle of evolution." All the laws of the evolution of the organic kingdom, as now recognized, were announced by him. His whole life was devoted to enforcing these laws, though he denied the existence of any discoverable cause except the First Great Cause. He regarded the organic kingdom as a great work of art, wrought out according to a plan predetermined in the mind of God; and says Prof. LeConte, "he was undoubtedly right." Darwin, on the other hand, attempted to discover the secondary causes by means of which this marvelous result was attained. To him the organic kingdom was an immense and complex organism developed under the action of resident forces; and "he also, as I conceive," says Prof. LeConte, "was right." Agassiz announced the formal laws of the universe of time, as Kepler did those of the universe of space; Darwin, like Newton, though with less success, attempted to determine the causes of these formal laws. Agassiz is undoubtedly the Kepler of the time-universe; but the honor of its Newton must be divided among many, though Lamarck, Darwin and Spencer are certainly the pioneers. In the remainder of the article the author discusses the question of materialism as the theory of human nature, arguing its inadequacy as an explanation of admitted phenomena, and its want of support in the legitimate conclusions of science. The views presented by Prof. LeConte, in the conduct of his argument, are as original as they are ingenious, and will doubtless challenge the attention of scientific thinkers to whom they are especially addressed.

U. S Entomological Commission.

The United States Entomological Commission, attached to the United States Geological and Geographical Survey of the Territories, has issued its first report on the Rocky mountain locust, or destructive grasshopper of the West, a volume of some 700 pages, fully illustrated with maps, plates and wood-cuts. The favorable predictions made by the commission last winter had an encouraging effect, and stimulated the immigration to the country of late years ravaged by locusts. The statement which a full survey of the field enabled the commission to make in advance, viz., that there would be no serious injury in 1878, has been fully verified. The commissioners have continued their labors during the past summer, confining their attention to that northwestern portion of the country which they have designated as the "Permanent Region," the object being to gather further knowledge of that region, with a view of preventing the ravages of the Rocky mountain locust therein and its migration therefrom.

The problem of destroying the young insects as they hatch out in the more fertile country in the southeast is virtually solved in the report which the commission has already issued; and the task which they now undertake is to endeavor to prevent the migration of the winged insects from the permanent region into the more thickly settled country.

An appropriation of $25,000 was asked of the last Congress for the completion of the work mapped out, and $10,000 were appropriated, and this only toward the end of the fiscal year. The commissioners ask for the additional sum of $15,000, in order that they may be able to continue their investigation until the practical work is accomplished. It was too late in the season when the last appropriation was obtained to permit the completion of the work this year, but with such means as they have husbanded added to the additional appropriation asked for, and with promised assistance by the Dominion authorities, they will be enabled, by getting into the field early the coming spring, to complete fully the work assigned to them.

New Incorporations.

BEAVER CONSOLIDATED M. Co.—Location: California. Capital, $10,000,000. Directors—John P. Culver, N. B. Childs, J. J. Foster, Fred Schumacker and F. M. Biber.

SWAMP ANGEL M. Co.—Location: Nevada county. Capital, $300,000. Directors—C. K. Kirby, C. W. Badger, W. P. Sargent, A. K. P. Joy and G. P. K. Walker.

STATE M. Co.—Location: California. Capital, $102,500. Directors—J. H. Mayuard, A. H. Clough, H. K. White, W. H. Olmstead and S. D. Woods.

MAGENTA M. Co.—Capital, $10,000,000. Directors—C. J. Hutchinson, Andrew J. Moon, Chas. Joost, John F. Lohse, and Louise Franconi.

CAHAWBA G. M. Co.—Capital, $30,000,000. Directors—C. W. Kellogg, H. L. Coye, F. W. Hadley, J. J. Morie, Isaac D. Huntoon.

NOB HILL G. AND S. M. Co.—Object: to mine in Nevada, California, Utah, Arizona, and elsewhere. Capital, $10,000,000. Directors—G. G. Garibaldi, John A. Younie, William J. Gray. William W. B. Sheldon, and Jas. D. McMurray.

ATLAS M. Co.—Intention: To mine in Utah. Capital, $10,000,000. Directors—Adolphus H. Noon, E. B. Jago, M. Goldman, R. H. Nasou and A. F. McGrew.

ARTICLES of incorporation of the Massachusetts Silver Miners' company were filed in the County Clerk's office in New York, November 29th. Also articles of incorporation of the Arizona mining company, with $10,000,000 capital.

HOLSTEIN CON. G. & S. M. Co.—Capital, $10,000,000. Directors—J. G. Edwards, J. Howell, F. E. Patton, Amos Roberts and C. K. Hobbs.

ARTICLES of incorporation by the Central Arizona mining company were filed in the County Clerk's in New York, November 29th. Capital, $10,000,000. Among the Trustees are A. L. Hinton, L. W. Knevals, A. Mitchell, W. E. Wallace and Noah Brooks.

GERMAN G. M. Co.—Intention: To mine in El Dorado county. Capital, $5,000,000. Directors—C. H. Baker, F. W. Ainsworth, William H. Reynolds, Warner Craig and N. E. Shaver.

SAN PEDRO G. & S. M. Co.—Location: Calaveras county. Capital, $10,000,000. Directors—John L. Peters, Isaac J. Holmes, J. C. Barlow, Philip L. Weaver and William McKenzie.

THE Rex Montis mining company has increased its capital stock from $320,000 to $10,000,000.

MONTE CRISTO G. M. Co.—Intention: To mine in Tuolumne county. Capital, $10,000,000. Directors—A. J. Bryant, Thomas Pendergast, D. A. Macdonald, William Corcoran and W. P. Humphreys.

WALKER M. & M. Co.—Intention: To mine in Bodie district. Capital, $3,000,000. Directors: Thomas B. Pheby, T. J. Powers, John Kane, William N. Jacobs and O. H. Bogart.

THE Tyho Con. mining company has increased its capital stock from $10,000,000 to $15,000,000.

CHICAGO M. & M. Co.—Capital, $10,000,000. Directors—Anthony C. Hesing, John A. Rice, Frederick Hess, George L. Hoods and Edward S. Solomon.

SCIENTIFIC RELIANCE ON SOAP.—Dr. Richardson lectured recently in Philadelphia on the germ theory of disease. He acknowledged his obligation to Tyndall for his microscopic investigation on air, dust, spores, and other comforting and salutary topics. It is worth while for common people to learn that 50,000 typhus germs will thrive in the circumference of a pin head or a visible globule. It is worth while for them to note that these germs may be dessicated and be borne, like thistle seeds, everywhere, and, like demoniacal possessions, jump noiselessly down any throat. But there are certain things spores cannot stand, according to the latest ascertained results of science. A water temperature of 120° boils them to death, and soap chemically poisons them. Here sanitary and microscopic science comes together. Spores thrive in low ground and under low conditions of life. For redemption, fly to hot water and soap, ye who live in danger of malarial poisoning. Hot water is sanitary. Soap is more sanitary. Fight typhus, small-pox, yellow fever with soap. Soap is a hoard of health.

THE ENGINEER.

Harbor Bars, Their Formation and Removal.

At a meeting of the Society of Engineers, held on Monday evening, November 4th, in the Society's hall, Victoria street, Westminster, a paper on "Harbor Bars, their formation and removal," by Mr. Henry F. Knapp, of New York, was read. After some observations upon the importance of every port having an adequate outlet for its commerce, the author proceeded to observe that bars had been divided into three classes, chiefly, viz., delta, drift and wave. He maintained that all bars and shoals in broken or rough water, should be treated in reference to wave-action, as that was the sole cause of their formation. Engineers had largely accepted the theory of narrowing the channel of a delta-forming river by jetties as the great cure of bar formation in its entrance. That theory, to the author's mind, had no feasibility to recommend it. He observed that the amount of wave-action of water depended on two causes—viz., wind and depth of water, both of which modified it from the extreme of smooth water to that of mountainous billows; and as engineers cannot control the winds from causing wave-action, they must modify wave-action itself, so as to deepen bars and prevent bar formation. To carry this theory into practice for the prevention of the formation of harbor bars, as well as to remove those already formed, which the author does on the theory of interference to wave-action; he proposes to construct a barrier directly across the mouth of a river or harbor on the outside of its bar, in a depth of 50 or 60 feet of water, and having a hight of from 20 to 30 feet above the bed. As the hight of this barrier is the only quality necessary to produce the required interference to wave-action, the thickness need only be measured by the solidity necessary to withstand the force that it is intended to detract from the waves. This barrier, according to the author, will not offer any impediment to the free discharge of the waters of the river, but on the contrary will protect and facilitate that discharge. Neither would it offer any impediment to vessels passing in and out at all times, as its top would be lower than that of the bar. Its sole use would be to destroy the building-up power of the waves, leaving unimpaired the full force of the river to cut out the bar.

Field Work of the Hayden Survey for 1878.

We have received from Washington some advance proof sheets of the forthcoming report of the work of the Hayden Survey, from which we extract the following: During the past season the work of the United States Geological and Geographical Survey, under the direction of Prof. F. V. Hayden, was continued northward into portions of Wyoming and Montana Territories. The usual appropriation for the survey was not passed by Congress until July, rendering the field season very short, yet the results were of considerable magnitude and of much importance.

The survey proper was divided into four parties, one of which was devoted to the extension of the primary triangulation to the northward, two were engaged in topographic and geologic work, and the fourth performed photographic and special geologic duty. All the parties left the Union Pacific railroad from Point of Rocks and Green River stations about July 25th, and proceeded northward toward the Yellowstone National park. To the second division was assigned the duty of making an exhaustive survey of the park and its surroundings, and to the third the exploration of the Wind River range and the Snake River country. The primary triangulation was extended over about 12,000 square miles. Eight primary stations were occupied, among them Wind river, Fremont's and Grand Teton peaks, which are among the most difficult and hazardous of ascent on the continent. This division would have performed double this amount of work had a band of hostile Indians not robbed it of its entire outfit about the middle of the season.

The second division made a very detailed survey of the National Park, securing the materials for the preparation of a topographical and geological map on a scale of one mile to one inch. The geologist not only studied the geology minutely, but also sketched every square mile of the area. An unusually interesting and valuable collection of volcanic rocks and hot-spring specimens was obtained. The entire collections of the survey, which are of a varied character, will amount to about three tons weight.

The third division explored with equal care the Wind River and Teton ranges of mountains, a region of which comparatively little was previously known. The peak named by the survey Fremont's peak was found to be over 14,000 feet in hight above the sea, with no trace that any human being had ever previously reached its summit. Three complete glaciers were discovered on the east side of the Wind River mountains, the first ever known to exist east of the Pacific coast. The old glaciated rocks and morainal deposits were found on a remarkably grand scale in both the Wind River and Teton ranges.

The object of again surveying the Yellowstone

park was to bring it under the system of triangulation which had been employed with so much success in Colorado and to make the entire work uniform. All the old hot-spring basins were resurveyed in great detail, and several new ones were discovered and mapped. Soundings and temperatures of several thousand hot springs were taken. The history and habits of the geysers were carefully studied.

The photographer of the survey obtained over 50 fine views of the bowls and other curious ornamental details of the Hot springs.

The results of the season's labors, though a short one, have been on the whole very satisfactory. About 12,000 square miles of very difficult country were surveyed, much of it in minute detail, and a mass of observation secured for the twelfth annual report, which will make it of more general interest and value than any of the preceding.

The district assigned to this survey by this department for the next Atlas comprises all the area of the Territories of the United States north of latitude 41° 4' east of meridian 117° and west of meridian 94°. It is estimated that the mapping of this area will occupy five years more, and when this is completed the survey will have mapped over one-fourth the territory of the United States west of the one hundredth meridian.

THE GIBRALTAR TUNNEL.—The proposed tunnel between Spain and Africa is still before the public. This tunnel, according to the plan at present contemplated, is to extend from within a short distance of Algeciras, on the Spanish side, to between Tangier and Ceuta on the African side. The length of submarine tunnel will be nine miles, with an inclination of one foot per hundred, and the approaches will have an extent of six or seven miles. The greatest depth of the sea is 3,000 feet; and, as it is intended to have a thickness of some 300 feet of rock left between the roof of the tunnel and the sea bottom, the greatest depth of the tunnel will thus be 3,300 feet below the level of the sea. —*Am. Architect.*

Burning Coal Dust.

We give the following remarks from an exchange, on the subject of burning coal dust and small coal:

Although the problem of burning coal dust is one of apparent simplicity, it is in reality found to be a most difficult one to solve. No doubt by making the dust extremely fine, and using only the dust of highly bituminous coal, the problem is so far simplified as to permit a simple solution, for such dust will burn in much the same way as the vapor of petroleum. Such limitations to the problem, however, deprived its solution of all practical utility, as bituminous coal, reduced to so impalpable condition as to burn like a gas, is necessarily very costly. The plan, however, of causing the dust to circulate continuously until wholly burnt, supersedes the necessity of using bituminous coal, and of providing for its impalpable pulverization; and under the arrangement indicated, any moderate degree of fineness will suffice, such for example as is attained by passing slack through rollers. It is also immaterial whether bituminous or anthracitic coal is used.

After all, however, the question arises, whether it is advantageous to pulverize small coal before burning it, and whether it is not on the whole simpler to employ a species of furnace which will burn the small coal at present regarded as refuse, without further preparation. To enable such coal to be burnt on a grate, several precautions are necessary. Of these the first that the bars of the grate shall be very thin and the air spaces very narrow, so as to prevent the small coal from falling through. An endless web of bars, which shall receive the small coal continuously at one end, and advance it continuously until the clinker is discharged in front of the bridge at the other end, has been tried, and seems to be a convenient arrangement. If the coal is bituminous, some stationary plows or scarifiers must be set across the furnace at that point where the bitumen begins to melt, to stir the coal in that situation, and thus prevent the particles from so sticking together as to prevent the access of air. If the coal is anthracitic these plows will not be necessary, and they should be so fitted that they could be easily introduced or removed.

It appears to be quite practicable by this arrangement to burn refuse coal without smoke, and if the dust is so fine as to run through the grate like sand, it may be wetted before being used. A hopper may be carried across the front of the boiler containing an Archimedean screw, which will deliver the small coal upon each web of bars, and the action of these different webs being automatic, the combustion of the fuel will be effected without stoking, or the necessity of any one remaining in the engine room, which in the case of a war vessel, that might receive a shot in the boiler, it is manifestly an important object to attain.

ANOTHER convention between England and Turkey cedes to England Alexandretta, a seaport of North Syria.

THE Russians have claimed from the International Commission 23,000,000 francs for the expenses of occupation.

GRANT has concluded to visit Asia before returning to the United States.

Useful Information.

COLORING METALS.—A foreign paper gives the following: Metals may be rapidly colored by covering their surfaces with a thin layer of sulphuric acid. According to the thickness of the layer and the duration of its action there may be obtained tints of gold, copper, carmine, chestnut brown, clear aniline blue, and reddish white. These tints are all brilliant, and if care be taken to scour the metallic objects before treating them with the acid, the coloring will suffer nothing from the polishing. On making a solution of 640 grains of lead acetate in 3,450 grains of water and warming the mixture to 88 or 90 degrees, it decomposes and gives a precipitate of sulphuret of lead in black flakes. If a metallic object be immersed in the bath, the precipitate is deposited upon it, and the color produced will depend on the thickness of the deposit. Care must be taken to warm the objects to be treated gradually, so that the coloration may be uniform. Iron treated in this way has the aspect of bluish steel; zinc, on the contrary, becomes brown. On using an equal quantity of sulphuric acid instead of the lead acetate, and warming a little more than in the first case, common bronze may be colored of a magnificent red or green, which is very durable. Very beautiful imitations of marble may be obtained by covering the bronze objects warmed up to 100°, with a solution of lead thickened with gum tragacanth, and afterwards submitting them to the action of the precipitate spoken of above.

NEW SUGAR PROCESS.—Mr. F. J. Minchin writes: The specialty of the Robert diffusion process is that it requires no cane mills nor the immense motive power to work them, and that it gets out fully 20% more juice than by the use of mills. In this process the cane is cut in slices merely and steeped, so that out of the closed cells is taken the juice by the well-known law of exosmosis and endosmosis. Hence the juice is much purer, since it is freer of albumen and of the fermentable matters which are left behind in the cells. The purity of diffusion juice may be judged of by the fact that a clarifier of 560 gallons when defecated would not give "scum" sufficient to fill a slop basin. The drawbacks to diffusion are the large quantities of water required for its use (much of this can be utilized, however, for condensing purposes), and the addition to the juice of 20% or 30% of water, which means so much extra evaporation and so much extra cistern space; but a larger yield of 20% more than compensates for these minor disadvantages. The Aska Sugar Works, Madras, is the only spot in British dominions where this process is at work.

NEW METHOD OF FRUIT PRESERVING.—There appears to be no end to the long list of valuable properties with which salicylic acid is to be credited. The latest testimonials in its favor relate to its power of preserving fruit. The process as described by M. A. dal Piaz, of Klostermenburg, near Vienna, is extremely simple, and consists in laying the fruit in jars of syrup containing a small percentage of the acid. The proportions recommended are two or three grammes of salicylic acid and 100 to 500 grammes of sugar to a liter of water. No boiling or cooking of any kind is required. Berries and stone-fruit of all sorts thus treated will keep good for months together, or even years, without the slightest approach to fermentation, even when the vessels containing them are but insecurely covered, and will preserve their natural aroma unaltered. Boiled fruit-juices will keep equally well with the addition of one gramme of the acid to every two pounds of the juice, and with such addition the color of the latter is nor altered in the cooking. The only precaution needed is to secure pure crystallized acid of the finest kind, for the inferior varieties impart an unpleasant flavor to the fruit.

THE WORLD'S SUGAR PRODUCTION.—The annual production of the sugar of the world has been approximately calculated as follows: Bengal, China and Siam, 300,000,000 lbs.; British Colonies, 440,000,000 lbs.; Spanish Colonies, 470,000,000 lbs.; Dutch Colonies, 160,000,000 lbs.; Swedish and Danish Colonies, 20,000,000 lbs.; French Colonies, 160,000,000 lbs.; France (beet), 360,000,000 lbs.; Brazil, 150,000,000 lbs.; Zollverein (beet), 550,000,000 lbs.; Austria (beet), 178,000,000 lbs.; Russia (beet), 100,000,000 lbs.; Italy and Belgium (beet), 200,000,000 lbs.; all other sources, including the United States, 400,000,000 lbs.; total, 3,420,000,000 lbs. The annual consumption of sugar per head by different nations varies very considerably, as may be seen by the following figures, based on official data: In the United States, 33 lbs. per head; England, 30; Scotland, 30; Holland, 16; Ireland, 5; Belgium, 6; France, 6.66; Spain, 6.24; Switzerland, 6; Portugal, 5; Denmark, 5; Poland, 5; Prussia (Zollverein), 10; Norway and Sweden, 9; Italy, 2; Austria, 2; Russia, 1.

ALL STEEL BRIDGE.—The *American Manufacturer* says: The new steel bridge which is being erected for the Chicago and Alton railroad over the Missouri river at Glasgow, Mo., is to have five spans, and is to be entirely of steel made by the Hay process. Not even a nut is to be made of iron. This is believed to be the first large bridge ever built in which steel alone is used.

CAUTION AGAINST BASTIE GLASS.—The toughened glass of M. de la Bastie, which, upon its first appearance, created so great an interest, and not a little consternation in the glass trade, has scarcely justified the great expectations formed of it, and evidence of its unreliable character is from time to time forthcoming. Thus in the August number of the *Moniteur Scientifique*, M. J. Laurent, of Marseilles, cautions the scientific world generally, and chemists in particular, against the use of it. He considers the objects and utensils made of toughened glass to be no better than so many Prince Rupert's drops or Bologna flasks, from which they differ only by their shape. M. Laurent adduces an instance where a dish made of toughened glass was used at a stearine factory at Marseilles: it suddenly broke into thousands of fragments upon being placed on the metal scale of a balance. It was then in a state of cooling down from 110° C., at which temperature it had been maintained for some time; but it had previously been in use for about a month, and its sudden destruction was entirely inexplicable, save by the theory above mentioned.

HOW TO CLEAN ENGRAVINGS.—Soak the print in cold water till all creases are out and it lies quite smooth; then put into a dish containing a solution of chloride of lime with twice its quantity of clear cold water. When the stains have disappeared, put the engraving into plain water, and afterwards dry with blotting paper. For the solution referred to, put half a pound of chloride of lime into a vessel with one pint of water; let it stand, stirring it now and again, for 24 hours, and then strain it through fine muslin till quite clear, when the liquid is to be added to one quart of water. The prints should not be left in the solution longer than is necessary to remove the stains, and the more thoroughly they are washed in cold water afterwards the better for them, for it is liable to rot and destroy it. The wet print requires care in handling.

MAHOGANY SUPERSEDED.—Mahogany, heretofore the chief source of wealth in British Honduras, was during 1876 of such small value as not to repay the expense of cutting, and never probably since the occupation of the colony, with the solitary exception of the year 1870, was so little of this wood exported. Of logwood, on the other hand, owing to the exceptionally high prices of 1875, more was sent home during 1876 than in any year since 1864. In 1875, 1,587 tons of logwood, valued at £6,348 were shipped from the island of St. Lucia.

DYNAMITE AND WATER.—It has recently been shown that if dynamite is poured into water, the sand falls to the bottom and the nitro-glycerine floats on the surface, and explodes with its usual violence if the temperature is slightly increased. This will explain the cause of many of the serious explosions with dynamite when used in wet holes.

Good Health.

Color Blindness—Testing the Eyes of Railroad Employees.

Upon this subject the Philadelphia *Record* says: "Railroad accidents have been ascribed to many causes, but rarely, if ever, does the reader of public prints learn of an accident attributed to color blindness. And yet such a defect in the eyes of a locomotive engineer has caused disaster and death. Cases where one train follows up another and telescopes the rear cars are far more numerous than collisions where two locomotives butt against each other. In these days of double tracks, the latter are almost impossible. The other could be prevented at times if the engineer was able to distinguish the warning light ahead. But he cannot. He mistakes red for green and green for red; he confuses blue and green; he confounds almost everything except a white light. A colored flag that should stop him he discerns as one which indicates a clear track. The defect is therefore vital. Upon a trainman's ability to distinguish a signal depends the safety of the traveling public. To ensure this, and also to examine as to the proportion of population afflicted with color blindness, the eminent oculist, Dr. P. D. Keyser, Surgeon of Wills Hospital, has undertaken the task of testing the eyes of all the employees of the railroads that center in this city (Philadelphia). A reporter was curious to learn just what proportion of the trainmen were thus affected, so he called at the doctor's office last evening. In the parlor was seated a large squad of men from the Philadelphia, Wilmington and Baltimore line. The railroaders said that this examination of their eyes had been going on for quite a period.

The newsgatherer was kindly permitted to witness some of the examinations, as well as to have his own eyes tested. The important requisite for a railroader is to distinguish colors, because all signals are made with colored lamps or flags. In the tests the doctor uses all shades of wool and pieces of glass before a flame. The sharpness of vision in each case is also tested.

All railroad employees in Europe have undergone such examinations, with the discovery that about 2% of them were color-blind. It is a natural defect. People are born so, and sometimes never discover it until placed under an examination. In the public schools in this city a knowledge of colors is now taught in an effort to train the children's eyes and to remedy, if possible, any defect.

The subject is a rich one, and interesting to the multitudes of travelers. The doctor's investigations are likely to be productive of great results, and no doubt will lead to the adoption here, as in Europe, of one requisite in the qualifications of trainmen—a freedom from color-blindness.

[We understand that the managers of the Central Pacific railroad have already commenced testing the eyes of the employees, on the various roads under their management.]

THE SCIENCE OF LIFE.—How few of us acquire this science until we are old enough for life to have lost half its charms! The science of life consists in knowing how to take care of your health, how to make use of people, how to make the most of yourself, and how to push your way in the world. These are the things which everybody ought to know and which very few people do know. How never to get sick, how to develop your health and strength to the utmost, how to make every man you meet your friend, how to attach a few people to you as your bosom friends to be relied on in every case, how to earn money and save it, how to behave just as you ought to behave amid all the contingencies and unforeseen happenings of life, how so to live down your past if it is of such a character as to demand being lived down, how to manage yourself as to escape the entanglements of bad women and sincere friends, how to provide yourself, if you wish to do so, with a wife that will not be a burden and shame to you all the rest of your life, how to approach old age gracefully, so that you will not be a grief and reproach to yourself or others, how to make use of past errors and crimes, so that they may prove a help rather than a hindrance to you in the future; all these and many other things are to be included in the science of living, and the pity is that we only appreciate that science at its true value when the bloom of life is gone.

HOW DIPHTHERIA WAS SPREAD.—A few weeks ago a little girl in St. Albans, who had just recovered from diphtheria, was taken by her parents to visit a family in a neighboring town. She slept with the children in that family, and shortly afterward three or four of them were taken with the malady, and some have since died. The family permitted relatives and neighbors to visit them, and the result is several cases in the neighborhood. They had public funerals, even keeping the remains of one child an unusual time, waiting for another to die, so as to bury them together; and this also spread the contagion. The physician was not powerfully impressed—as some physicians are not—with the contagious character of the disease; therefore, he did not take the necessary precautions for the protection of the neighborhood or of his own family, and the result is that one of his own children has died and another is dangerously ill. A lady who went to one of these houses to robe the victims for the grave has called at houses in the vicinity where there are children, without any change of her garments or any attempt at disinfection, and has fondled the children in those families, apparently in utter ignorance of the danger to which she was exposing them.—*St. Albans (Vt.) Messenger.*

POULTICES.—The common practice in making poultices of mixing the linseed-meal with hot water, and applying them directly to the skin, is quite wrong, because, if we do not wish to burn the patient, we must wait until a great portion of the heat has been lost. The proper method is to take a flannel bag (the size of the poultice required), to fill this with the linseed poultice as hot as it can possibly be made, and to put between this and the skin a second piece of flannel, so that there shall be at least two thicknesses of flannel between the skin and the poultice itself. Above the poultice should be placed more flannel, or a piece of cotton wool, to prevent it from getting cold. By this method we are able to apply the linseed-meal boiling hot, without burning the patient, and the heat, gradually diffusing through the flannel affords a grateful sense of relief which cannot be obtained by any other means. There are few ways in which such marked relief is given to abdominal pain as by the application of a poultice in this manner.—*Dr. T. Lauder Brunton, in Brain.*

THE SANITARY EFFECT OF HOUSEWORK UPON WOMEN.—Many of the ills and diseases prevalent among women in our day are, no doubt, traceable to the sedentary mode of life so common among them. The progress with much of the household drudgery to which women were formerly subjected, and the result is, in too many cases, want of sufficient occupation for needed bodily exercise. The fruits of this state of things are strikingly exhibited in certain observations made by the late Mr. Robertson, a Manchester surgeon, who, in his practice as a specialist for women's diseases, found that in women who themselves performed all their work there was no trace of certain complaints; that these complaints begin to make their appearance in women with one servant, become more pronounced in women who have two servants, or worse still with those who have three servants, and so on. He showed statistically that the deaths from childbirth were four times greater in the case of women with four servants than those with none.—*Popular Science Monthly.*

MINING AND SCIENTIFIC PRESS

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The Week.

With the approach of the New Year men nerve their energies anew for more determined efforts in prosecution of success, and in remedy of failure. For us, citizens of the Union and of the Pacific coast, there could be scarcely a more hopeful season than is to usher in '79. The honor of our country is to be upheld. We are to pay our debt dollar for dollar, and before another week gold may be worth less than our promises to pay. The prosperity of our Coast is assured. The rains have held off long enough to encourage the farmer that there will be plenty of them within a month. But it is in the mining industry that we find most of interest. While the stock market languishes—a good sign, under some circumstances—the field of legitimate mining is widening, and men are hopeful. This is the tone from all our States and Territories. Some of our hydraulic miners have already water enough to commence work. The severity of winter is beginning to be felt in elevated camps. But the tireless industry of the past three months has prepared shelters and collected supplies, so that the cold and the wet shall not much interfere with development and product. There are failures reported continuously from the Old World. We have too many of them ourselves. But, in striking contrast to this falling away of old and unsound things, are the cheerful promises of activity to come, that may justify us in enjoying our holidays without touch of misgiving.

The "Press" for 1879.

We will continue in the coming year to endeavor to represent the mining and scientific interests of our coast. The PRESS for 1879 will contain articles of local and general interest on all subjects that come within our province. We shall make efforts to be of as much practical use to miners as possible. To this end we contemplate a series of articles on mineralogy and blow-pipe assaying, adapted both in style and matter to the every-day needs of the prospector and miner. We have tried to give heretofore the market price of metals. We shall render our list much more useful by quoting the price of ores of different metals and grades. In the interest of a new and attractive country, we shall present to the people a series of articles on Arizona, giving as far as possible new information concerning it, derived from reliable sources. On the second Saturday of January we will publish a supplement in which will be found a most interesting article on Sonora, Mexico, accompanied by a map. Also a very fully illustrated article on "Artesian Wells," lately read before the Academy of Sciences, by C. S. Gibbes, C. E. Among the illustrations is a section of the country made through San Francisco, Mount Diablo and Stockton to the foothills of the Sierra Nevadas. This will deserve special attention, not only from those who are seeking artesian water in the neighborhood of the regions treated of, but also from all interested in any way with artesian well supplies in general. In the line of purer science we can promise a paper by the Hon. Alex. Del Mar, entitled "The Evolution of Words," being really an addition to political economy.

By pursuing a policy of this kind in selecting matter for our readers, we hope to satisfy the wants of practical, every-day work, and at the same time the desire for higher culture which is the honor of Americans.

Unheeded Warnings.

Doubtless all who are within easy reach of the San Francisco mails, have before now read accounts of the fatal accident at the Guadalupe mine, Santa Clara county. When the cage, containing nine men, had reached a point between the 600 and 700 levels of the mine, the wire hoisting hand gave way at the drum, and the cage, burdened with its human freight, and loaded with 2,400 pounds of steel hand, fell to the dumps of the 700 level. Thos. J. Crocker was trampled upon and smothered to death in the water at the bottom. John Burney had his thigh broken; William Bennett one or two of his ribs. The others escaped with bruises.

The first question suggested by the report of this accident, to any one who is at all familiar with mining matters, is: Was not the cage provided with safeties? The answer comes, "Yes, but the safeties refused to act." What was the condition of the hoisting hand? Had it lately been inspected? Yes, the hoisting hand is inspected once a month, and had been pronounced sound but 23 days before the accident. Had the safeties and their connections with the cable been examined? To this query there is no reply. And here it is that a charge of criminal negligence might prove very much to the point. The lives of miners are as good as the lives of any men. They are not to be played with by any spirit of economy on the part of mine owners, and most assuredly not by the carelessness and negligence of mine superintendents.

Luckily, in the case before us, the band broke when the cage had risen less than 100 feet. Only one man was killed, and that perhaps not by the fall. But who shall say that next time the cable will not break when its human freight is almost landed at the top? Will the safeties act better at six feet below the surface than they have at six hundred? There is nothing to assure us that they would, and the imagination shrinks from picturing the results of such a fall.

We have had occasion before to refer at length to the causes of mining accidents. The results of our investigations at that time led to the conclusion that a majority of such accidents grew out of the carelessness of the miners themselves. Since then we have studied the subject further, having collected accounts of a large number of accidents. We are not able at present to state definite conclusions from them. We shall soon be ready to give the results. Suffice it to say now, that whatever may be the carelessness of the common miner, altogether too many accidents may be laid to superiors. Deaths caused by accidents of this latter kind have been reported thick and fast lately. This Guadalupe accident capped the climax, and, without waiting to arrange statistics and calculate percentages, we exclaim now against that seemingly petty carelessness, that insufficient carefulness, which is so reprehensible as being so likely to be fatal when practiced by the manager of a mine.

Mines and Works of Almaden.—No. 14.

[Translated for the PRESS from "ANNALES DES MINES."]

The workmen labor partly by wages and partly by contract. The manufacture of the aludels, the repairs of the furnaces, the extraction of the cinders are undertaken by contract. The charging and discharging of the furnaces, the roasting of the ore, the luting of the aludels and of the doors, the extraction of the soot are, on the contrary, paid by the day.

The cost of the manual labor may be reckoned as follows:

	Days.	Francs.	Francs.
Charging	2 ..	at 2	4
Firing	1 ..	at 2	2
Luting	½ ..	at 2	1
Discharging and cleaning	2 ..	at 2	4
Total			11

To this it is necessary to add the manual labor for the treatment of the residues. This last operation, the *batido de cabezas* produces for two furnaces per year from 350 to 450 kilograms of mercury; on an average for each operation it gives 3.16 kilograms for each furnace.

The total expense of a single operation may be estimated as follows:

	Francs.
Manual labor paid by wages	15
" " " contract	5
Fuel	25
Maintenance and repairs	5
Total	50

Or, per ton of ore worked about 4.50 francs, and per ton of mercury produced 60 francs, of special expenses for the Bustamente furnace.

First. *Idria Furnace.*—The following are the precise results of four operations, in which an exact account is taken of all the products and all the expenses:

	1st Operation.	2d Op'n.	3d Op'n.	4th Op'n.
Charge (tons)	28.5	28.5	28.5	28.5
Hours of fire	10	11	11	11
Wood consumed (tons)	3.385	4.29	4.03	4.68
Duration of the operation (days)	6	6	6	6
Mercury produced (kilog.)	1001.55	1538,75	1837.98	1738.13
Slag { Well burned (kilog.)	25,373.	25,329	24,915.	26,114
Slag { To be retreated (")	25	521	35	24

In resume:

Ore treated (tons)	114	
Mercury produced, before the *batir cabezas* (kil.)	6,716.355	
Fuel burned (tons)	16.385	
Slag produced (tons)	102.336	

These four operations cannot be taken as types, the charges were made, in fact, without bricks of menn, and were composed only as follows:

Metal	4.6 tons,	or	16.14%
China	17.0 "	"	57.16%
Solera	6.9 "	"	24.21%
Total	28.5 "		100%

The slag represents 87.768% of the charge; the difference, 10.232%, represents therefore the total amount of all the volatile substances (mercury, sulphur, water, bituminous matter, etc.)

The soot from these four operations was washed with care, and furnished 1,791.725 kilograms of mercury, which gives as a direct product of the four operations 8,508.08 kilograms of mercury, or an average of 2,127 kilograms for each.

These figures are somewhat low, from the absence of the rich menn from the composition of the charge, the mean of 66 operations made in the winter of 1875-6 gave for each operation 2,508.928 kilograms of the metal.

The residues of the powders washed in the four operations already cited weighed 1,993.34 kilograms, of which,

	Kilograms.
Residues from the 1st chambers weighed	970.4
" " 2d " "	325.3
" " 3d " "	311.0
" " 4th " "	94.8
" " 5th " "	95.02
" " 6th " "	91.92
" " Flues	104.00
Total	1,993.34

The residues washed held about 10% of water; when dry they weighed, therefore, 1,794 kilograms. The following is their contents in mercury:

Resi'e from the	Analysis at School of Mines at Madrid.	Analysis at Laboratory at Almaden.
1st Chambers	44.20%	43.80%
2d "	21.70	21.50
3d "	14.42	13.90
4th "	12.16	11.96
5th "	15.07	14.90
6th "	13.50	13.02
Flues	12.16	12.19

From this it follows that 1,993.34 kilograms of residue contains still:

	Kilograms.
Residue from 1st Chamber	380.026
" 2d "	63.531
" 3d "	40.362
" 4th "	10.375
" 5th "	13.009
" 6th "	11.168
" Flues	11.409
Total	535.880

Kilograms of mercury, if we take, as nearer the truth, the assay as showing the greatest amount of mercury.

Hence, then, the total product of the four operations was:

	Kilograms.
1. Mercury received in the reservoir	6,716,355
2. Mercury taken from the soots	1,791.725
3. Mercury still contained in the washed soot	535.880
Total	9,043.960

This came from 114,000 kilograms of ore.

That is to say:

Classes.	Amounts. Kilog.	Contents Per Cent.	Mercury contained, Kilog.
Metal and China 1st	21,080	25.00	5,270.000
China 2d	9,840	17.96	1,078.704
China 3d	8,920	14.66	1,307.672
China 4th	3,160	8.88	280 608
China 5th	4.480	4.99	223.552
China 6th	5,400	2.46	132.840
China 7th	33,520	1,05	351.900
Solera	27,600	0.89	220,800
	114.000	8.30 (average)	9,466.130

But of the 9,043.96 kilog. of mercury produced, 535.88 kilog. is still mixed with impurities. If we admit that the ulterior treatment of these residues does not give more than 80% of the mercury which they contain, they would not give more than 428.704 kilog. The total product of four operations can then be estimated as

	Kilog.
1—Mercury in the reservoir	6,716.355
2—Mercury from the soots	1,791.725
3—Mercury extracted from residue	428.704
Total in kilograms	8,936.784

Or 7.84% of the ore treated in place of 8.30% which the assays give as an average content of the different classes of ores—

	Kilog.
Therefore the mercury contained is	9,466.130
The mercury obtained is	8,036.784
Loss in kilog	529.352

The loss is only 0.464% of the ore treated, or 5.59% of the contents of the ore.

Let us see now what have been the expenses for manual labor, and material for these operations:

Manual Labor.	Per Operation.
Charging, 5 days @ 2.00 francs	10.00 francs.
Maintenance of fire 1 day @ 2.00 francs	2.00 "
Luting, 1 day @ 1.25 francs	1.25 "
Discharging, 5 days @ 2.00 francs	10.00 "
Removal of ashes, 1 day @ 1.00 franc	1.00 "
Examination of slag, 4 days @ 0.50 francs	2.00 "
Cleaning of chambers, 6 days @ 0.50 francs	3.00 "
Weighing of slag, 4 days @ 0.50 francs	2.00 "
	31.25 francs.
Or for operations	125.00 francs.
Cleaning of chambers { 3 days @ 1,000 francs / 6 " " 0.830 " / 3 " " 0.625 }	9.375 francs.
Extraction of slag, at 7.25 francs per operation	29.00 "
Extraction of soot, 40 days or fractions of	29.25 "
Washing of soot 23 " " " "	13.25 "
Weighing of ore	58,95 "
	264,82 francs.
Fuel, at rate of 27.50 francs per operation	119.00 francs.
	374 82
Or, per operation, 93.45	francs

These figures are even smaller in the example chosen than is ordinarily the case. They ordinarily do not weigh either the ore or the slag. They save therefore the sum of 60 francs. On the other hand, certain prices have changed; fuel costs now 42.50 francs per operation in place of 27.50 francs.

The cost of repairing the furnaces is very small; they were in the first place very solidly built in the beginning in 1806, and do not require hut small repairs. It is a high estimate to put them at 30 francs per furnace for each operation. We can then reckon to-day upon the following expenses:

Manual labor	51.00 fr.
Fuel	42.50 "
Repairs	39.00 "
Per operation	123.50 "

Or per ton of ore treated: $\frac{123.50}{28.500} = 4.33$ fr.

The cost of treatment is therefore nearly the same as in the Bustamente.

We will have to return later to the essential element which must be improved, the loss of mercury. We will now endeavor to ascertain the entire cost of producing a ton of mercury at the works of Almaden, omitting from the account at first the general expenses and the value of the ore. The following table of the expenses of the works in the year 1873-74 will permit us to arrive at an estimate sufficiently approximate:

(*a.*) Manual Labor.		Sum in francs
Charging and discharging	12,026.00	
Extraction of slag	7,478.16	
Repairing furnace	3,573.79	25,521.95
Luting of doors and joints	3,444.00	
Superintendence	12,054.26	
Workmen	47,204.20	
Masons	516.00	
Work at warehouse	6,243.13	
Care of tools	904.50	78,644.93
Watchmen	912.50	
Factory	8,923.00	
Discharge of carts	2,696.20	
Washing	31.50	
Carpenters	109.12	
Francs		105,266.88
Construction of 2 pairs of Bustamente furnaces		18,730.56
(*b.*) Material.		francs.
Sand, clay, etc		9,800.00
Aludels		4,618.71
Fuel		29,102.95
Lime		25,453.50
Portland cement		127.25
Coal		1,220.22
Ashes		159.75
Sparte		2,578.42
Balais		66.00
Iron bottles (frascos)		00,000.00
Iron for tools		203.20
Brick tiles		20,402.83
Sundries		259.20
Total		154,308.12

The production during 1873-74 was 676.104 tons, and the total expenses during the year, including the cost of building two new furnaces, was 278,205.55 francs, or per ton of mercury about 285 francs.

[To be Continued.]

A TERRIBLE famine prevails at Magador, Morocco, the deaths numbering 25 daily.

What and How?

In this column are printed all sensible inquiries relating to and connected with mining or relating to any matters of general scientific interest, also the answers to them as dictated by individual experience, or as furnished by correspondents.

Conquering Refractory Ores.

EDITORS PRESS:—In your issue of the 7th inst., remarking on the President's message, you speak of "those refractory ores which, all over the mining part of the country, still continue to defy the metallurgist." Will you be so kind as to inform me where those ores are, as I presume you speak of gold, silver, or copper ores, these being the principal objects of search in this country. I should like to experiment on such refractory ores; for though I have once or twice failed to work companies or superintendents successfully, I can truly say I have yet to meet with a silver ore which could not be worked by one or other of the known processes to 80% or upwards. However I exclude smelting as a branch in which I have no experience, confining myself to amalgamation or lixiviation, with their various modifications. I also exclude gold sands and gravels, which are too poor to admit of anything more than washing; but these exceptions apply to myself only, there are others whose experience has been greater, and who will doubtless join me in asking, where are these refractory ores? C. H. A.

Benton, Mono Co., Cal., Dec. 11th.

There is probably no ore of gold or silver, or both, that cannot be worked, at least on a small scale. Some very refractory ores can be worked on a larger scale and with profit, but, at the same time, with such waste of the precious metals that the process is deemed very unsatisfactory. The ores of Meadow Lake, Nevada county, for instance, have for more than 10 years verily "defied the metallurgist." They have been worked, to be sure, but with what pecuniary success may be judged from the deserted village in the Sierras. Lately it has been said that Willard's furnace could manage the ore, but this is not yet definitely established. Ores on some of the ledges of Shasta county are said to be similar to the Meadow Lake ore. Here again, a process has lately been successful, viz., the O'Harra furnace process. Further east in Nevada there are numerous places where the ore is very difficult to work. At one mine in Ward district, several bad failures have been made, stockholders being taxed to put up one style of works only to be called upon again and again to put up still other works to be operated on different principles. And after all these changes from amalgamation to lixiviation, and from lixiviation back to amalgamation, it is still open to some question whether the ore may be classed as economical, although several hars of low fineness have lately been shipped. It is said that the ores of Robinson district are refractory. Lately, however, copper bars have been forwarded from this district, but how economical the process is we are not prepared to say. We believe that the telluride ores of Colorado, Montana, and Idaho have presented difficulties, to some extent overcome by this time.

As we stated in the remarks referred to by our correspondent, a proposition was brought before Congress some years ago, providing for a fund to be applied in promoting the development of the mining industry, by encouraging inventors in the line of processes for working difficult ores. We do not think the proposition advanced far enough to be drawn up into a bill. And it is our opinion that the mining industry needs no aid of this kind. But, as we said before, we do believe that a great deal of good may come from a discussion just such as our correspondent has commenced. We hope he will be answered by others of wide experience, who are better able to inform him than we. We have tried to start a discussion on the relative merits of amalgamation and lixiviation with certain classes of ores. Mr. W. T. Rickard, of Arizona, has taken interest in it, and in this issue we are glad to call attention to a second article on the subject by Mr. Ottokar Hoffman, of this city. We hope to hear from others on both of these subjects.

AN explosion of nitro-glycerine and gunpowder occurred at St. Bernard coal mines at Earlington, Ky., December 13th. The shock was felt for miles. A train of mining cars, mules and a negro driver were blown to atoms.

THERE is being manufactured at Chicago a 100-stamp quartz mill for Arizona. What part of the Territory this mammoth mill goes to is not known, but it is presumed it goes to southern Arizona.

ISRAEL R. BLUMENBERG sues the North Con. Virginia Mining Co., in the Twelfth District Court, to compel the transfer of 833 shares of the capital stock to him.

ABRAMS & CARROLL have commenced suit in the Twenty-third District Court to recover $1,412 from the Minnietta Belle Silver mining company, for goods sold and delivered.

THE First National Bank and Commercia Bank, of Saratoga, N. Y., have closed their doors.

The Bird of America.

The White-headed, but incorrectly called Bald Eagle, is well known to every one as the emblem of the United States. Many, however have false ideas of its real appearance and habits, obtained chiefly from unnatural figures and fictitious stories, so we have reproduced here the excellent illustration from life made for the "Ornithology of California," published by the Legislature in 1870, giving also a short account of its natural history from the most authentic sources.

The colors of old birds of both sexes are dark chocolate, or blackish brown, the feathers paler at edges, the head and tail pure white, bill and feet yellow. Length, 30 to 43 inches; extent of wings, 78 to 88 inches; wing, 20 to 26 inches; tail, 11 to 15½ inches; the female being considerably the largest (as in all birds of prey), and Pacific coast birds are larger than eastern or southern. The young in the first year is nearly uniform black, the feathers afterward growing out paler, and white near their base, every year becoming more white on head and tail, until the fourth year when these parts become entirely white. This change with age has led many to suppose that there were several kinds, especially as young birds often show white patches on the body.

THE WHITE HEADED OR AMERICAN EAGLE.

Such a showy and noble-looking bird of course attracted the attention of the first European visitors to America, north of Mexico, where it is not known to exist. Its white head distinguished it from the very similar white-tailed eagle of Europe and Greenland, leading the celebrated Linnæus to adopt for its scientific name the Greek word for White-headed, which, combined with the generic title of the Fishing Eagles, makes that used by naturalists in all enlightened countries since 1760, namely, *Haliætus leucocephalus*.

About 1776 Congress adopted it as the emblem for our coins, and other national devices, against the advice of that practical philosopher, Franklin, who thought that a bird which lived in great part by robbing the industrious fish-hawk and killing defenceless lambs was unworthy of such an honor, advising that the honest and useful turkey should be adopted in its place, being also an American bird. This would have been, perhaps, as appropriate as the barnyard fowl of France, but the admirers of the Roman emblem, and the dignified aspect of the eagle, prevailed—though it has been recently supposed that the bird on coins may represent something quite different, almost anything between vulture and owl in fact, perhaps varying with the baseness or intrinsic value of the metal.

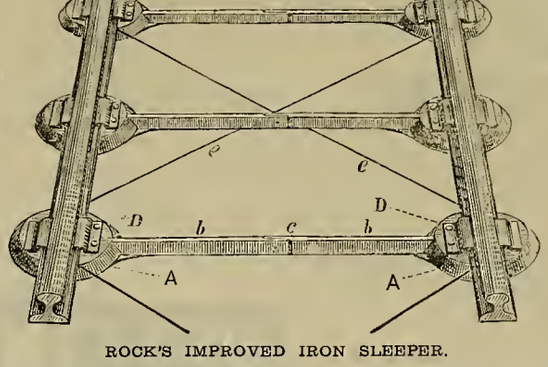
This bird inhabits the whole of North America, except Mexico and southward, where other kinds occur. It leaves only the extreme northern shores in winter, remaining wherever it can obtain fish from unfrozen waters, or small animals and birds near the forests. It is, however, a lazy bird, never diving for fish or pursuing game when it can find them dead or disabled, and therefore watching the fish-hawk and the hunters to share what it can capture with their aid. Its flight is heavy and slow compared with some birds of prey, which to some extent excuses it for "sponging" on others; but it has been seen at times to fly with great swiftness, capturing the flying fish in its short course over the waves, and certainly is swifter than the laborious fish-hawk. At times it is forced to dive for fish, circling round high in the air until it sees one near the surface, and then plunging like a bullet headlong to the water, though it does not go beneath it, but seizes the fish in its long, sharp claws. It also picks up dead ones and injured birds in the same way, while at times it varies its fare by hunting ground squirrels, etc., watching for them from the air or a tree.

The California Indians, and, to some degree, the Spanish population, held this bird sacred, and formerly it was a numerous species, allowed to live around the ranchos as a useful tenant, on account of killing many squirrels, though it might occasionally capture a weak lamb or pig. Instances have been published of infants being carried off by this eagle, but less often than by the fiercer and stronger golden eagle. Nowadays, as every schoolboy is allowed to carry a gun and shoot what he can, there is no danger of eagles becoming too plenty. Indeed, they are fast decreasing in numbers and will soon be rare in California.

The nests of this eagle were formerly very common here, built often in some tall sycamore and large enough to fill a two-horse wagon, being composed of large sticks, three or four feet long, piled together year after year, until the mass was five feet thick, having a little cavity at the top lined with a few clods of turf, moss, etc. In this are laid two to four eggs nearly equally rounded at both ends, whitish, rough, and from two and one-half to three inches long. They are laid from January to April, according to climate, the bird nesting from latitude 32° to latitude 68°.

Near the sea coast, where trees are absent, the nest is often built on a cliff, but pine trees are the usual kind selected northward.

The title of fishing eagles, given to this (and eight or nine other foreign kinds), merely shows its favorite food, and, indeed, it is rarely met with many miles from water, usually building its nest near its fishing resorts. In captivity it is dull and silent, except when hungry, then screaming and ruffling its feathers at sight of food in the most fierce manner. Young birds have often been raised from the nest, but are always dangerous pets, requiring a cage or chain, though they were formerly kept half-tamed about the ranches, going off to hunt in the morning and returning at night.



ROCK'S IMPROVED IRON SLEEPER.

Iron Sleeper for Railroads.

Alexander D. Rock, of Eureka, Nevada, has patented through the MINING AND SCIENTIFIC PRESS Patent Agency a peculiar arrangement of iron sleepers, shown in the accompanying engraving. *A*, *A*, are two inverted bowl-shaped cast-iron bed-pieces, upon which the rails of the railroad are secured by means of the ordinary chairs. Each of these bearings has a cast-iron arm or bar, *b*, long enough to extend half way across the track, and the meeting extremities of the arms of the two opposite bowls are united in the middle of the track by a lap or other equivalent joint, as shown at *C*. The upper surface of the inverted bowl-shaped bearings are made flat, so that the chair, *D*, can be readily secured to it by bolts. Beneath the rails in each chair may be placed a thin sheet of india rubber or other yielding material, in order to lessen the vibration between the rail and bearing. The adjoining ties are bound together by diagonal iron rods, *e*, *e*, so as to join the bearings, and thus give the bed a perfect connection throughout.

The inverted bowl for a base will keep the bed steady and firm on loose, sandy or soft soil, owing to the extended surface which the bowl covers. The bowl can be easily raised or lowered and adjusted at pleasure by tamping or removing the earth from under it in the usual way.

The center-coupling provides a chance for the road to yield under sudden pressure, and the elastic substance under the rail prevents rigidity and does away with much wear and tear on the rolling stock.

The bracing of the ties by transverse rods keeps the bed in place where it is either straight or curved.

Asbestos in San Diego County.

Mr. C. S. Colby, of Banning, San Bernardino county, has shown us some specimens of asbestos, from his claim near Agua Caliente, San Diego county. The asbestos occurs in a number of veins, only one of which, however, has, on account of its size, been worked to any great extent.

This vein is about 12 feet wide where first cut, running in a north and south direction. South of the first cut, 300 feet, the ledge was found to be 30 feet wide. Again, 2,000 feet south, the ledge has been struck, but its width at that point has not yet been determined.

The walls of the vein are smooth hard cement. The fibers of the asbestos extend directly across from wall to wall, and are nearly horizontal. The material appears to be of very fine quality. Mr. Colby has worked the ledge to a depth of 10 feet, and an aggregate horizontal distance of about 2,000 feet. The walls go down vertically, and gives no signs of petering. Pieces weighing 200 pounds have been taken out, and Mr. Colby says that he can get them of any manageable size. In the neighborhood there is a very peculiar pipe vein of asbestos. This vein is nearly perfectly round, and is about as great in diameter as the crown of an ordinary hat. Its length has not been determined. One of its peculiar features is that the asbestos contained in it, is in a fine pulverulent form. Large deposits of such material would undoubtedly be very valuable, much more so for some purposes than the fibrous variety. Mr. Colby finds good market for his asbestos. He has promised to send a box of fine selected specimens to the University. We hope he will keep the promise, as we believe asbestos has not been before discovered in large quantities so far south in the State as San Diego.

PACIFIC COAST POSTAL CHANGES.—The following are reported for the week ending December 14th: Offices discontinued — Workman, Los Angeles county, California. Postmasters Appointed—Gilbert Lampbere, Berryville, Siskiyou county; Hiram Shartzer, Highland Springs, Lake county; W. M. Tucker, Leesville, Colusa county; Silas R. Lewis, Orland, Colusa county; Abbott Richardson, Sheep Ranch, Calaveras county, California; Livingstone Vance, Wildervillc, Josephine county, Oregon; Miss Maggie Patterson, Safford, Pima county, Arizona.

FOSSILS IN RINCON HILL.—A few months ago Dr. J. J. Bleasdale, while walking through Second-street cut, picked up a chance piece of the blue shale, of which there is so much in the excavation. On splitting it apart, or rather lifting off a portion of it, he found a knot of about fifty fossil worms. The formation in which he found them is tertiary. This is very interesting, as few fossils have been collected on the upper end of the peninsula, so few that the geologists were some time in becoming thoroughly convinced of the age of some of the neighboring hills.

IT is said that Senator Jones proposes to spend several thousand dollars in sinking an artesian well for the benefit of the Santa Monicans.

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We invite the acquaintance of all parties connected with inventions and patent right business, believing that the mutual conference of legitimate business and professional men is mutual gain. Parties in doubt in regard to their rights as assignees of patents or purchasers of patented articles, can often receive advice of importance to them from a short call at our office.

Remittances of money, made by individual inventors to the Government, sometimes miscarry, and it has repeatedly happened that applicants have not only lost their money, but their inventions also, from this cause and consequent delay. We hold ourselves responsible for all fees entrusted to our agency.

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We have superior artists in our own office, and all facilities for producing fine and satisfactory illustrations of inventions and machinery, for newspaper, book, circular and other printed illustrations, and are always ready to assist patrons in bringing their valuable discoveries into practical and profitable use.

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South Pacific Coast Railroad.
New Route (Narrow-Gauge.)

Commencing Monday, September 30th, 1873, boats and trains will leave San Francisco daily from the New Ferry Landing, foot of Market street, at 5:30 A. M., 9:00 A. M., and 4:00 P. M. for ALAMEDA, SAN JOSE, LOS GATOS, ALMA, and all way stations.
Stages connect with 9:00 A. M. train at Alma for Santa Cruz.
EXCURSION TICKETS will be sold Saturday afternoons and Sunday mornings from San Francisco and Alameda to San Jose, Los Gatos, and Congress Springs, and return, at reduced rates, good only until Monday evening following date of purchase.

FERRIES AND LOCAL TRAINS, DAILY.

From San Francisco.—5:30, 16:40, 9:00, 10:30 A. M.; 1:30, 4:00, 5:15, 6:30 P. M.
From High Street, Alameda.—15:40, 7:40, 9:01 A. M.; 12 M.; 2:40, 4:00, 5:16, 6:24 P. M.
†Daily, Sunday excepted.
The Company are prepared to carry vehicles of all kinds on the Ferry, to and from San Francisco, Alameda and Oakland.
THOS. CARTER, Superintendent. GEO. H. WAGGONER, Gen'l Passenger Agent

CAUTION
To Hydraulic Miners.

The public generally and Hydraulic Miners especially are hereby notified that any parties making or using the contrivance known as the HOSKIN DEFLECTOR will be prosecuted to the full extent of the law, said machine having been declared by the U. S. Circuit Court an infringement upon my patent, the

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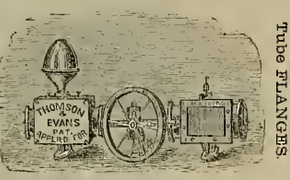

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The Power is mainly built of wrought iron, and cannot be affected by exposure. The hoisting drum is thrown out of gear by the lever, while the load is held in place with a brake by the man tending bucket. The frame of the Power is bolted to bed-timbers, thus avoiding all frame work. When required these Powers are made in sections for packing.

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CAPABILITIES.—The "Elephant" is capable of crushing as much stuff as a 12 Stamp Battery of the present system, having crushed as high as 14 tons of tough copper ore in one hour, through a No. 4 punched screen. The undersigned, however, will guarantee 20 tons per day of ordinary quartz through the same size screen.

WEAR.—The 'Elephant' having only two pairs, Shoe and Dies, the wear in this instance is equal to one-sixth of a 12 Stamp Battery. There being no Cam Tappets, Cam Shafts or Guides, the consequent wear on these parts is done away with; the leather thoroughbrace, uniting the lever with the spring, would only require replacing at most, once a year.

POWER.—The "Elephant" only requires a seven horse-power engine to drive it, where a 12 Stamp Battery would require from 18 to 20 horse-power.

PORTABILITY.—The entire Battery, including Mortar, will weigh about six tons, thereby causing an immense saving in the way of freight to such places as Arizona, Mexico, Cariboo and Boise. As no part of the Machine weighs more than 1,800 pounds, the handling of the Machine is comparatively easy, and in places where it would be necessary to pack the Machine on mules, it could be easily made in pieces not to weigh over three hundred pounds.

The above engraving shows the Machine in exactly the position it would be placed in a mine; the reader will therefore see that all wood work is done away with, and that once the Machine is on the ground it will take but a few days to set it up and have it in full working order. The "Elephant" can be seen working every day from 2 to 4 P. M. at No. 342 Main street, near Harrison, San Francisco. For particulars apply to

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MINING ENGINEER and METALLURGIST.

P. O Address: ALAMEDA, CAL.

SAN LORENZO, December 6th, 1877.

MESSRS. DEWEY & CO.—*Gentlemen:* I received the Letters Patent for my invention on the 5th inst., and beg to thank you for the gentlemanly and business-like manner in which you have dealt with me from the beginning of my application. I shall always feel it a pleasure to recommend you to all I come in contact with who need Letters Patent. Respectfully, WM. DALE.

Continued from page 389.

been discontinued for the present. Everything running smoothly and well.

WARD.—Work on the foundations for the new machinery is progressing favorably. The east drift on the 800 level shows little or no change.

SILVER HILL.—As soon as the pumps are all in good running order down to that depth, crosscutting the 1100 level will be commenced. The St. Lonis drift is making good progress.

HALE & NORCROSS.—The joint east drift on the 2000 level is making much better speed, having passed through the belt of hard rock recently strnck into much softer and more favorable ground.

SUTRO TUNNEL.—Total length of south lateral drift toward the Julia shaft from the main tunnel, 936 feet.

YELLOW JACKET.—The south lateral drift on the 2400 level is in a favorable looking formation of clay, quartz and porphyry, showing constant improvement as the drift advances.

SOLID SILVER.—The outskirts of the vein are evidently being passed through, and the drift will soon be into the maiu west ledge itself.

LEVIATHAN.—The main lateral drift north, on the 750 level, is steadily advancing and the increasing amount of quartz stringers met with, indicate nearer proximity to the ore chimney found on the level above.

CROWN POINT.—Sinking the donble incline winze below the 2300 level is making good headway. The east driit from the 2300 station still continues in a favorable character of vein matter. The north crosscnt on the same level is steadily advancing, the face also iu eucouraging veiu formation.

UNION CON.—Sinking the joint Mexican winze below the 1600 level is making good headway, the bottom being in a much softer character of porphyry, carrying occasionally streaks of quartz of a very favorable character.

NORTH BONANZA AND FLOWERY.—The 200 station, 130 feet below the old tunnel level, has been opened and a drift started northward along the east clay wall of the ore vein. The main incline will be pushed on downward to reach and open up another level at the earliest day possible. Sinking the north winze, below the tunnel level on the east clay wall of the ore vein, also makes the best of progress.

GOULD & CURRY.—The joint Best & Belcher crosscut, on the 1700 level, is making steady headway. The east crossents, ou the 1900 level, are also making the best of progress, without any changes of value to report at any point.

CALEDONIA.—The north crosscut on the 1600 level is in a favorable character of quartz aud porphyry mixed. The east drift on the 1600 level is also making good progress, the faco in very hard blasting rock.

JUSTICE.—The mill is kept steadily running on ore from the mine, crushing at the ratc of 600 tons per month.

ALTA.—Driving the main north drift outside of the ore vein on the 1550 level is making the best of headway, the face in good working ground. The north drift on the 1450 level is also making good progress.

SUCCOR.—Sinking the main shaft is going steadily aud energetically ahead, the bottom in good blasting rock.

ALPHA.—Siuking the joint Imperial winze below the 2400 level is making steady headway, the bottom in porphyry streaked with quartz. It is now down 164 feet on the slope.

ATLANTIC CON.—Crossentting from the hottom of the shaft, toward and into the two ledges, progresses well, and the prospects are excellent for pay ore.

OVERMAN.—The nortb lateral drift on the 1600 level is steadily advancing along the ore vein, the face in a very favorable mixture of quartz and porphyry. The east drift on this level is advancing in a very lively, healthy quartz formation. A south crosscut has been started, the face of which shows a lively, favorable ledge formation.

CON. VIRGINIA. — A small amount of ore is being extracted from the old ore stopes on the 1400 and 1500 levels. An upraise is heing made to connect the 1400 and 1500 level, which will greatly assist the ventilation and the extraction of ore on the 1400 level. The main south drift on the 1950 level is making steady progress, the face still in a fine vein formation. It is likely that dnring the eomiug month the extraction of ore from the lower levels will be gradnally iucreased as the weather grows cooler, and the repairs to the air connections are completed.

SIERRA NEVADA.—Sinking the south winze below the 2200 station is going vigorously forward, the hottom of the winze still in ore of fine character. The formation has the same regularity and all the favorable indications that has characterized it for the last 100 feet or more.

SAVAGE.—There is no change in the condition of the water in the main incline. The joint east drift on the 2000 level has passed through the belt of hard rock encountered last week, and the face is again to-day in very soft, favorable rock. The south drift ou the 2100 level from the hottom of the north winze is iu 87 feet, the face in very soft, favorahle porphyry showing streaks of good quartz. The east crosscut on the same level is in 191 feet, the face in soft ground full of clay slips and small veins of quartz.

COLORADO.

SILVER CLIFF.—Pueblo *Chieftain:* A new and important discovery has been made near Silver Cliff in a "chimney" on the Chieftain lode. The lodes radiate from it like the spokes in a wagon hnh, and the shaft is now eight feet deep and it shows better as depth is gained. An assay made at a depth of four feet shows 16 onnces in gold and only a trace of silver. The intersecting lodes are true fissure quartz veins. The excitement is at fever heat, but none but the original discoverers and a few of their friends have been let into the secret. People are prospecting in every directiou but the right one. All the old prospectors from other districts pass the lodes over, thinking them worthless. The whole country is seamed with lodes bearing gold and silver. An assay from the surface rock on the Annie lode showed over 60 onnces of silver. The Copper Hill or Eastman district is on Grape creek about seven miles northeast of Silver Cliff and not more than a mile from the Canyon City stage road, and is very easy of access. Timber of the best quality is plenty in the vicinity, and it is much warmer than at the Cliff or Rosita, being sheltered by the high mountains ou the north. The mines are on the south side of the creek near what is known as Steele's ranch. The indicatious show that there are more craters or chimneys in the vicinity.

OREGON.

MONUMENTAL.—*Idaho Avalanche*, Dec. 7: A receut letter from Independence, Grant county, Oregon, says: "Mr. Stemme, of Portland, President of the Monumental Silver mining company, passed through here recently. He expresses himself as highly pleased with the appearance of the Monumental. During Mr. Stemme's stay the hands were paid off and contracts were let for further work in the mine. The mill, which it was supposed would be erected this fall, will not he put up until spring. The upraise on the ledge is 250 feet high, and running on a large body of good ore, of which there is sufficient on the dump to pay expenses. Some of the larger veins run parallel with the Monumental. They have been encountered to the nnmher of 12, the Monumental proper making 13. The tunnel which was run to tap the main ledge cut the parallel veins mentioned. Among the latter, designated as No. 12, I believe, is the Doyle ledge, carrying gold in paying quantities. The ore from this ledge resembles that fonnd in Gold mountaiu, Independence district. It is ucarly two feet wide and will help out the finencss of the bullion wonderfully. Mr. Harry McCann, well known at Canyon City, and elsewhere through the mouutains, is officiating in the capacity of foreman. Beagle Brothers' ledge still continues to yield handsomely.

BOULDER COUNTY.—Denver *Tribune:* Some improvemeut is manifest among the mines of Boulder couuty of late, and a better feeliug exists in mining circles than some time ago. Carihou is producing more silver than during the past three years and several good strikes are reported in that locality among re-opened veins. The mines of Ward district, Jamestown and Left Hand, are turning out considerable hullion, and Magnolia shows signs of revival. The same may bc said of Gold Hill where the Slide has been paying largely, and Horsfal, Cold Spring and other lately re-opened mines are showing well. The Smnggler at Balarat, and the Melvina near Salina, continue to turn out largely. Several mills and smelters have all they cau do, and altogether the outlook is decidedly promising in most of the districts of this county.

IDAHO.

BLACK JACK.—*Avalanche*, Dec. 7: Work still goes a head at a lively rate and the usual shipments of rich rock are being made to the mill. A quartz house, and other improvements designed to facilitate winter operations have recently been eompleted. Thc adit tnuuel is in nearly 400 feet, running through good ore, and everything wearing a promising appearance.

POTOSI.—New hoisting works are progressing rapidly. The shaft is heing put in good condition, and in a few days there will be plenty of rich ore going away from the mine.

BELLE PECK.—A force of men has recently started up, and Mr. Peck is sanguine that the most favorable results will follow. The Eastern capitalists who bonded that mine a few months ago made a tremendous mistake in abandoning it, and they will discover that to their sorrow before long. We predict, upon the very best practical opinions, that the Belle Peck will yield over $100,000 during the coming six months.

OTHER MINES.—Mr. Vanwie and others are working a miue called the Niagara, near the Empire. They are down 26 feet and the prospects are quite encouraging. Other mines near the Poormau are yielding handsomely.

THE bill for the payment of invalid and other pensions for the next fiscal year, as it passed the House, appropriates $29,366,000, being $250,000 less than the amount estimated, aud $5,500 less than the appropriation for the present fiscal year.

A LIVERPOOL firm is reported to have purchased a steamer for the purpose of importing live pigs from America. The vessel is being fitted up to hold over 2,000 pigs, as well as cattle.

THE first shipment of horses from Amcrica for the nse of the French army arrived during the past week at Havre, and were ordered through Consul Bridgland. The French Military Inspector is much pleased with them.

WE call attention to the advertisement of McDonald & Johnson's Stylograph or Rapid Letter Copying Book.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch from Washington. D. C.

FOR THE WEEK ENDING DECEMBER 3D, 1878.

HOSE CLAMPS—Daniel D. Hayes, San Francisco, Cal.

METHODS OF EXTRACTING GASES OF SEWERS, AND CONSUMING SAME BY COMBUSTION—Barton S. Alexander, San Francisco, Cal.

DREDGING AND DITCHING MACHINES—Daniel Bridges, Coquille, Oregon.

HORSE HAY FORKS—Byron Jackson, Woodland, Cal.

PULVERIZING BARRELS—John C. Senderling, S. F., Cal.

HARROWS.—Tobias A. Hansley, Dayton township, Butte county, Cal.

GANG CULTIVATORS AND SEEDERS—James Sherrill, Harrisburg, Oregon.

ROASTED COFFEE, GROUND SPICES, PEPPER AND MUSTARD—Trademark—Etieune Guittard, San Francisco, Cal.

PREPARED CHOCOLATE—Trademark—Etienne Onittard, San Francisco, Cal.

A PREPARATION FOR REMOVING STAINS, ETC., FROM SILK, WOOLEN, ETC.—Trademark—The Western Manufacturing Co., San Francisco, Cal.

BEER, ALE AND PORTER—Trademark—Schramm & Schnabel, San Jose, Cal.

JAPAN TEAS—Label—Etienne Guittard, S. F., Cal.

EXCELLENT—Label—Etienne Guittard, S. F., Cal. ; E. Guittard & Co., 405 and 407 Sansome street, S. F., Cal.

Bullion Shipments.

Since our last issue, we have noticed the following shipments of bullion :

California.—Bodie, Dec. 13th, $11,920. Extra, Dec. 6th, $1,161.56; Dec. 10th, $2,062.44. Pittsburg, Dec. 11th, $3,850. Standard, Dec. 16th, $17,617.71.

Idaho.—Black Jack, Dec. 9th, $9,574.13. Potosi, Dec. 9th, $1,732.23. Other sources, Dec. 9th, $1,823.40.

Nevada.—California, Dec. 14th, $194,593.72; total to date, $300,929.70. Christy, Dec. 16th, $5,214. Grand Prize, Dec. 16th, $2,800. Hillside, Dec. 12th, $5,315; Dec. 15th, $5,119. Jefferson, Dec. 11th, $2,073.53; Dec. 13th, $2,073.50. Leopard, Dec. 13th, $5,000; Dec. 14th, $5,000. Manhattan, Dec. 13th, $11,387.87; Dec. 17th, $10,939.58. Navajo, Dec. 16th, $5,200. Northern Belle, Dec. 11th, $5,044.84; Dec. 14th, $2,775.70.

Utah.—The following is from the Salt Lake *Tribune:* The Union Express Company received from the Ontario, Dec. 10th, $3,131.47; Dec. 11th, $5,334.62; Dec. 12th, $2,982.22; Dec. 13th, $2,645.20; Silver Reef, Dec. 12th, $1,669.77; Dec. 13th, $5,176.90; Tiutic, Dec. 10th, $1,000.

No season within memory has been so unfortunate for the Greenland whaling fleet as that just past. The whole Scoteh fleet seeured but six whales, and one steamer was totally lost.

THE fencing of North Carolina is valued at $10,000,000, and the stock at $2,000,000. In other words, it takes $5 worth of fencing to protect the crops againts $1 worth of stoek.

FRESH attractions are constantly added to Woodward's Gardens, among which is Prof. Gruber's great educator, the Zoographicon. Each department increases daily, and the Pavilion performances are more popular than ever. All new novelties find a place at this wonderful resort. Prices remain as usual.

EXAMINE the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.94. Lewis C. Grover, President; L. Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Stroug, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

MODEL MAKER AND MACHINIST.—I. A. Heald, No. 514 Commercial St., San Francisco, (fourth floor.)

Chew JACKSON'S BEST Sweet Navy Tobacco.

METALS.

[WHOLESALE.

WEDNESDAY M., December 18, 1878.

IRON.—		
American Pig, soft, ton	23 00	@26 00
Scotch Pig, ton	25 50	@26 50
American White Pig, ton	23 00	@— —
Oregon Pig, ton	26 50	@— —
Refined Bar	2½	@ 3
Horse Shoes, keg	5 00	@— —
Nail Rod	—	@ 7½
Norway, according to thickness	6½	@ 7
COPPER.—		
Sheathing, lb	34	@ 35
Sheathing, Yellow	19	@ 20
Sheathing, Old Yellow	—	@—
STEEL.—		
English Cast, lb	16	@ 17
Black Diamond, ordinary sizes	16	@— —
Drill	16	@ 17
Flat Bar	16	@ 19
Plow Steel	8	@ 12½
TIN PLATES.—		
10x14 I C Charcoal	8¾	@ 9
10x14 I C Coke	7	@ 7½
Banca Tin	18	@— 20
Australian	16½	@ 17
ZINC.—		
By the Cask	9	@— —
Zinc, Sheet 7x3 ft. 7 to 10, lb, less than cask	9½	@— 10
NAILS.—		
Assorted sizes	2 90	@3 00

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, December 18, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., par. SILVER, 2@2½.

GOLD in New York, 100¾.

GOLD BARS, 890@910. SILVER BARS, 8@22 ₰ cent. discount.

EXCHANGE on New York, 35, on London bankers, 491@493. Commercial, 50; Paris, five francs ₰ dollar; Mexican dollars, 83@90.

LONDON Consols, 94 7-16; Bonds, 105⅞.

QUICKSILVER in S. F., by the flask, ₰ lb, 40@41c.

LUMBER.

WEDNESDAY M., December 18, 1878.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE	
		RETAIL PRICE.	
Rough, M	13 00	Rough, M	18 00
Refuse	9 00	Fencing	18 00
Clear	23 00	Flooring and Step	28 00
Clear Refuse	13 00	Narrow	30 00
Rustic	23 50	2d quality	25 00
Refuse	18 00	Laths	3 50
Surfaced	20 00	Furring, lineal ft	¢
Refuse	14 00	REDWOOD.	
Flooring	20 00	RETAIL PRICE.	
Refuse	12 00	Rough, M	18 00
Beaded Flooring	23 00	Refuse	14 00
Refuse	13 00	Pickets, Rough	15 00
Half-inch Siding	16 00	Pointed	16 00
Refuse	14 00	Fancy	22 50
Half-inch Surfaced	20 00	Siding	20 50
Refuse	14 00	Surfaced & Long Beaded	30 00
Half-inch Battens	16 00	Flooring	30 00
Pickets, Rough	11 00	Refuse	22 50
Rough, Pointed	12 50	Half-inch Surfaced	30 00
Fancy, Pointed	18 00	Rustic, No. 1	30 00
Shingles	1 75	Battens, lineal ft	
		Shingles M	2 00

Signal Service Meteorological Report.

SAN FRANCISCO.—Week ending December 17, 1878.

HIGHEST AND LOWEST BAROMETER.

Dec 11	Dec 12	Dec 13	Dec 14	Dec 15	Dec 16	Dec 17
30.11	30.17	30.41	30.48	30.37	30.21	30.18
30.07	30.13	30.19	30.38	30.22	30.14	30.09

MAXIMUM AND MINIMUM THERMOMETER.

57.5	56	55	53.7	54	53.7	53.3
49.5	43	47	42	43	43.5	42

MEAN DAILY HUMIDITY.

43	39	38	50	63	56	59

PREVAILING WIND.

N	N	NE	N	N	NW	NW

WIND—MILES TRAVELED.

395	344	390	145	145	171	222

STATE OF WEATHER.

Clear.	Clear.	Clear.	Clear.	Clear.	Clear.	Clear.

RAINFALL IN TWENTY-FOUR HOURS.

Total rain during the season, from July 1, 1878, 2.63 in.

Mining and Other Companies.

Persone interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

General Robert Allen Silver Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Globe Mining District, Pinal County, Arizona.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 1) levied on the 29th day of October, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
John J Cushing	8	3000	$750 00
Robert Allen	12	1000	250 00
Robert Allen	13	440	110 00
Wm N Grier	23	200	50 00
Rufus Ingalls	31	100	25 00
Rufus Ingalls	32	100	25 00
R M Batchelder	85	200	50 00
H Prince	30	200	50 00
W H Jameson, Jr	37	200	50 00
W H Duryea, Trustee	40	10	2 50
W V Kingsbury, Trustee	56	500	125 00
S Simon, Jr	57	500	125 00
S Simon, Jr	58	500	125 00
S Simon, Jr	59	500	125 00
S Simon, Jr	60	500	125 00
S Simon, Jr	61	500	125 00
S Simon, Jr	62	500	125 00
S Simon, Jr	63	500	125 00
S Simon, Jr	64	500	125 00
S Simon, Jr	65	500	125 00
S Simon, Jr	66	500	125 00
S Simon, Jr	67	100	25 00
S Simon, Jr	68	100	25 00
S Simon, Jr	69	100	25 00
S Simon, Jr	70	100	25 00
S Simon, Jr	71	100	25 00
S Simon, Jr	72	100	25 00
S Simou, Jr	73	100	25 00
S Simon, Jr	74	100	25 00
S Simon, Jr	75	100	25 00
S Simon, Jr	76	100	25 00
Julius Fay	77	300	75 00
W H Duryea, Trustee	79	5000	1250 00
E Heller	81	25	6 25
John D Wilson	82	25	6 25
Robert Allen	84	100	25 00
John D Wilson, Trustee	88	500	125 00
Marie Pascal	91	600	150 00
H H Lawrence, Trustee	113	335	83 75
H H Lawrence, Trustee	114	50	12 50
H H Lawrence, Trustee	118	250	02 50
H H Lawrence, Trustee	119	100	25 00
H H Lawrence, Trustee	120	150	37 50
Wm V Kingsbury	121	500	125 00
Jacob Hardy, Trustee	122	20	5 00
Jacob Hardy, Trustee	124	20	5 00
Jacob Hardy, Trustee	128	115	28 75
Jacob Hardy, Trustee	129	50	12 50
C E Stevens, Trustee	130	10000	2500 00
C E Stevens, Trustee	131	10000	2500 00
C E Stevens, Trustee	133	10000	2500 00
C E Stevens, Trustee	134	10000	2500 00
John D Wilson, Trustee	139	1550	387 50
Thomas Arthur	140	100	25 00
C Stevens	141	100	25 00
H H Lawrence	142	10	2 50
Jos G Wilson	47	10	2 50
U Simon	149	1000	250 00
U Simon	150	1000	250 00
U Simon	151	1000	250 00
U Simon	152	1000	250 00
U Simon	153	1000	250 00
U Simon	154	1833	458 25
C E Stevens, Trustee	155	5000	1250 00
C E Stevens, Trustee	156	50	12 50
C E Stevens, Trustee	157	783	195 75
C E Stevens, Trustee	159	4000	1000 00
C E Stevens, Trustee	161	2000	500 00
C E Stevens, Trustee	163	2000	500 00
M C Southard, Trustee	164	7890	1972 50
H H Lawrence	168	1400	350 00
John D Wilson	138	10	2 50

And in accordance with law, and an order of the Board of Directors made on the 29th day of October, 1878, so many shares of each parcel of such stock as may be necessary will be sold at public auction, at the office of said association, 411½ California street, San Francisco, California, on Thursday, the second (2d) day of January 1879, at the hour of 12 o'clock of said day, to pay said delinquent assessment thereon, together with cost of advertising and expenses of the sale.

M. C. SOUTHARD, Secretary.

Office, Room 11, 411½ California St., San Francisco, Cal.

Land Purchaser's Association. — Office,

No. 318 Montgomery Street, San Francisco, California.

NOTICE -There are delinquent upon the following described stock, on account of assessment (installment No. 43) levied on the 5th day of November, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount
Mrs Matilda Stohr	38	1	$4 00
James L Beyca	43	1	4 00
V Chevallier	64	1	4 00
Geo S Dickey	98	1	4 00
W G Koch	178	1	4 00
Asa Fisk	220	1	4 00

And in accordance with law, and an order of the Board of Directors, made on the 5th day of November, 1878, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the Secretary, No. 318 Montgomery street, San Francisco, California, on Saturday, the fourth (4th) day of January, 1879, at the hour of 10 o'clock A. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

C. S. WRIGHT, Secretary.

Mineral Fork Mining and Smelting Com-

pany.—Location of principal place of business, San Francisco, California. Location of works, Big Cottonwood District, Salt Lake County, Utah Territory.

NOTICE.—There are delinquent upon the following described stock on account of assessment (No. 1) levied on the 31st day of October, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
G Areskog	156	50	$ 1 00
G Areskog	157	50	1 00
W H Atwood	185	100	2 00
W H Atwood	186	100	2 00
W H Atwood	187	100	2 00
W H Atwood	188	100	2 00
W H Atwood	189	100	2 00
Wm Atwood	190	100	2 00
Wm Atwood	191	100	2 00
Wm Atwood	192	100	2 00
Wm Atwood	193	100	2 00
Wm Atwood	194	100	2 00
G Bearson	105	100	2 00
G Bearson	115	100	2 00
G Bearson	116	100	2 00
G Bearson	117	100	2 00
G Bearson	118	100	2 00
G Bearson	119	100	2 00
G Bearson	136	66	1 32
H L A Culmer	295	50	1 00
H L A Culmer	296	50	1 00
H L A Culmer	297	100	2 00
H L A Culmer	298	100	2 00
H L A Culmer	299	100	2 00
Wm H Culmer	378	10	20
Wm H Culmer	379	50	1 00
Wm H Culmer	380	50	1 00
Chs G Denicke	434	50	1 00
Chs G Denicke	435	50	1 00
Chs G Denicke	436	50	1 00
Chs G Denicke	437	50	1 00
A S Easton	4	75	1 50
A S Easton	365	350	7 00
E E Elliott	105	100	2 00
E E Elliott	196	100	2 00
E E Elliott	197	100	2 00
E E Elliott	198	100	2 00
E E Elliott	201	17	34
E E Elliott	271	25	50
E E Elliott	272	25	50
E E Elliott	274	10	20
E E Elliott	275	10	20
E E Elliott	217	50	1 00
E E Elliott	218	50	1 00
E E Elliott	220	50	1 00
E E Elliott	222	200	4 00
E E Elliott	224	200	4 00
E E Elliott	225	200	4 00
E E Elliott	226	200	4 00
E E Elliott	228	200	4 00
E E Elliott	229	200	4 00
E E Elliott	230	200	4 00
E E Elliott	231	200	4 00
E E Elliott	233	100	2 00
E E Elliott	234	100	2 00
E E Elliott	371	50	1 00
E E Elliott	372	50	1 00
E E Elliott	373	50	1 00
E E Elliott	374	50	1 00
E E Elliott	375	100	2 00
E E Elliott	376	100	2 00
E E Elliott	377	100	2 00
E E Elliott, Trustee	503	10	20
E E Elliott, Trustee	504	10	20
E E Elliott, Trustee	505	10	20
E E Elliott, Trustee	506	10	20
E E Elliott, Trustee	507	10	20
E E Elliott, Trustee	508	10	20
E E Elliott, Trustee	509	10	20
E E Elliott, Trustee	510	10	20
E E Elliott, Trustee	511	10	20
E E Elliott, Trustee	513	10	20
E E Elliott, Trustee	514	10	20
E E Elliott, Trustee	515	10	20
E E Elliott, Trustee	516	10	20
E E Elliott, Trustee	517	10	20
E E Elliott, Trustee	518	10	20
E E Elliott, Trustee	519	10	20
E E Elliott, Trustee	520	10	20
E E Elliott, Trustee	521	10	20
E E Elliott, Trustee	522	10	20
E E Elliott, Trustee	523	10	20
E E Elliott, Trustee	524	10	20
E E Elliott, Trustee	525	10	20
E E Elliott, Trustee	526	10	20
E E Elliott, Trustee	527	10	20
E E Elliott, Trustee	528	25	50
E E Elliott, Trustee	529	25	50
E E Elliott, Trustee	530	25	50
E E Elliott, Trustee	531	25	50
E E Elliott, Trustee	532	25	50
E E Elliott, Trustee	533	25	50
E E Elliott, Trustee	534	25	50
E E Elliott, Trustee	535	25	50
E E Elliott, Trustee	536	25	50
E E Elliott, Trustee	537	25	50
E E Elliott, Trustee	538	50	1 00
E E Elliott, Trustee	539	50	1 00
E E Elliott, Trustee	540	50	1 00
E E Elliott, Trustee	541	50	1 00
E E Elliott, Trustee	542	50	1 00
E E Elliott, Trustee	543	50	1 00
E E Elliott, Trustee	544	50	1 00
E E Elliott, Trustee	545	50	1 00
E E Elliott, Trustee	546	50	1 00
E E Elliott, Trustee	547	50	1 00
E E Elliott, Trustee	512	10	20
W W Elliott	208	100	2 00
W W Elliott	209	100	2 00
W W Elliott	210	100	2 00
Frank Foote	381	250	5 00
B A M Troisith	568	20	40
B A M Troisith	569	20	40
Edwin Gardner	202	100	2 00
Edwin Gardner	203	100	2 00
Edwin Gardner	204	100	2 00
Edwin Gardner	205	100	2 00
Edwin Gardner	206	100	2 00
S J Jonasson	181	25	50
S J Jonasson	182	25	50
S J Jonasson	134	67	1 34
Peter Jhonson	333	100	2 00
Peter Jhonson	334	100	2 00
Peter Jhonson	336	100	2 00
Peter Jhonson	338	100	2 00
Peter Jhonson	340	100	2 00
Peter Jhonson	342	100	2 00
Peter Jhonson	346	50	1 00
Peter Jhonson	348	50	1 00
Peter Jhonson	349	50	1 00
Peter Jhonson	350	50	1 00
Peter Jhonson	351	50	1 00
Peter Jhonson	353	50	1 00
Peter Jhonson	354	50	1 00
Peter Jhonson	355	50	1 00
Peter Jhonson	357	50	1 00
Peter Jhonson	358	50	1 00
Peter Jhonson	359	50	1 00
T F Nystrom	247	100	2 00
T F Nystrom	248	100	2 00
T F Nystrom	249	50	1 00
T F Nystrom	250	50	1 00
T F Nystrom	251	33	66
R B Noyes	270	300	6 00
Samuel Purdy	250	100	2 00
W C Pease, Trustee	607	18	36
W C Pease, Trustee	608	18	36
G Peterson	75	100	2 00
G Peterson	85	100	2 00
G Peterson	87	100	2 00
G Peterson	88	100	2 00
G Peterson	89	100	2 00
G Peterson	96	50	1 00
G Peterson	100	50	1 00
G Peterson	102	50	1 00
William Russell	276	10	20
William Russell	277	5	10
William Russell	278	5	10
P H Sumner	19	5	10
P H Sumner	20	70	1 40
P H Sumner	180	66	1 32
Edgar Sheldon	291	250	5 00
Edgar Sheldon	292	250	5 00
Edgar Sheldon	293	250	5 00
Edgar Sheldon	294	250	5 00
F C Thompson	243	50	1 00
F C Thompson	244	50	1 00
F C Thompson	245	33	66
Theodore Tangwell	328	50	1 00
C F Winslow, Trustee	555	500	10 00
C F Winslow, Trustee	556	277	5 54
C F Winslow, Trustee	561	50	1 00
C F Winslow, Trustee	562	100	2 00
C F Winslow, Trustee	563	100	2 00
C F Winslow, Trustee	564	100	2 00
C F Winslow, Trustee	565	100	2 00
C F Winslow, Trustee	566	100	2 00
C F Winslow, Trustee	567	50	1 00
C F Winslow, Trustee	570	250	5 00
C F Winslow, Trustee	571	250	5 00
C F Winslow	237	5150	103 00
C F Winslow	301	1000	20 00
C F Winslow	308	1700	34 00
C F Winslow	309	1000	20 00
C F Winslow	310	1000	20 00
C F Winslow	311	1000	20 00
C F Winslow	312	1000	20 00
C F Winslow	314	250	5 00
C F Winslow	318	100	2 00
C F Winslow	324	100	2 00
Ronde N Walter	246	84	1 68
A Winguist	56	100	2 00
A Winguist	62	100	2 00
A Winguist	66	50	1 00
A Winguist	67	50	1 00
A Winguist	68	50	1 00
A Winguist	69	50	1 00
A Winguist	70	50	1 00
William Schade	24	50	1 00
William Schade	25	50	1 00
William Schade	53	100	2 00
William Schade	54	100	2 00
William Schade	55	100	2 00
Otto Metchke, Trustee	600	14	28

And in accordance with law, and an order of the Board of Directors, made on the 31st day of October, 1878, so many shares of each parcel of such stock as may be necessary, will be sold at public auction at the office of the Company, Room 20, Safe Deposit Building, No. 328 Montgomery Street, San Francisco, California, on Monday, the thirtieth (30th) day of December, 1878, at the hour of 12 o'clock M. of such day, to pay delinquent assessments thereon, together with costs of advertising and expenses of the sale. OTTO METCHKE, Secretary.

Office, Room 20, Safe Deposit Building, No. 328 Montgomery St., San Francisco, California.

Orion Mining Company. — Location of

principal place of business, San Francisco, California. Location of works, Iowa Hill, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 12th day of December, 1878, an assessment (No. 4) of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, No. 28 Sansome street, Sao Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 13th day of January, 1879, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Tuesday, the 28th day of January, 1879, to pay the delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors. P. CONKLIN, Secretary.

Office, No. 28 Sansome St. (up-stairs) Sao Francisco, Cal.

Summit Mining Company.—Location of

principal place of business, San Francisco, California. Location of works, Mineral Point Mining District, Plumas County, California.

Notice is hereby given, that at a meetiug of the Board of Directors, held on the nineteenth day of November, A. D., 1878, an assessment, (No. 6,) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of said Company, 318 Pine street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the sixth (6th) day of January, A. D., 1879, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the fourth day of February, A. D., 1879, to pay the delfquent assessmeot, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W CLARK, Sec'y.

Office, Room 6, No. 318 Pine Street San Francisco, Cal.

The California Fruit Growing Association.

—Locatioo of priocipal place of husioess, San Fraocisco, California. Locatioo of property, El Dorado Conoty, California.

Notice is hereby given, that at a meetiog of the Directors held on the first day of August, 1878, an assessment (No. 9) of three ($3) dollars per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the Company, No. 641 Sacramento street, Sao Francisco, Cal.

Any stock upon which this assessment shall remaio unpaid on the 30th day of September, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Monday, the 21st day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, San Francisco, Cal.

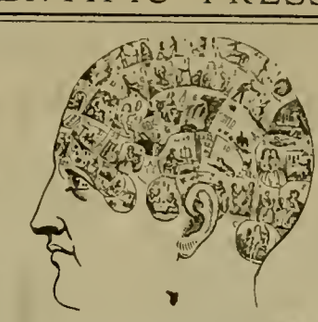
POSTPONEMENT.—At a meetiug of the Board of Directors of the California Fruit Growing Association, held September 23d, 1878, it was resolved that the day of above assessment becoming delinquent be postpooed till Saturday, the 26th day of October, 1878, and the day of sale of delioquent stock is herehy postpooed to Friday, the 22d day of November, 1878. D. A. BROWN, Sec'y.

Office, No. 641 Sacramento street, Sao Francisco.

POSTPONEMENT.—At a meeting of the Board of Directors held on the Ninecteoth day of October, 1878, it was resolved that the day of above assessment becoming delinqueot be postponed till November 30th, 1878, aod the day of sale of delinquent stock is hereby postponed to December 21st, 1878.

D. A. BROWN, Sec'y.

Office, No. 641 Sacramento Street, San Fraocisco, Cal.



Barlow J. Smith. M. D.

Consulting Physician,

Professor of Phrenology and Mental Hygiene.

Proprietor of the Smithsonian Medical and Phrenological Institute, 635 California Street, above Kearny.

This Institute, by combining medical hygiene with the various Water Cure treatments and the most powerful Electrized Horseshoe Magnet in the world, claims to cure speedily and permanently all forms of acute or chronic nervo-vital derangements, Brain, Spinal and Heart diseases, St. Vitus Dance, Palsy, Epilepsy and all Rheumatic, Liver and Kidney troubles. The institution has for the past 20 years made a specialty of treating all forms of weaknesses and diseases peculiar to males and females. By the use of hygienic remedies and electro-motorpathy the worst forms of impoteocy and seminal weakness in males and sterility in females are speedily and permanently overcome. Hygienic board, with or without rooms. Terms moderate. Electro-thermal, Russo-Turkish and Medicated Baths given daily.

Mrs. Dr. Smith as Matrou has charge of the female bathing department.

DR. SMITH has practiced Phrenology the past 30 years, and during the last 20 years has been constantly using the science connected with Physiognomy, in examining or diagnosing disease in this city, and claims to have made discoveries in the SCIENCE of Phrenology that enables him, by an examination of the head, even bliudfolded, to determioe the disease to which the person is constitutionally subject, or whether the disease at the time afflicting the person, is the result of accident or hereditary weakness; whether CONSUMPTIVE, DYSPEPTIC, RHEUMATIC, APOPLECTIC NEURALGIC, LEUCORRHEAL, or SEMINAL. Especially does the form of the head indicate the strength of the uterine, genital or reproductive system. The head is also an index of the natural strength of the lungs, heart, stomach, liver, kidneys, spleen, back or vertebra, and it determines the power of the system in warding off and overcoming disease of all kinds.

Ladies or gentlemen, desirous of obtaining a thorough and correct Phrenological examinations with Fowler and Wells' charts, will meet with a respectful reception at his consulting rooms. Parties can depend upon a reliable delineation of the character of their intimate male or female friends, by presenting a clearly defined photograph.

Phrenological or Physiognomical exaoinations without charts, $1.50; with charts, from $2 to $3.

INVITATION TO INVALIDS

And all persons who are in any way out of health, who desire to know the nature and causes of their disease, may avail themselves of an examination through phrenology in regard to health free of charge, between the hours of 9 A. M. and 8 P. M. Sundays from 9 A. M. to 12 M.

Mill and Mining Machinery Of All Kinds For Sale by BERRY & PLACE

At the Old Stand, Market, head of Front Street, S. F.

ARTESIAN Well Drilling, Boring,

MINERAL PROSPECTING and QUARRYING TOOLS.

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The accompanying drawing illustrates one of the patent transparent block ice making machines manufactured by the WESTERN SHORE ICE COMPANY. To this apparatus a very plain and simple Steam Engine is attached for working the Air pump. This is made direct acting, by which means the use of all belts or gear wheels is avoided. Where, however, a separate motor exists, the Machine may be had without the Steam Engine, in which case there is of course a consequent proportionate reduction in the cost.

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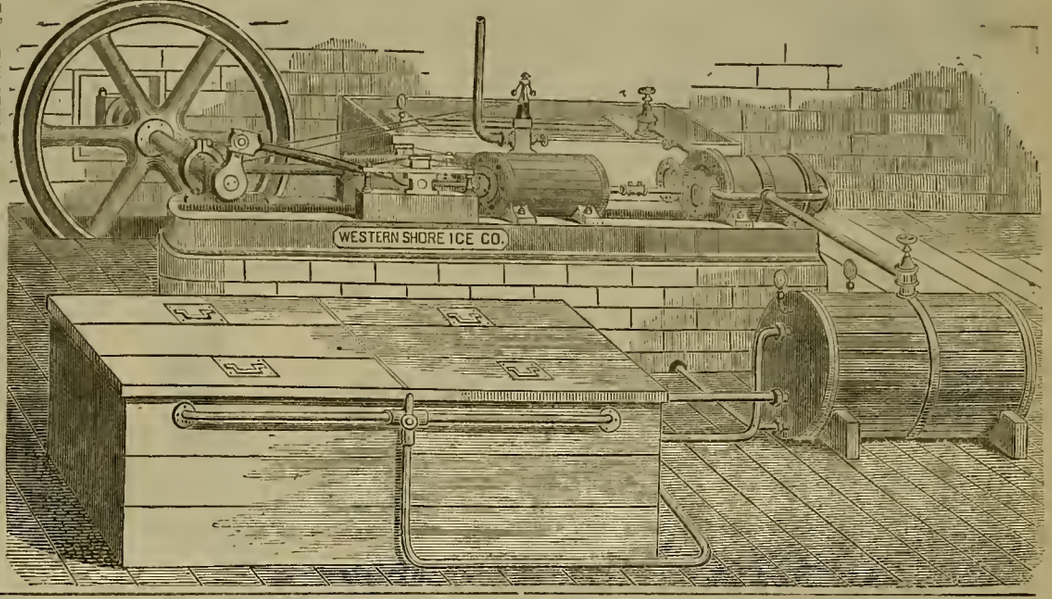
All Machines Sold will be Accompanied by a Guarantee.



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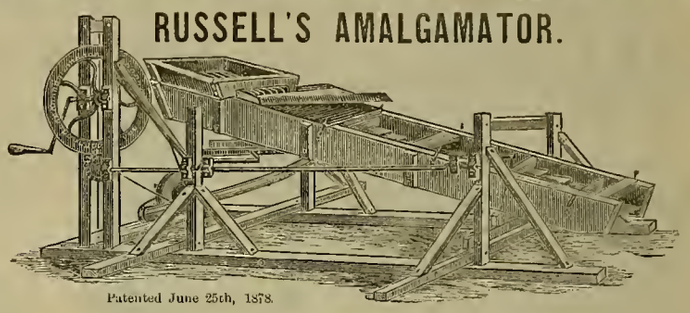

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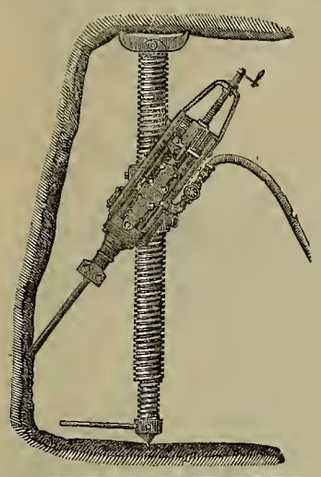

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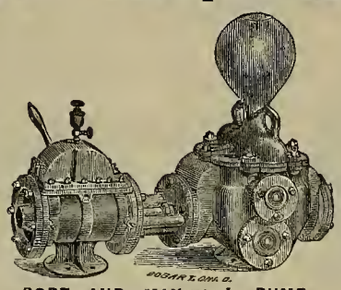

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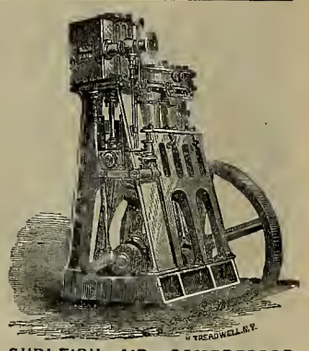

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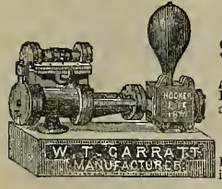
GARDEN HYDRANTS
General Assortment of Engineers' Findings.



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STEAM PUMP
The Best and Most Durable in use. Also, a variety of other
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For Ventilating Mines and for Smelting Works.
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For Mining Purposes.
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ALL KINDS OF
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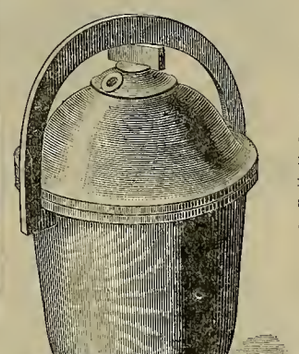
AT LOWEST RATES.

Dewey & Co. { 202 Sansome St } **Patent Ag'ts**

THE NEVADA OVAL TOP RETORT.

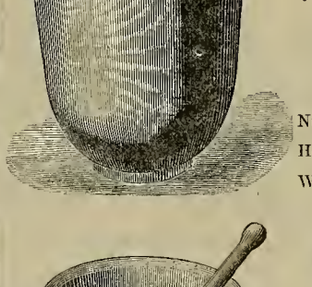


The advantage of this Retort over the OLD FLAT PATTERN is, that it can be filled full of Amalgam, thereby holding more than the old style, besides avoiding all danger of an explosion owing to the crown space in the cover which allows for the expansion. They are made extra heavy, WELL GROUND in the joints, and are furnished with a strong Norway clamp, having a wrought iron key which can be driven in or out of place by a single stroke of a hammer.

The Annoying Thumb-Screws are Entirely Done Away With.

We Make Seven Sizes, as follows:

Number or Pints	1	2	3	4	5	6	10
Holds Pounds Quicksilver	12½	25	38	50	63	75	125
Weight each.....10lbs	15	18	25	31	44	65	



Mortars and Pestles,

GROUND INSIDE.

Size—Quarts	½	1	2	4	6	8	12	16
Hight—Inches	3½	5	6	7½	8½	9	11	1
Weight—Pounds	6½	9	16	22	37	43	72	86

Bullion Ladle.

Forged from one piece of Charcoal Iron, eight inches in diameter by four inches deep.

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DUNHAM, CARRIGAN & CO., Agents, San Francisco.

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Judson Powder

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Celebrated
Governor

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Never one has Failed.

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BERRY & PLACE,
Market, head of Front St., San Francisco.

DEFLECTORS,
Or Perkins vs. Hoskin.

W. H. PERKINS has for nearly two years been threatening orally and through the Press to prosecute all persons using my Patent Deflecting Nozzle, but for *good reasons*, has failed to come to time. I want miners to understand that Deflectors are still manufactured and sold, and that I will defend all suits and assume all responsibility. Mr. P. will confer a favor if he will carry out his threat, as it will afford me the opportunity I desire to again try the case, and he can rest assured that *professional dodges* will not again be allowed to *temporarily* thwart the ends of justice.

I feel confident that the Supreme Court of the United States will ultimately decide in my favor. The superiority of my invention is shown by the means which Mr. P has resorted to in trying to stop my sales. Mr. P. has so degraded himself as to circulate statements which he knows to be *falsc and malicious*. Notwithstanding the great number of my Deflectors in use, I have heard of but one accident, and this was caused by the breaking of the iron lever from a defect in the material and great carelessness in use. This circumstance Mr. P. has magnified into several deaths and numerous accidents. I refer to the following owners and Managers for testimonials as to safety and efficiency. Some of them have used and discarded Mr. Perkins' device in favor of my much superior one. Messrs. Gould, Gold Run, using 4; Spaulding, Dutch Flat, on different mines, 12; Stone, Gold Run, 2; Morgan, Little York, 6 Bisbee, Iowa Hill, 2; Briere & Wheeler, Bath, 2; Mr. Gillvary, Forest Hill, 4; Atkins, Weaverville, 2. I could mention scores of others, but these are sufficient.

Mr. Perkins' device is an infringement on a patent owned by Mr. Craig, who is about to institute legal proceedings to protect his rights. Miners are advised to stand from under. A word to the wise is sufficient. R. HOSKIN,

Manufacturer of Machines for Hydraulic Mining. Address, No. 29 Garden Street, San Francisco, or Empire Foundry, Marysville, Cal.

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Publishers.

SAN FRANCISCO, SATURDAY, DECEMBER 28, 1878.

VOLUME XXXVII Number 26.

Whaling Rocket Trial.

We witnessed in Oakland creek last week, a trial of the Roys & Liliendahl whaling rocket, which took place in presence of a number of persons intereeted in the whale fisheries, among thom Capt. Truman of the *Sea Breeze*, Capt. Halsey of the brig *Siberia*, Capt. Bourne, Capt. Smith, Mr. Thompson, Mr. Brooks, mate of the *Hunter*, and other officers of whaling vessels. The Roye whaling rocket has been known for a number of years, but its introduction and use has not been successful, for the reason that the defects in construction operated against its efficiency. Messre. Fletcher & Suits, owners of patent rights for this coast, experimented with the rocket for some time in order to test it and find out the defecte, knowing the principle was good. They found that it had been previously made too light, and that there was not power enough in it. Moreover, in order to make it cheap, the details of tbe construction had not been carefully worked out. They have improved upon the rocket, made it heavier and stronger, and finally made a practical theory of it. Their succese is evident from the fact that outside of the harbor, during the year, they killed 35 whalee—hump-back, sulphur bottom and fin-back—using the rocket from a emall steam launch.

The apparatue consists of a strong brass cylinder containing the projectile charge. This is loaded with a peculiar powder, made by Fletcher & Suits themselves. In the front of this is secured a bomb containing an explosive charge, and inside of it is a harpoon attached to the shell. An iron is secured to tbe rear end of tbe rocket, to which is attached tbe wbale line. The bomb has a hearded or barbed point, and wheu projected into the whale by the rocket, explodes inflicting a fatal wound. At the same time the harpoon takes its hold, and the boat is fastened to the whale by tbe lino attached to the iron. These shots are good for killiug and fastening to a whale at 30 fatboms distauce, which is, of course, very much further than an ordinary harpoon is available. The whole apparatus weighs 32 pouuds, and from the point of the bomb to rear end of iron ie seven feet five inchee in length.

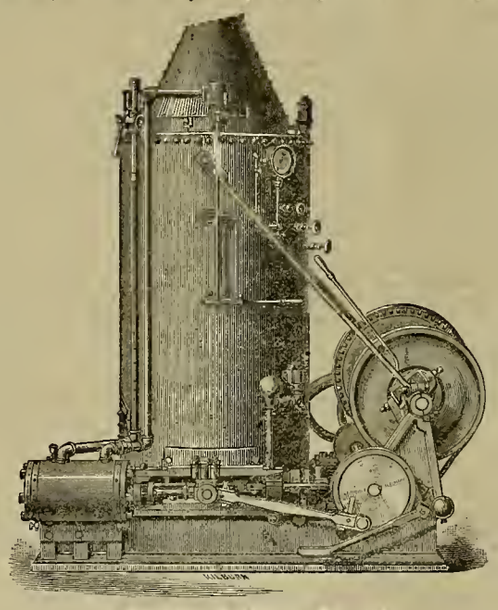
A peculiar reet is used in firing the rocket, having on it a shield to protect the operator from the fire which issues from the rear end of the rocket. The rocket is set in the rest, the rear end of which is placed on the shoulder, and by discharging a pistol charge into a hole provided for the purpose—after aim ie taken— the projectile is discharged and the rocket powder carries the rocket, bomb and line in the direction required.

At the trial the other day, the apparatus was placed on a boat and the spectators were on tbe whaler *Dawn*, now lying in Oakland creek. A tub was allowed to float down the stream and was used ae a target. A young man named Stanley, who is expert in the use of the rocket, fired the first shot at the tub, the projectile striking within a few inches of it. Then Capt. Truman of the *Sea Breeze*, fired a shot, gauging so as to take water short of the tub, in a position which would strike the whale's belly. The shot weut as directed, passing close under tne tub. Capt. Truman sat down, not having braced himself. There is, however, very little recoil, and that is taken by the standard which answers to hold the rest. Capt. Halsey, of the *Siberia*, then fired a shot, which was also inteuded for the whale's belly. It passed immediately under the tub. Those who had not seen the rocket fired before were all surprised at the accuracy with which it went ; even when fired hy those unaccustomed to its use. Any one of the shote would havo killed. All of those present expressed themselves highly pleased with the exhibition. There were several there who had previously used the rocket, but others had not, and it was for the edification of the latter that the trials were made.

Already some six vessels have outfitted with this apparatus for tbe Arctic, each carrying from five to fifty shots. One vessel is to leave shortly, taking with her a steam launch and an outfit of these rockets, hunting the whale with steam and powder instead of oars and muscle. By the use of this peculiar rocket, in the Arctic, where the bowhead are so shy, the whale can be killed anywhere within a distance of 30 fathoms, while on the way it is very difficult to get near enough to them to kill. Very littlc practice will enable any one to shoot tbe rocket very accurately, and wherever it strikes it kills, no whalo getting away wheu struck. Messrs. Fletcher & Suits have acquired the right of manufacture and sale of these rockets for thie market, and will probably fit out nearly the whole whaling fleet this seasou. Capt. Williams, an owner of three whaliug vessels, is so convinced of the efficicucy of the apparatus, that he sayshe wouldn't go on a whaling voyage without it. In fact, its introduction as part of a whaler's outfit is no longer matters of doubt, all those who have used it speaking highly of the apparatus.

A Report on the Minerals at Paris.

When the Pacific Coast mineral specimens were sent on to the Paris exhibition in charge of Mr. H. G. Hanks, they were forwarded and all the expenscs paid by the liberality of a private citizen of Nevada, Mr. John Mackay. The



IMPROVED HOISTING ENGINE.

State did not contribute a cent, and even the expenses of the California State Commissioners were paid by the gentleman mentioned. When Mr. Hanks arrived there he was appointed director of the mineral department of the United States, by the Commissioner General, and had charge of the whole exhibit of this country. The exhibit attracted a great deal of attention from mining men and mining engineers from all over Europe, and although a very full catalogue had been prepared for distribution, there was, and is great demand, for our official report. This report should he on all our minerals, rocks, fossils, etc, exhibited at the exposition, and should be distributed in Europe and America gratis, hy the State. Such a report is expected and has been conditionally promised.

According to Mr. Hanks' plan, which he has explained to us, the report would be a credit to the State and to all interested. There would be two maps, one a map of California, printed in colors, showing the geology as far as known, with the locality of our gold, silver, lead, copper, quicksilver, etc. The second map would be an outline and showing the position of California as a commercial center. We would show the coast of China, Japan, Australia, British Columbia, Alaska, Russian Possessions, South Sea Islands, Mexico, and Central and South America, in outline, with California in colors.

The first one hundred pages more or less of the report would be devoted to the geography, history, geology, commercial statistics, etc., of California, with general discription and statistics of the natural products of the State other than mineral. This part would be followed by descriptions of all the minerals exhibited at the exposition in detail, giving analysis, locality, mode of occurrence, uees, quality, etc. The third part would be a full account of all the gold, silver, quicksilver, lead, tin, and other mines represented at Paris, arranged by counties. Under the head of "gold" before the individual mines are described in detail, a general description of the gold mines on the coast will be given with descriptions of methods of prospecting, melting, and refining, including the hydraulic mining proccsses in which other countriee are specially interested. Full tables of the gold production of the State would also be published. The same plan would be adopted with the other metals under each heading.

Such a work as Mr. Hanks has planned would be valuable to other countries of the world as well as to our own citizene, and would be executed typographically in the beet style to compare favorably with the reports of the French government. Tbat government, particularly, takee great interest iu our metallurgical processes. We have before us, as we write, two pamphlets issued by the Society for the Encouragement of National Industry, during the expesition. One of tbese is a report by M. Troest, on the borax mines of California, prepared by Emile Durand. Another is on the "Metallurgy of Mercury in California," by M. G. Rolland. This givee detailed description of the various processes, with engravings, of the Livermore, Scott & Huttner, Knox & Osborne, and other furnaces, as well as the various condeusers in use. Such pamphlets should emauate from California itself, not from a foreign government, as all the information contained therein is more valuable to our citizens than to others.

It is found that there is no fund from which the Governor of the State can appropriate money for the publication of the Commissioners' report. He expresees himself as willing to assist the publication of the report, hut is powerless in the matter of the use of State money for the purpose. The publication should not be delayed until the Legislature meete. It is, of course, already known that California paid no expenses of the exhibit at Paris, hut at leaet she should pay for a report on it, such as Mr. Hanks proposes. Mr. Hanks wae recommended by the Governor to represent the State, and received his appointment from the President on this recommendation. It seems too bad that there will be no record of the whole proceeding frem official sources, unless private citizene contribute. A report of this character would bo extremely valuable to the citizene of this State and this coast, and it is to be hoped that money will be forthcoming from eome quarter for its publication.

The Geological Section.

The last two meetinge of the Geological Section of the Academy of Sciencee, have been of considerable intercet. Prof. Price presented a specimen of a mineral, probably the selenite of lead, from Nevada, which is, as far as is known, the first epecimen found on the coast. Indeed the only specimen which has yet been known ie an imperfect one from which Dana was compelled to describe it. Some of the parte of the specimen ehow nearly perfect crystale, and it is boped that Mr. A. W. Jackson will be successful in determining its crystalline form, as he promises to do. Prof. Price found that the mineral contained selenium, but has not as yet had time for any further analysis.

Mr. G. D. Gibbee presented a very interesting paper upon the subject of artesian wells, whicb we shall print in full shortly. Prof. Price followed with some remarke upon the purity of tbe water from these wells. He stated that the water, while it was certainly exposed to contamination with the drainage of the city, at the same time ae far as the analysis he had made had gone, he had never found the presence either of albumenoid mattere or of nitrates, or of ammonical compounde; and that the water had always proved to be pure enough for all usee. He found that the water from the serpentine rocks was usually richer in carbonates of lime and magnesia, while that from the saudstones was richer in sulphates and chloridee, with less of magneeia and more of lime.

Mr. S. B. Chriety presented the notes of some study and investigations, upon which he has for a long time been engaged, on the eubject of the "Genesis of Quicksilver Deposits." Ae this paper will also be shortly published in full, we give only some of the main points. The results of experiments with solutions in closed tubes at temperatures from 150° to 250° centegrade, and pressures from 150 to 400 lbs. of steam, sbowed that the sulphide of mercury was insoluble botb in solutions of alkaline carbonates and silicates, but where to tbe eame solutions sulphydric acid was added, the eulphide was disselved and cinnabar was formed. Mr. Christy was also able to produce cinnabar from the amorphous sulphide by treating it in the same manner with the water from the New Almaden Vichy Spring, to which sulphydric was added. The tendency of the investigation was to prove that the cinnabar deposits in general, and certainly at New Almaden, are theresulte of the action of solution of the sulphide in water.

Parke & Lacy's Hoisting Engines.

Messrs. Parke & Lacy, of 417 Market street, in this city, dealers in mining and other machinery, make a specialty of portable hoisting engines, of which they have issued a very neat illustrated catalogue. They keep these improved hoisting engines in all styles, loose drum, with rose or friction clutch, or with reverse link motion; vertical engines, horizontal engines, double engines with single drum, or double drum, or single engines with double drum. They are kept in various sizes and styles. These engines are warranted to be the power represented, and to give perfect satisfaction.

The style shown in the accompanying engraving is made from four to twenty-five horse-power, single and double. It is a single horizontal hoist, with vertical hoilers, and can be used for stevedores, pile-drivere, builders, wreckers, miners, railroad companies, etc., for pumping and hoisting. As a mining hoist it is very convenient and compact, and will be useful in opening up mines, or in working thoee which requirc no very expensive apparatus.

The Artificial Syntheses of Organic Compounds.

Extract from a paper read before the California Academy of Sciences hy John M. Stillman of the University of California.

I wish this evening to mention a few of the more striking examples of those discoveries of organic chemistry, where the products of nature have been produced by the hands of the chemist, and to show you the successive steps of the processes that you may see for yourselves how completely the wall between organic and inorganic has been overthrown; what complex compounds may he obtained by care and patience in the domain of organic chemistry. I shall not allude to the immense number of compounds which organic chemistry has prepared, which have not been discovered in animal or vegetable organism, some of which, as the aniline-dyes, have given rise to industries valued at the present day at millions of dollars, but shall confine myself to those products where the laboratory has succeeded in reproducing natural products of vital force in the animal or vegetable organism.

It is true that the artificial method of production is sometimes more expensive than that hy which it is produced in nature's laboratory, hut this is not always so, and there is always a prospect of new methods and new information giving a cheaper product than nature can produce.

In every case we will follow the process step by step from the elements themselves or from simple inorganic constituents, and every step shall he one whioh has actually been performed by chemists of repute. To commence with some of the simplor compounds, we will take first

Formic Acid.

This compound was first obtained from the bodies of ants by distilling with water;—formed, therefore, under the influence of vital force in the animal organism.

In the laboratory it can he obtained readily hy convenient methods from other organic compounds, hut also hy the action of CO and KHO which gives formic acid in combination with potassium, ($KHO + CO = HKCO_2$) which when treated with dilute sulphuric acid gives the free *formic acid*, ($2\,HK\,CO_2 + H_2\,SO_4 = H_2\,CO_2 + K_2\,SO_4$), identioal in all properties, physical and chemical with the formic acid derived from the ants themselves; is, in fact, the eame compound.

Alcohol

Is another product of organic life, and occurs in the decomposition of juices of plants oontaining sugar. It also can he huilt up from inorganic constituents, as follows:

Carbon and hydrogen unite directly to form acetylene, $C_2\,H_2$, under the influence of the electric spark.

This compound, acetylene, by the action of hydriodic acid gives ethane—$C_2\,H_2 + 4HI = C_2\,H_6 + 4\,I$, $C_2\,H_6$; and this in turn with chlorine gives $C_2\,H_6 + Cl_2 = C_2\,H_5\,Cl + H\,Cl$, which when treated with Ag OH gives alcohol, ($C_2\,H_5\,Cl + Ag\,OH = C_2\,H_5\,OH + Ag\,Cl$) *identical* with the compound produced by fermentation.

By oxidizing alcohol we also obtain another eompound, which is also an organic product, viz: *Acetic Acid.*

$C_2\,H_6\,O + O_2 = C_2\,H_4\,O_2 + H_2\,O$.

Glycerine

Can he obtained in the common method hy decomposing fats and oils, where it exists in oomhination as a product formed under the influence of vital force. It also oan he obtained from inorganic compounds hy a series of simple eteps.

If this oompound ethane, which we just saw formed from inorganic constituents, be treated with iodine, we have ethyl iodide formed, and this, with zinc, gives zinc ethyl, $C_2\,H_6 + I_2 = C_2\,H\,I + H_5\,I$, $2\,C_2\,H_5\,I + 2Zn = Zn\,I_2 + Tu\,(C_2\,H_5\,2)$. Again, if we heat CS_2, $H_2\,S$ and Cu together, we have a compound (CH_4) marshgas, formed $CS_2 + H_2\,S + 8\,Cu = 4\,Cu_2\,S + CH_4$; this, with iodine, gives $CH_3\,I$, methyl iodide; $CH_4 + I_2 = CH_3 + HI$.

These two compounds, zinc ethyl and methyl iodide, when heated together, form zinc iodide and a new compound, propane, $C_3\,H_8$, $Zn\,(C_2\,H_5)_2 + 2\,CH_3\,I = Zn\,I_2 + 2\,C_3\,H_8$. This, with iodine, gives propyl iodide, $C_3\,H_8 + I_2 = C_3\,H_7\,I + HI$, and this, with KOH, gives KI, $H_2\,O$ and another substance, propylene, $C_3\,H_6$ ($C_3\,H_7\,I + KOH = KI + H_2\,O + C_3\,H_6$), and this, treated with Cl and chloride of iodine, gives another compound, $C_3\,H_5\,(Cl_3)$, $C_3\,H_6 + Cl_2 = C_3\,H_5\,Cl + HCl$, $C_3\,H_5\,Cl + 2\,I\,Cl = C_3\,H_5\,Cl_3 + I_2$ which, with much water at a bigh temperature, is chauged to glycerine, $C_3\,H_5\,Cl_3 + 3\,H_2\,O = C_3\,H_5\,(OH)_3 + 3\,HCl$.

When glycerine now, which we have seen huilt up hy means of inorganic reagents from the elements themselves, is treated with HI, an inorganic reagent, it forms allyl-iodide, $C_3\,H\,(OH)_3 + 3\,HI = 3\,H_2\,O + 2\,I + C_3\,H_5\,I$, and this, again treated KSCN, which in turn is readily obtained from tbe elemeuts, we have formed a new compound, $C_3\,H_5\,Cl + KSCN = KI + C_3\,H_5\,SCN$, which has the odor and general appearance of the chief constituent of the oil from the common mustard, aud on closer examination proves to possess identical physical and chemical properties, the same hoiling point, odor, taste, uudergoes precisely the same changes with the same chemical reagents, and is in fact precisely the same substance as the natural mustard-oil, but formed entirely from substances which have been obtained from inorganic constituents.

Another Example.

We saw that hy inorganic agencies we could obtain a substance mcthyl iodide $CH_3\,I$, and also that hy the direct union of C and H we could obhtain $C_2\,H_2$, acetylene. Wben this acetylene is simply heated intensely we obtain a small quantity of henzol C_6H_6, which with bromine gives a compound $C_6\,H_5\,Br$. This $C_6\,H_5\,Br$. togetber with the $CH_3\,I$ treated with the metal sodium gives a compound toluol $C_6\,H_5\,Br + CH_3\,I + Na_2 = Na\,Br + NaI + C_7\,H_8$, and this hy heating gives anthracene, ($C_{14}H_{10}$.) Anthracene when oxidized gives anthraquinone $C_{14}H_{10} + 3\,O = H_2\,O + C_{14}\,H_8\,O_2$ and anthraqninone when treated with $H_2\,So_4$ givcs a new product, which finally treated with KHO and HCl gives alizarine. Now this alizarine ie found to he absolutely identical with the coloring material of the madder root, in composition, properties and chemical action. Fortunately, also, the anthracene can he obtained in quantity hy distilling coal-tar so that the alizarine of the lahoratory is much cheaper than the alizarine from the madder-root itself, and is of course just as good, being identical with it, so that it has nearly forced the true madder out of commerce.

Oil of Bitter Almonds.

Let us now start again from the same toluol, which we saw in the last example, huilt up synthetically from inorganic substances, but which is readily obtained from coal-tar hy distillation.

Wheu this tolnol is heated, and then treated with chlorine, we have a compound formed, the benzyl chloride ($C_7\,H_8 + Cl_2 = C_7\,H_7\,Cl + HCl$,) and thie with caustic potash gives henzyl alcohol, ($C_7\,H_7\,Cl + KOH = KCl + C_7\,H_7\,OH$,) hy oxidation we get from this a liquid compound which has the odor of hitter almonds, and on further examination proves to be identical with the oil of hitter almonds which is obtained from the kernels of the bitter almond itself ($C_7\,H_7\,OH + O = C_7\,H_6\,O + H_2\,O$). It is in fact the same substance as the purified and distilled oil of hitter almonds. This artificial oil of bitter almonds is not to be confounded with the cheap nitro-benzol or essence of mirbane, which possesses a similar odor, but is hy no means identical with the oil of hitter almonds, or the *benzaldehyde.*

Oil of Cinnamon.

Again, we find that if we take this artificial oil of bitter almonds, and together with this take common aldehyde (obtained hy oxidizing alcohol, which we have already seen can be prepared synthctically), and trcat the two suhstances together with HCl, we have formed a uew substance which is again identical with another natural product, viz., the chief constitnent of cinnamon oil, which is formed in the hark of the cinnamon tree ($C_7\,H_6\,O + C_2\,H_4\,O = H_2\,O = C_6\,H_2\,CH : CH . CHO$.

Wintergreen Oil.

Wintergreen oil also can be obtained very readily as a laboratory product hy the action of methyl alcohol (obtained also artificially like the common alcohol from tho $CH_3\,I$ already spoken of, and AgOH) upon salicylic acid under the influence of $H_2\,SO_4$. Salicylic acid is readily obhained from phenol or carholic acid hy treating the eodium salt of carbolic acid with CO_2 and Na, and decomposing the resulting salts with acids $C_6\,H_5\,O\,Na + Na + CO_2 = C_6H_5\,O\,Na, CO_2\,Na$. $C_6\,H_5\,ONa . COO\,Na + H_2\,O = Na\,HO + C_6\,H_5\,OH . COOH$.

Carbolic Acid.

Pheuol also, or carbolic acid, can be obtained synthetically hy the action of acetylene on $H_2\,SO_4$ and fusing the potassium salt of tho acid formed with caustic potash. The artificial product is in this case precisely the same as the chief constituent of wintergreen oil derived from the plant, when distilled and purified.

A couple examples more, and these the latest, will suffice.

Let us start again from two suhstances whose preparatione are already explaiued, propane $C_3\,H_8$ and toluol $C_7\,H_8$. When toluol is treated with Br in the cold a para-hrom-toluol is formed, $C_7\,H_7\,Br$.

When propane is treated with Br propyl bromide is obtained $C_7\,H_7\,Br$; when these two hromides are treated with metallic sodium, a new compound cymol $C_{10}\,H_{14}$ $C_3\,(H_7\,Br + C_7\,H_7\,Br + 2\,Na = 2\,Na\,Br + C_{10}\,H_{14})$ is obtained, and hy the oxidation of this substance hy means of sulphuric acid and potassium hi-chromate. Prof. Oppenheim obtaincd a small quantity of a substance of the odor,—appearance, crystalline character and chemical composition of common camphor, and the proof of the reaction may he substautiated hy the fact, that camphor treated with $P_2\,S_5$ or $Zn\,Cl_2$ gives this same cymol.

Indigo Blue.

The last example which I shall call your attention to is one, tbe completion of which has been effected in the present year hy Prof. Baeyer of Munich, to whom, in fact, we are chiefly indehted for the earlier steps in the synthesis. Baeyer had some time ago obtained the indigo blue by the action of PCl_3 and acetyl chloride $C_2\,H_{30}\,Cl$., on another compound, Isatin;—and in the present year he has succeeded in obtaining this isatin from limpler constituents, and has finished the complete synthesis of indigo-blue.

Startiug from *toluol*, which we have already used in the other examples, and the preparation of which has been explained; and treating when hot with chlorine, we have henzyl chloride. This treated with KCN, and hoiled with dilute acids, gives $C_6\,H_5\,CH_2\,COOH$, phenyl-acetic acid, $C_7\,H_8 + Cl_2 = C_7\,H_7\,Cl + H\,Cl$, henzyl chloride; $C_7\,H_7\,Cl + KCN = C_7\,H_7\,CN + K\,Cl$, benzyl cyanide; $C_7\,H_7\,CN + 2\,H_2\,O + H\,Cl = N\,H_4\,Cl + C_7\,H_7\,COOH$, phenyl-acetic acid; and this treated with HNO_3 gives a nitro-phenyl-acitic acid. By the action Sn and HCl on this latter compound is obtained oxindol, which, with nitrous acid, gives nitroso oxindol; this, with reducing agents, gives amido-oxindol; and this finally, oxidized with $Fe_2\,Cl_6$, or HNO_2, gives isatine. And, as we have already seen, the indigo hlue can he obtained from this hy PCl_3 or $C_2\,H_3\,O\,Cl$.

I have not attempted to give the most convenient or simple mode of obtaining these compounds; on the contrary, I havo often taken the more inconvenieut and expensive methods, with the one purpose of showing the possibilty of producing these compouuds from strictly inorganic constituents hy a series of consecutive reactions. In no case has a method been used in which any reagent is employed which cannot itself he obtained from inorganic constituents. In other worde, all these complex organic eompounds have been obtained without any hut the common and simple reagents of the inorganic lahoratory.

The achievements of organic chemistry in other directions I have no intention of discussing now.

The Martin White Case.

[Continued from last week.]

This disposes of the first proposition of appellant. The second and third are entirely without merit, and as tbey relate to well-settled doctrines of the law, they will be very briefly adverted to. There is not the slightest evidence of an intention on the part of the Paymaster location to ahandou their claim. The act of Henry in changing the language of the notice on the 10th of October, 1872, proves only that he had ahandoned the opinion that the course of the ledge was cast and west. So far from proving an intentiou to abandou a foot of his claim on the ledge, it proves exactly the reverse.

Nor do the facts present a single elemeut of estoppel.

Each party had exactly the same means of information. When the Shark location was made it was as much the business of its locators to know whether it was on the Paymaster vein as it was of Ward, the recorder. The truth probably is tbat no one at tbat time thought the two claims would conflict. It is idle, therefore, to say that any culpable silence on the part of Ward caused the expenditure of labor and money on the Shark. If the locators of that claim were deceived it was their fault and they must suffer the conscquences.

As to the change in the Paymaster notice from east and west to north and south that was, as we have seen, wholly immaterial. Tho simultaneous settling of the stakes entirely euperseded the calls of the notice and was the first thing that ever fixed the boundaries of the claim. If, after that, the Shark locators continued at work, they did so with their eyes wide open, as they di d everything else from the heginning to the end of their attempts to locate the ground. From the outset they had the same opportunities to know tbe truth that the other party had. If they have any hetter claim to the property than the defendant it is not because they were deceived or misled, but only because they can show a technical compliance with the law, while their adversaries cannot. It is upon this ground alone that their case has any semhlance of streugth, and upon this ground we think it clearly fails. The judgment and order appealed from ought to be affirmed and it is so ordered.

BEATTY, J.

I concur:

LEONARD, J.

Since the foregoing opinion was written two oasos (Gelsich vs. Moriarty et al., and Holland et al. vs. Mount Auhurn G. Q. M. Co.,) have been decided hy the Supreme Court of California, in hoth of which it is assumed, as a point heyond question, that the marking of a mining location on the ground so that its boundaries oan he readily traced is absolutely essential to the validity of the claim. This is in perfect accordance with our own views as above expressed. But in the latter of these cases it seems also to be held that the marking of the center line of the claim is not sufficient to satisfy the requirements of the law. The opiniou of the Court is very brief, and no reasons are assigned for the conclusions reached. We have, however, heen led by that decision to thoroughly recousider our own opiuion on this point, and the arguments of counsel pro and con. The result is that we are satisfied of the correctness of our first conclusion. A mining claim consists of a certain hreadth of surface, to he laid off on each side of the line of the croppings, with the mineral deposits included thereiu. The center line, as a matter of course, is to he a straight line conforming to the general strike of the vein as nearly as that can be ascertained. The side lines are to be parallel to the center line, and if as we assume to he the proper construction of the law, the end lines must he parallel and conform to the dip of the vein, which is at right angles to its strike it follows, with the conclusiveness of a mathematical demonstratiou that when the center is once definitely fixed the boundary lines can he traced (that is followed out) with absolute certainty. It may he that they could not be traced as easily and readily as if stakes were set at the corners, hut the difference would he very slight and of no practical consequence. In any case we think that the law should receive as liberal and beneficial a construction as is consistent with the object which Congress undouhtedly had in view in passing it. That object, we are satisfied, was not to save intending locators a slight amount of labor in tracing older claims, hut it was to make the boundaries of such older claims certain and immovable; to put an end forever to the shifting and floating of claims; to do away with an existing and intolerable evil. The whole object of the law is accomplished whenever, from the monuments on the ground, the boundaries of a mining claim can he traced with absolute certainty and without any practical difficulty, and for that purpose a definitely fixed center lino is sufficient.

BEATTY, J.

I concur:

LEONARD, J.

[By Hawley, C, J., Concurring.]

I concur in the conclusions reached by the Court that the judgment of the District Court ought to he affirmed; hut I am unwilling to give an unqualified approval of the construction given to the mining laws of the United Statcs.

If I entertained the opinion, as expressed hy tbo Court that "it is a surfaco parallelogram not less than fifty feet in width that must be located;" that the location on a vein "mnst be made hy taking up a piece of land to inclnde it;" that a vein "can only be located by means of a surface claim, and held only to the extent that it is included in the surface lines," and if —upon these points—I agreed "entirely with the views of counsel for appellant," I should he inclined to agree with tbeir conclusions that it is the surface location that "must he distinctly marked on the ground so that its hounderies can he distinctly traced."

But I do not helieve that it was the intention of Congress hy the passage of the eeveral acts referred to in the opinion of the Court, to produce an entire revolution in the system of locating mining claims. Some very important changes have been made and the rights of the locators have hcen enlarged and made more specific; hut, in my judgment, it is—as it was under the old system—the vein of quartz, the lode that is the principal thing constituting the location. The eurface grouud is but an incident thereto. The location of such a mining claim is distinctly marked on the ground so that its houndaries can be readily traced, by the placing of stakes along the lode and at the ends of tbe location, or hy such other monuments or marks as will clearly designate the numhcr of feet in length and the particular lode located. In my judgment the location need uot, necessarily, be the takiug up of "a piece of land" in the form of a parallelogram. When tho vein or lodc is sufficiently identified and marked, as above stated, tho laws of tbe local district fix the number of feet in width—of the surface ground—to which the locator is entitled. It heing, of course, understood that: "No claim shall extend more than 300 feet on each side of the middle of the vein at the surface, nor shall any claim he limited hy any mining regulation to loss than twenty-five feet on each side of the middle of the vein at the surface."

I differ with the Court upon another point discussed in the opinion. I think that after the lode is properly located, the locator has the right to 1,500 feet aloug tbe outcrop of the lode, "in whatever directiou it extends, irrespective of the vertical side lines of the surface houndaries" (dissenting opinion, Golden Fleece vs. Cable Con., 12 Nev., and that he would only he entitled to 1,500 feet in length, although the vein took such a course as to embrace more than 1,500 feet within the end lines of his surface location.

HAWLEY, C. J.

THE ELONGATION OF TREE TRUNKS.—The *College Quarterly* saye that experiments made at the Iowa Agricultural College show that the popular notion that the trunks of trees elongato is entirely erroneous. Tacks were driven into the trunks of various trees, and the distance between them accurately measured. At the end of the season they were found to have neither iucreased or decreased their distances. In the experiment, tree trunks were selected of all ages, from one year up to five or six, and in no case was there any change whatever noticeable.

IRIDESCENT GLASS.—Ornamental glassware in many styles, tinted with the glowing colors of the rainbow, is now making its appearance in the shop windows of Broadway and Fifth avenue. This is one of those brilliaut little achievements of science that delights the eye and pleases the imagination. To produce the colors, the glass, while in a heated state, is subjected to the vapor of chloride of tin. Shades of more or lcss depth or intensity are imparted hy adding to the tin chloride a littlc nitrate of strontium or harium.

ANOTHER "LARGEST" TELESCOPE.—Now that Professor Watson has hecame a permanent fixture of the University of Michigan, and will remaiu director of the observatory, hc has heen guaranteed hy the citizens of Detroit $60,000 for the purchase of the largest and most powerful telescope in the world, to be located at the observatory at Anu Arhor, Michigan.

RICHARD READE has heen recognized as Consul of England for Pennsylvania, Ohio, Indiana, Michigau, Illinois, Iowa and Wisconsin, to reside at Philadelphia.

MECHANICAL PROGRESS.

The Structure of Rails as Affecting Accidents.

Professor Thomas Egloston recently addressed the New York Academy of Sciences on the subject of "The Structure of Rails as Affecting Railway Accidents." He remarked, among other things, as follows: The destruction of rails is due to three causes. 1. Defects in the manufacture. 2. Improper mechanical or chemical composition. 3. Physical changes.

A very large number of raile are annually made which should never be put in any track. Their defects are often imperceptible to the naked eye, but they very soon begin to break. Statistics show that the breakage from defects in making increase until they have been used 18 months; then it decreases to zero, and after that rails break from different causes. The impact of the locomotive is apt to break the rail, very much on the same principle that is taken advantage of in breaking them up for the manufacture of smaller objects. A nick is made somewhere, and the workman then strikes a blow with a hammar at a point between the nick and the place where the rail is supported. This will sever the rail at the nicked place. Sometimes more than a second intervenes between the blow and the fracture.

Now, whenever holes are punched in rails for the fish plates, flaws are apt to radiate from them; and if these flaws are not planed or filed out, they may cause the rail to break, just as the nicks above mentioned. Such rails have been known to last no longer than eighteen months, and some have actually broken on the way from the manufacturer to their destination. There are establishments in this country and in Europe where they "doctor" such rails by filling up the flaws with a mixture of iron filings, sal ammoniac, and some adhesive substance. Beware of them, a poor cheap rail is dear at any price. The French government stipulates in its contracts for rails, that flaws shall be planed, drilled, or filed out; that the rails shall not be allowed to drop on the ground, but shall be carried by men and slid down. The Lyons railroad does not pay for its rails until 15,000 trains have passed over them.

By imperfect mechanical composition is meant imperfect union of the parts of rails. Steel heads are welded to the rest of the rail in a variety of ways, and this welding is necessarily imperfect. A number of sections of rails etched with acid plainly showed this want of homogeneity. Before such rails have lost weight appreciably, they are used up by the constant rolling they undergo. The advantage of a steel rail is its homogeneity, but a good iron rail, is likely to prove better than one of poor steel. The life of a steel rail is chiefly affected by the temperature at which it is rolled and annealed. It ought to last about 20 years on roads doing as much business as the New York Central. It is, however, unlikely that our steel rails will stand more than half this amount of traffic.

The effects of chemical composition are but little understood. Some of the purest irons have turned out utterly worthless. Apparently the absolute quantities of carbon, silicon, aluminum, phosphorus, etc., present are not of so much importance as their relative proportion. One specimen containing carbon 0.16, silicon 0.8, and phosphorus 0.012, could be bent double when cold, while another, containing carbon 0.58, silicon 0.56, and phosphorus 0.011 broke at once.

The physical tests for tensile and torsional strength, usually made on a portion cut out of the head of the rail, are not sufficient, because the flaws before spoken of exist mostly in the flange of the rail, and fracture usually begins there.

The effect of cold rolling and shocks that a rail is exposed to was shown by a piece of steel rail, which had been worn by a traffic of 60,000,000 tons. The head had been somewhat flattened, and the flange driven down into the foot to a certain extent. Under such usage an *iron* rail would have gone to pieces long ago.

Sometimes steel rails crumble all at once and pieces fall out of the head. This is probably due to some physical defects or to crystallization from shocks. The cause has not yet been definitely ascertained.

Professor Egleston asserted that there was no such thing as fibrous iron; what appeared so being simply crystalline with the ends drawn out. A sharp blow would cause this to fall off and show the crystalline structure beneath.

NEW METHOD OF HEATING TIRES.—In the workshop of the railroad from Moscow to Nijni, the tires of the wheels are not expanded by the direct action of fire, but by hot water, before being put on the wheels. With the assistance of a movable crane they are plunged into a metallic cistern containing water, which is kept boiling by means of steam from a boiler close by. An immersion for ten minutes expands a tire sufficiently to enable it to pass around the wheel. The heat is more uniform and the contraction more regular than when a tire is heated by fire in the usual way. It is said that in six years there was only one case of fracture of the water-heated tires, and only one per cent. of them loosened upon the wheel.

Iron vs. Steel Bolts.

W. Mathieu Williams, in the *Metallurgical Review*, discusses at some length the question of iron *versus* steel bolts. He considers the question as one of much importance and one, just now, very properly occupying much attention among the metallurgists of all nations. He thinks the steely attributes of the bolts employed in the experiments alluded to were directly detrimental. Increased tenacity as measured by the application of a gradually increasing strain, was accompanied by increased weakness in relation to a sudden shock. The case is an extreme one undoubtedly and the test excessively severe; but admitting this as regards degree, does it not represent the kind of strain to which boilers, girders, ship-plates, bridges, and all structural applications of iron or steel are more or less subject.

Let us take a boiler first. While the heat is being gradually applied, the expansive force of the steam gradually developed, and the boiler firmly at rest, the plates are submitted to a strain fairly represented by the hydraulic or screw testing machine; but if, when the metal is thus strained, the boiler is submitted to any kind of shock, the conditions are entirely changed. A vibration traverses its structure; waves of compression and extension suddenly add to the roaring strain of the expanding steam in one place and diminish it in another. In proof of the effect of this, the following experiment may be made by anybody who has a testing machine at command. When the strain is approaching the breaking point, let the plate or bar under trial receive a light but smart tap sufficient to produce a molecular vibration. It will instantly break, even though at a considerably less strain than would have broken it if undisturbed. The boilers of all kinds of marine engines and of locomotives are subject to violent vibratory shocks. Suppose we have two boilers, one of steel and the other of soft malleable iron, and both have been tested by hydraulic pressure to the same extent. Which would be most likely to give way under practical conditions, and subject to ordinary and extraordinary shocks while worked nearly up to their tested pressure? If compelled to sit on the safety valve of one or the other, I should choose the soft iron.

The practical conclusion to which all the above-stated facts and reflections point is, I think, that for all purposes where resistance to vibratory shocks or suddenly applied strains of any kind is demanded, the old-fashioned wrought iron is more reliable than steel of any kind that is at present obtainable. I do not, however, maintain that we should be satisfied with this conclusion, but, on the contrary, regard it as indicating the direction of future effort, which should be devoted to the softening and toughening of these new steels in order to combine, as far as possible, some of their valuable properties with those of wrought iron.

A DEVICE for cleaving stone has recently been introduced in Germany, which promises to be very useful for splitting granite and other stone blocks. The cleaving is effected by means of a prismatic steel cutter inserted with wedges in the under side of the hammer, and opposite a similar one below on the anvil bed. The granite-block to be cleft is pulled on rollers over the lower cutter (which is slightly higher than the rollers), and into the proper position. Then a rapid series of blows is given from a short hight, followed by a strong blow from a great hight. Thus a plate is cut vertically with accurately even surface. The block is next pushed on one-plate thickness, and the process is repeated. The plates obtained are afterwards divided into cubical blocks by means of a steam-hammer, arranged quite like the former, except that the plates, instead of lying on rollers, are placed on small tables resting on spiral springs. By the weight of the stones the springs are compressed, so that the stones come to lie on the lower cutter.

POCKET MICROPHONE.—M. Trouve has invented a cylindrical device which resembles a small dark-lantern, with a carbon crayon instead of a candle. The device, as its name implies, is designed for collecting small sounds. When placed in the middle of a room, it reveals all secrets. It transmits the voice admirably to a receiving telephone, even when the speaker stands twenty-eight feet or more from the microphone. When a watch is placed in the interior, it seems to be making unheard-of efforts to get out. The instrument can be easily used for revealing the normal or morbid movements of the heart or lungs.

A NEW wall covering is extensively advertised in England. It is so durable that disease germs can be burnt off it with fire or washed off with acid; so soft that it can be stamped and worked into beautiful forms; so tough that it can be scrubbed frequently, and so cheap that it can be bought for fourteen cents a foot.

A DELICATE mechanical feat was recently accomplished by a watchmaker of Providence, Rhode Island, who drilled a hole throughout the entire length of a common pin, from head to point, just large enough to admit the passage of a fine hair.

FROM the debris of the coal mines France makes annually 700,000 tons of excellent fuel, and Belgium 500,000 tons. Germany makes fuel for the most part from peat and similar earths.

SCIENTIFIC PROGRESS.

A New and Startling Contribution to Science.

The scientific world has recently been somewhat startled by the bold announcement, and apparent demonstration, that the so-called elements of chemistry are no "elements" at all, in the ordinary acceptation of that term; but that there is good reason to believe that they are all, or nearly all, compound bodies, capable of being resolved into other compounds; in fact that there is but one original form of matter—hydrogen. This announcement is made by the well-known English scientist, Prof. J. Norman Lockyer. The announcement was first made, we believe, to the French Academy of Sciences, by the venerable Dumas, at its meeting on the 28th of October last, by the reading of a note from Prof. Lockyer, in which that scientist said: "Reasoning from analogies furnished by the behaviors of known compounds, I have discovered, that, independently of calcium, many other bodies, hitherto considered as elements, are also compound bodies."

Mr. Dumas, in communicating this note to the academy, observed that this discovery was the result of three years of assiduous research, in which Mr. Lockyer had, with the greatest care, compared spectra of the chemical elements with the solar spectrum and other luminous bodies. In a private note to Mr. Dumas, Mr. Lockyer stated that he should shortly send photographs and such other details as would carry conviction to the minds of the members of the academy.

It is well known that Mr. Lockyer has been working in this direction for some three years. But as yet the text of his paper has not been fully made public, and some time must necessarily elapse before his supposed discovery can pass the critical examination which alone can give the announcement a standing before the scientific world.

The London *News* of November 26th brings the following additional information in regard to this alleged discovery:

"In the presence of a small party of scientific men Mr. Lockyer, by the aid of a powerful voltaic current, volatilized copper within a glass tube, dissolved the deposit formed within the tube in hydrochloric acid, and then showed by means of the spectroscope that the solution contained no longer copper, but another metal, calcium, the base of ordinary lime. The experiment was repeated with other metals, and with corresponding results. Nickel was thus changed into cobalt, and calcium into strontium. All these bodies, as is well known, have ever been regarded as elementary—that is, as incapable of being resolved into any components, or of being changed one into another. It is on this basis that all modern chemistry is founded, and should Mr. Lockyer's discovery bear the test of further trial, our entire system of chemistry will require revision. The future possibilities of the discovery it is difficult to limit. Mr. Lockyer is one of our best living spectroscopists, and no man with a reputation such as his would risk the publication of so startling a fact as he has just announced to the scientific world without the very surest grounds. He is known by his friends as somewhat sanguine, and he does not pretend to be an accomplished chemist, but he was supported yesterday by some of our leading chemists, all of whom admitted that the results of his experiments were inexplicable on any other grounds but those admitting of the change of one element into another, unless, indeed, our whole system of spectrum analysis is to be upset, the other horn of a very awkward dilemma. Since a hundred years ago Priestley discovered oxygen and founded modern chemistry, there has been, there could be, no discovery made which would have such an effect on modern science, as that the so-called elements were no longer to be considered elementary."

Within the last few years a large number of new substances have been added to our list of "elements," and numerous examples are recorded where bodies, supposed at first to be elementary, have yielded to the crucial tests of the chemist, and been proven to be compounds. So much has been done in this direction that the question has often been asked, "Are not all the elements really decomposable substances?" With the new lights, and constantly increasing appliances which are being brought forward to aid in unlocking the secrets of nature, it seems as though we should soon be able to answer the above question in the affirmative. It is an interesting fact that the spectroscope, which has done so much since its discovery in opening the way to new revelations in science, should now once more be found leading the way to what promises to be one of the most interesting and important discoveries ever made in the domain of scientific research. The details of this discovery will be awaited with the greatest interest.

CLEOPATRA'S NEEDLE AND WIND FORCE.—It is pointed out that the factor of safety or stability of the Cleopatra's needle is too small. As it stands, it is already calculated to bear a pressure of 90 lbs. to the square foot, whereas the force of no hurricane is believed to exceed 25 lbs. to the foot. Mr. John Holden, architect of Manchester, recalls the fact that on the 7th day of February, 1868, the pressure registered at the Liverpool observatory was over 60 lbs. to the square foot. The instrument, in charge of Mr. Hartnup, only registered up to 60 lbs., but his opinion was that the pressure reached between 70 lbs. and 80 lbs. to the square foot. At Liverpool, on the 27th of September, 1875, the pressure registered was 70 lbs. to the square foot; and at the same place some time in April, 1867, the pressure was 45 lbs. At Sydney, Australia, on the 10th of September, 1876, the Government Astronomer reports "that the wind in some of the gusts lasting several minutes attained the extraordinary velocity of 153 miles an hour, equal to a pressure of 117 lbs. to the square foot; and during 12 minutes between 12 and half-past the velocity of the wind was 112 miles per hour." The question of the velocity and pressure of the wind is of great importance, especially in the manufacturing districts; and for many years the firm of which Mr. Holden is a member, in calculating the stability of factory chimneys, has assumed the pressure to be not less than 80 lbs. to 90 lbs. on the square foot.—*Engineer.*

MYSTERY OF PERFUME.—No one has yet been able to analyze or demonstrate the essential action of perfume. Gas can be weighed but not perfume. The smallest known creatures—the very monades of life—can be caught by a microscope lens and made to deliver up the secrets of their organization, but what it is that emanates from the pouch of the musk deer that fills a wide space for years with its penetrating odor—an odor that an illimitable number of extraneous substances can carry on without diminishing its size and weight—and what it is that the warm summer brings to us from the flowers, no man has yet been able to determine. So fine, so subtle, so imponderable, it has eluded both our delicate weights and measures and our strongest senses. If we come to the essence of each odor we should have made an enormous stride forward, both in hygiene and chemistry, and none would profit more than the medical profession if it could be as conclusively demonstrated that such an odor proceeded from such and such a cause, as we already know of sulphur, sulphurate, hydrogen, ammonia and the like.

A NEW ELECTRICAL DEVICE.—P. Lacour has devised a toothed wheel of soft iron—a phonic wheel—which turns on its axis so that its teeth pass near one pole of an electro-magnet without touching it. An intermitting electric current, regulated by the vibrations of a reed or tuning-fork, traverses the coils of the magnet, so that it periodically attracts the nearest tooth. The wheel, turning with such velocity as to traverse the space between two teeth at each period of the current, maintains a uniform movement. It is well-fitted for use as a chronograph, for finding the number of vibrations in a given musical note, and for establishing synchronism in telegraphy.

NON-TRANSPARENCY OF FLAME.—It has been commonly believed that flame is transparent. Some observations have lately been made by M. Van Eyndhoven on the flame of a hat'ewing burner with one of Sugg'e photometers, and he found in two experiments a difference of 1.5 candles, or 17% to 18%, between the narrow and the broad side of the flame—the latter giving most light; whence he infers that the flame is not transparent. For this reason the entire luminous power is not obtained from an Argand burner. For good street lighting, the slit of the burner and the direction of the street should be at right angles to each other.—*Eng. Mech.*

SCIENTIFIC SKEPTICISM.—M. Bouilord finds it so difficult to accept the ordinary explanations of the phonograph and the telephone, that he propounds some new and curious hypothesis. He asks whether it is really the phonograph that repeats the sound, or whether the repetition is not due either to some kind of echo or to some unconscious action in the vocal organs of the bystanders; and whether the telephone does not act simply as a good conductor of sound, independently of any electric currents.—*Comptus Rendus.*

A ROYAL OBSERVER.—Dom Pedro was one of the observers of the late transit of mercury, at the imperial observatory of Rio Janeiro. The contacts were perceived and noted simultaneously by the Emperor and all of the other observers. Liais's new method was employed, and the result differed from calculation by less than one-fifth of one per cent. in right ascension, and by only one-tenth of one per cent. in declination.—*Comptes Rendus.*

SOLIDIFICATION OF PETROLEUM.—Even the lightest petroleums may be partially solidified, by mixing them with an aqueous decoction of soapwort. A mucilage forms, which is so thick that the containing vessel can be overturned without any portion running out. If a few drops of phenic acid are stirred into the mucilage, it soon becomes liquid again.—*La Nature.*

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	Week Ending Dec. 5.	Week Ending Dec. 12.	Week Ending Dec. 19.	Week Ending Dec. 26.
Alpha	10½ 8½	10 8	9½ 8½	13½ 9¾
Alta	7½ 5½	7¼ 5¼	6 5½	5½ 5¼
Andes	75c 40c	65c 40c	60c 50c	50c 40c
Alps	30c	25c	20c	....
Argenta	3 2.50	2.65 2.40	3 2.20	3½ 2.70
Atlantic	....	....	....	....
Aurora Tunnel	50c	50c	50c 40c	....
Baltimore Con	1½	1¼ 1¼	....	....
Belcher	5 4	4.90 4	4.10 3.60	3.90 3¾
Belmont	50c 30c	35c 25c	45c 30c	30c 30c
Best & Belcher	21½ 17	20¼ 17¼	18¾ 17	18 17¼
Bullion	6¼ 4.40	5¾ 4.40	5 4½	5¼ 4½
Bechtel	65c 30c	80c 45c	60c 50c	70c 50c
Belle Isle	40c	20c 15c	30c 20c	20c ....
Bodie	16½ 16	14½ 12¼	13¾ 9	12 7¾
Benton	3¼ 2	2¾ 2¼	4.10 3	3.60 3
Bulwer	16½ 16	16 15	16 15½	16 14
Boyle	....	....	....	....
Black Hawk	1 50c	1 90c	50c	40c ....
Belvidere	1 50c	1 20c	75c 30c	50c 30c
Booker	1 90c	1 75c	80c 50c	50c 30c
Caledonia	2 2¼	2¼ 2	2 2	2¼ 2.30
California	10¾ 9	11 9¼	10¼ 9¼	10 9¼
Challouge	1¼ 90c	2 1	1.65 1.40	1.85 1¾
Chollar-Potosi	39½ 35¼	40½ 35	39½ 33	39½ 38
Comanche	....	....	....	....
Confidence	7¼ 5	9¼ 7¼	9 7¾	9¼ 8¾
Con Imperial	80c 55c	75c 55c	70c 65c	95c 70c
Con Virginia	6¾ 7	8¼ 7¼	8 4	8¼ 7¾
Crown Point	5¾ 4	5 4	4.40 3¾	3.80 3.60
Con Washoe	3.05 1	2.90 2¼	3¼ 2.10	....
Champion	40c 15c	15c 5c	25c 15c	15c 10c
Concordia	....	....	50c	....
Dayton	....	....	....	....
DeFrees	25c 10c	20c 15c	20c 15c	15c ....
Daney	....	....	....	....
Day	35c 20c	35c 30c	30c 30c	25c 25c
Eureka Con	37 35	37 34½	36 34	33½ 32
Exchequer	4¾ 3¾	4.10 3¾	3.90 3¾	3.40 3.60
Endowment	40c 25c	30c 20c	30c 20c	40c 30c
Gen Thomas	....	....	....	....
Grand Prize	10¾ 8½	8¾ 8¼	8¼ 7¼	9¼ 7¾
Gila	10c	25c 15c	....	....
Golden Chariot	....	....	....	....
Golden Terra	5	.... 5¾	6	.... 5¾
Goodshaw	45c 30c	50c 30c	50c 40c	40c 30c
Gould & Curry	9¾ 7¾	8¾ 7¾	8¾ 6¾	9¼ 8¼
Hale & Norcross	13¾ 10	12 10¼	11¼ 9¾	11¾ 10
Hillside	3.60 3.40	3½ 2¾	2.60 2¼	2½ 2
Highbridge	2½ 2	2¼ 2.10	2.30 2¼	2.35 2¼
Homestake	....	....	....	....
Hussey	40c 30c	40c 30c	35c	35c 30c
Independence	1.40 1¼	1.30 1¼	1.45 1.30	1.30 1¼
Julia	3.60 2¾	4.60 2¾	3.80 2.80	3 2.90
Justico	5 4	4¾ 3.90	4¾ 3.90	4 3¾
Jackson	6 5¾	7¼ 6	9¼ 7	9¼ 8¾
Joe Scates	....	....	....	....
K K Con	1¼	1¼	....	....
Kentuck	5¾ 4	4¾ 4	4¼ 3¾	4¼ 3.70
Kossuth	25c 15c	15c	20c 15c	20c 15c
Keystone	....	....	....	....
Lady Bryan	2 1.10	2.10 1¼	1.95 1.05	1.05 75c
Lady Wash	1¼	1¼ 1.10	1.10	1 90c
Leonard Con	1¼ 1.15	1.20 1	1¼ 1	....
Leviathan	50c 30c	50c 35c	40c 30c	40c 30c
Leeds	1½ 1.20	1¼ 1	1.20 1	1½ 1.15
Lee	....	....	....	....
May Belle	....	.... 50c	40c 30c	....
Modoc	20c 10c	15c	5c	....
Manhattan	4½ 4	4½ 4.15	4¾ 4	4.15 4
Martin White	10 8¾	7¾ 6	4½ 3	6 4½
McClinton	75c 40c	50c	60c 50c	50c 40c
Meadow Valley	....	....	35c 30c	....
Mexicau	35 23½	28½ 22½	29½ 27	31½ 27½
Miles	....	....	1½	....
Morning Star	3 2	3 2½	2½	....
North Con Virginia	7½ 4¾	6¾ 4	7¾ 4	5¼ 4
New York	70c 50c	55c 40c	70c 60c	85c 60c
Northern Belle	10 9¼	9¾ 9¼	10 9½	10 9¾
New Coso	40c 35c	35c	30c 25c	25c 20c
Navajo	50c 40c	50c 40c	50c 45c	50c 40c
Occidental	....	....	1	....
Ophir	43¾ 34	43¾ 34	42 36½	38¾ 37
Oriental	45c 40c	30c 25c	30c 15c	75c 60c
Overman	13 9¾	11 9¾	10¾ 9	10¾ 9¾
Panther	....	....	....	....
Phenix	....	....	....	....
Phil Sheridan	75c 50c	55c 45c	40c 30c	40c 30c
Prospect	....	....	....	....
Raymond & Ely	10½ 9	9¼ 7¾	10¼ 8	9¾ 6¼
Richer	....	....	30c 25c	75c 60c
Rock Island	....	....	....	....
Rye Patch	....	....	....	....
Rough & Ready	....	....	....	....
Savage	11¼ 9	11 9¾	10 9	9¾ 6¾
Seg Belcher	25 20	20 18	20	20 18
Sierra Nevada	55 38	51½ 39	51½ 46	48 44¾
Silver Hill	1¾ 1¼	1¾ 1	1½ 1¼	1.65 1¼
Silver King	15	12	....	....
Silver Prize	....	....	....	....
Succor	1 75c	85c 65c	65c 65c	50c 40c 25c
Summit	1.60 1	1½ 1.10	1¼ 1.05	1.15 1
Scorpion	1.65 1	1¼ 1	1¼ 1	90c 1.15 1
Solid Silver	70c 50c	50c	50c	50c ....
South Bodie	50c	.... 45c	45c 40c	....
South Standard	10c 5c	40c 25c	30c 25c	30c 25c
St. Louis	45c 25c	40c 25c	50c	50c 25c
Syndicate	....	....	....	....
Tioga Con	2 1¼	1¼ 1.10	1.60 1¼	2 1¾
Tiptop	1½ 1¼	1¼ 1.30	1½ 1¼	1¼ 1.35
Trojan	30c 25c	30c 20c	25c 20c	25c ....
Union Con	64 37½	60 38¾	61 54½	59¾ 55¾
Utah	21 13	16¼ 13	15 12½	13¾ 12½
Vermont Con	....	....	....	....
Ward	75c 50c	1¼ 50c	75c 55c	55c 50c
Wells-Fargo	60c 25c	35c 25c	25c 20c	20c 10c
Woodville	25c	25c 20c	25c 20c	20c 25c
White Cloud	....	....	....	....
Yellow Jacket	15 11¾	15 11½	16 13½	15 14

Sales at S. F. Stock Exchange.

Friday A. M., Dec. 20.

320 Alta	5¾@5¾	210	Belvidere
15 Alpha	9¼	125	Champion
80 Andes	40c	190	C Pacific
10 Best & Belcher	17¼	860	Caledonia (B H)
590 Bullion	4¾@4.60	100	DeFrees
210 Belcher	3.70@3.60	150	Dudley
360 Belcher	3¾@3.70	255	Eureka Con
35 Con Virginia	7¾	1100	Endowment
150 California	9¾@9¾	50	Grand Prize
25 Chollar	35¾@35	100	Goodshaw
160 Crown Point	3.70@3.65	300	Golden Terra
1040 Con Imperial	70c	170	Hussey
90 Caledonia	2.30	1240	Highbridge
110 Confidence	9	330	Hillside
840 Challenge	1.10@1.65	600	Hamburg
300 Dardanelles	1	830	Independence
120 Exchequer	3.60	825	Jackson
100 Flowery	50c	1825	Leopard
255 Gould & Curry	8¼@8¾	145	Leeds
40 Hale & Nor	10	30	Manhattan
180 Justico	4@3.95	110	M White
55 Reubuck	3.70@3.80	50	McClinton
1040 Lady Bryan	1.05	1450	Navajo
300 Leviathan	30c	100	Northern Belle
570 Mexican	28¾@27¾	100	New Coso
235 North Con Vir	4	250	Oriental
3260 N Bonanza	80c	1115	Paradise
440 New York	65@60c	255	Raymond & Ely
175 Overman	10@10¼	300	Real del Monte
1,175 Ophir	37@37¾	400	Richer
100 Succor	40c	400	Summit
440 Sierra Nevada	47@46¾	200	Sitting Bull
210 Savage	9@8¾	250	S Standard
1040 Silver Hill	1.45@1.35	50	Syndicate
60 Union Con	55	20	Star
20 Utah	13	1000	Tuscarora
300 Wells-Fargo	20c	670	Tiptop
200 Woodville	25c	225	Tioga Con
800 Ward	50c	100	University
200 Yellow Jacket	14¼@14¾		

Saturday A. M., Dec. 21.

AFTERNOON SESSION.

350 Argenta	2¾	25	Alta
200 Bechtel	50@50c	1025	Argenta
70 Bodie	12	145	Best & Belcher
600 Belmont	25@30c	455	Bullion
195 Bulwer	15¾@15	200	Belle Isle
300 Belcher	3¾	210	Belvidere
15 Alpha	9¼	125	Champion
80 Andes	40c	190	C Pacific
10 Best & Belcher	17¼	860	Caledonia (B H)
590 Bullion	4¾@4.60	100	DeFrees
210 Belcher	3.70@3.60	150	Dudley
360 Belcher	3¾@3.70	255	Eureka Con
35 Con Virginia	7¾	1100	Endowment
150 California	9¾@9¾	50	Grand Prize
25 Chollar	35¾@35	100	Goodshaw
160 Crown Point	3.70@3.65	300	Golden Terra
1040 Con Imperial	70c	170	Hussey
90 Caledonia	2.30	1240	Highbridge
110 Confidence	9	330	Hillside
840 Challenge	1.10@1.65	600	Hamburg
300 Dardanelles	1	830	Independence
120 Exchequer	3.60	825	Jackson
100 Flowery	50c	1825	Leopard
255 Gould & Curry	8¼@8¾	145	Leeds
40 Hale & Nor	10	30	Manhattan
180 Justico	4@3.95	110	M White
55 Reubuck	3.70@3.80	50	McClinton
1040 Lady Bryan	1.05	1450	Navajo
300 Leviathan	30c	100	Northern Belle
570 Mexican	28¾@27¾	100	New Coso
235 North Con Vir	4	250	Oriental
3260 N Bonanza	80c	1115	Paradise
440 New York	65@60c	255	Raymond & Ely
175 Overman	10@10¼	300	Real del Monte
1,175 Ophir	37@37¾	400	Richer
100 Succor	40c	400	Summit
440 Sierra Nevada	47@46¾	200	Sitting Bull
210 Savage	9@8¾	250	S Standard
1040 Silver Hill	1.45@1.35	50	Syndicate
60 Union Con	55	20	Star
20 Utah	13	1000	Tuscarora
300 Wells-Fargo	20c	670	Tiptop
200 Woodville	25c	225	Tioga Con
800 Ward	50c	100	University
200 Yellow Jacket	14¼@14¾		

AFTERNOON SESSION.

350 Argenta	2¾	25	Alta
200 Bechtel	50@50c	1025	Argenta
70 Bodie	12	145	Best & Belcher
600 Belmont	25@30c	455	Bullion
195 Bulwer	15¾@15	200	Belle Isle
300 Belcher	3¾	210	Belvidere
15 Alpha	9¼	125	Champion
80 Andes	40c	190	C Pacific
10 Best & Belcher	17¼	860	Caledonia (B H)
590 Bullion	4¾@4.60	100	DeFrees
210 Belcher	3.70@3.60	150	Dudley
360 Belcher	3¾@3.70	255	Eureka Con
35 Con Virginia	7¾	1100	Endowment
150 California	9¾@9¾	50	Grand Prize
25 Chollar	35¾@35	100	Goodshaw
160 Crown Point	3.70@3.65	300	Golden Terra
1040 Con Imperial	70c	170	Hussey
90 Caledonia	2.30	1240	Highbridge
110 Confidence	9	330	Hillside
840 Challenge	1.10@1.65	600	Hamburg
300 Dardanelles	1	830	Independence
120 Exchequer	3.60	825	Jackson
100 Flowery	50c	1825	Leopard
255 Gould & Curry	8¼@8¾	145	Leeds
40 Hale & Nor	10	30	Manhattan
180 Justico	4@3.95	110	M White
55 Reubuck	3.70@3.80	50	McClinton
1040 Lady Bryan	1.05	1450	Navajo
300 Leviathan	30c	100	Northern Belle
570 Mexican	28¾@27¾	100	New Coso
235 North Con Vir	4	250	Oriental
3260 N Bonanza	80c	1115	Paradise
440 New York	65@60c	255	Raymond & Ely
175 Overman	10@10¼	300	Real del Monte
1,175 Ophir	37@37¾	400	Richer
100 Succor	40c	400	Summit
440 Sierra Nevada	47@46¾	200	Sitting Bull
210 Savage	9@8¾	250	S Standard
1040 Silver Hill	1.45@1.35	50	Syndicate
60 Union Con	55	20	Star
20 Utah	13	1000	Tuscarora
300 Wells-Fargo	20c	670	Tiptop
200 Woodville	25c	225	Tioga Con
800 Ward	50c	100	University
200 Yellow Jacket	14¼@14¾		

Monday A. M., Dec. 23.

245 Alta	5¾@5¾	50	Kentuck
70 Andes	40c	50	Kossuth
305 Alpha	11¼@10¾	225	Lady Bryan
485 Best & Belcher	18@17¾	40	Lady Wash
385 Belcher	3¾@3.60	600	Leviathan
665 Bullion	4¾@4.60	50	Liberty
640 Benton	3¾@3.60	45	Leopard
610 California	10	90	Leeds
595 Con Virginia	8¼@8¾	50	M White
125 Crown Point	3.60@3.65	220	Mono
5630 Con Imperial	70@75c	400	May Belle
160 Chollar	39@39¾	760	Mexican
300 Challenge	1.10@1.85	845	Navajo
200 Caledonia	2.40@2.45	95	Northern Belle
90 Confidence	9@9¼	200	New York
300 Dardanelles	1	65	N Bonanza
1275 Exchequer	3.70@3.65	425	N Con Virginia
830 Gould & Curry	9@9¼	220	Ophir
385 Hale & Nor	10¾@11	155	Overman
115 Justice	3@3.05	20	Oriental
295 Julia	3@2.90	360	Paradise
200 Kossuth	20c	600	Phil Sheridan
25 Kentuck	3.90	600	Plutus
400 Lady Bryan	90c@1	210	Raymond & Ely
1565 Mexican	31@30¾	420	Sierra Nevada
50 North Con Vir	5@5¼	100	Succor
400 N Bonanza	90@1	100	Syndicate
135 New York	60c	300	Sitting Bull
90 Ophir	38¾@38¾	100	Solid Silver
30 Overman	10	50	Scorpion
80 Phil Sheridan	40c	500	Silver Hill
200 Plutus	1	400	Succor
150 Solid Silver	50c	200	Star
180 Savage	9@9¼	50	Tuscarora
525 Sierra Nevada	46¾@46¾	200	Tioga Con
130 Silver Hill	1¼	450	Trojan
200 Trojan	25c	435	Union Con
30 Utah	13	100	Ward
450 Union Con	58@57	215	Yellow Jacket
1000 Ward	60@55c		

SALES OF LAST WEEK AND THIS COMPARED

Thurs'd'y A. M., Dec. 19.		Thursday A.M., Dec. 27.	
305 Alpha	9¼@9⅜	610 Andes	40@45c
95 Alta	5¾@5¾	50 Alpha	9¼
850 Andes	50c	145 Alpha	12½@13¼
310 Best & Belcher	17@17¼	160 Best & Belcher	17½@17¾
230 Belcher	3.60@3.65	785 Bullion	5¾@5¾
625 Bullion	4¼	160 Belcher	3.80@3.90
750 Benton	3@3¼	375 Benton	3
4225 California	9¾@9¾	100 California	9¾
575 Con Virginia	7¾@7¾	1630 Con Imperial	95@90c
215 Crown Point	3¼	275 California	9¼@10
105 Chollar	33@33¾	200 Challenge	1.70@1¾
1035 Con Imperial	65@70c	850 Con Virginia	7¼@8
430 Confidence	9@9¼	20 Confidence	9¼
285 Caledonia	2.30@2.35	55 Chollar	35¾@35
450 Challenge	1.55@1.60	195 Crown Point	3.70@3.80
900 Exchequer	3¼@3.60	960 Exchequer	4.15@4.40
50 Flowery	45c	400 Gould & Curry	9¼@9¾
375 Gould & Curry	8¼@8¾	120 Hale & Nor	11¾@11¾
385 Hale & Nor	9¼@10	30 Justice	3.90
645 Justice	3.90	80 Julia	2.90
405 Julia	2.90@3	200 Kentuck	4@4¼
210 Kentuck	3¾@3.80	100 Lady Wash	90c
100 Kossuth	20c	45 L Bryan	75c@80c
250 Lady Wash	90c@1	195 Mexican	30¼@30¾
1095 Lady Bryan	1.05@1.30	200 New York	60c@65c
450 Leviathan	30@35c	200 N Bonanza	70c@80c
50 Morning Star	2¼	1060 Ophir	37¾@37
710 Mexican	27@27¾	120 Overman	9¼@10
925 New York	60@65c	990 Sierra Nevada	44¼@45¼
455 N Bonanza	75@80c	510 Savage	9¼@9⅜
305 North Con Vir	5@5¼	25 Silver Hill	1.35
520 Ophir	36¾@37	85 Succor	25@35c
100 Overman	9@9¼	300 Solid Silver	55c
600 Phil Sheridan	40c	175 Union Con	57¾@58
855 Sierra Nevada	46@47¼	100 Utah	12¼@12½
195 Savage	9@9¼	150 Wells-Fargo	20c
50 Succor	55c	250 Ward	60c
50 Seg Belcher	20	600 Yellow Jacket	14¼@15
355 Silver Hill	1¼		
350 Scorpion	1		
150 Solid Silver	50c		
100 Trojan	25c		
685 Union Con	54¾@56		
325 Utah	12¾@13		
100 Woodville	25c		
440 Ward	55@60c		
290 Yellow Jacket	14¼		

AFTERNOON SESSION.

225 Argenta	2.60		
50 Aurora T	40c		
200 Advance	50c		
500 Adenda	65c		
115 Bulwer	15¾@15	650	Argenta
250 Bodie	9¼@10	300	Belle Isle
50 Bechtel	60c	145	Bodie
700 Booker	50c	250	Black Hawk
550 Belle Isle	20c	900	Booker
720 Belvidere	39@40c	100	Bulwer
300 Champion	15@20c	50	Champion
360 C Pacific	2¼	25	C Pacific
250 Caledonia (B H)	1¼	230	DeFrees
40 Day	30c	500	Dudley
500 Dudley	1¼	145	Eureka Con

990 Yellow Jacket....14¼@14

AFTERNOON SESSION.

695	Argenta	2.80@2¾	
190	Bodie	8@7¾	
140	Bulwer	14¼@15	
350	Belmont	10c	
750	Booker	50c	
25	Belvidere	80c	
50	Black Hawk	40c	
30	C Pacific	2.40	
680	Dudley	1.40@1.20	
100	DeFrees	15c	
220	Eureka Con	32	
200	Endowment	40c	
20	Golden Terra	6	
985	Grand Prize	9¼@9¾	
200	Hussey	30c	
150	Hamburg	1¼	
275	Hillside	2	
1095	Highbridge	2.30@2	
550	Independence	1.30@1¼	
270	Jackson	8¾	
85	Leeds	1¼	
105	Leopard	1	
60	Manhattan	2¼	
525	Monte	2¼@2	
750	Martin White	5¼	
20	May Belle	50c	
50	McClinton	40c	
100	New Coso	25c	
100	Northern Belle	10	
250	Navajo	45@50c	
50	Oriental	75c	
550	Paradise	2@1.95	
75	Raymond & Ely	9¼@9	
100	Summit	1

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

CALIFORNIA.

AMADOR.

MOORE MINE DITCH.—*Dispatch*, Dec. 21: The building of the Moore mine ditch, is progressing rapidly, the workmen now being a short distance from Jackson. The water will be piped across Jackson creek just below town to the ridge on the opposite side. There are about 100 men at work, and it is expected that the work will be completed in about two weeks.

RICH MINE.—*Ledger*, Dec. 21: W. Vandament has struck a quartz ledge of extraordinary richness at Irish Town, near Pine Grove. F. M. Brown of Sutter Creek, has purchased an interest in the claim. Those who have seen the claim pronounce it one of the most important mineral discoveries ever made in the county. The ledge is said to be eight feet in width. A piece of quartz, weighing between 35 and 40 pounds, was exhibited the other day, which was studded all over with free gold. A fair estimate places its value at from $70 to $80.

ITEMS.—It is reported that rich ore has been struck on the Centennial. The machinery at the Hercules will soon be running. The Empire mill is still running by steam. The sulphurets are paying well, and the rock keeps up its quality. The Keystone mine is yielding some very rich rock now, in which free gold in large quantities is plainly visible to the naked eye. At the Grass Valley claim everything is in readiness for hydraulicking as soon as water can be had. Over 1,000 feet of pipe is in position.

BUTTE.

OUR RESOURCES.—Oroville *Mercury*, Dec. 20: Mining brings more money into the town every week than all other resources combined. The weekly shipments of the Chinamen working in the lava beds alone range from $10,000 to $15,000. This amount is sent to the Mint at San Francisco, coined and returned to this city, where a large percentage of it is placed in circulation. In addition to the productions of the Chinese, the bank purchases about $4,000 worth of dust per week from the numerous men working upon a small scale in the neighborhood. And semi-occasionally, the Spring Valley Company send in from $50,000 to $75,000 worth.

CALAVERAS.

NEW QUARTZ MILL.—*Chronicle*, Dec. 21: While in Murphys lately we visited a quartz mill recently erected there by Mr. Smyth. The method of working the quartz is a modification of the Paul process. The ore is first broken to a suitable size and then thoroughly dried. It is then put under stamps and crushed. From the battery the crushed ore is carried in elevators to the "pulverizer," a large, revolving, iron cylinder, in which it is reduced to an impalpable powder by the attrition of quartz rocks with which the cylinder is partially filled. From the pulverizer the powdered ore drops on to a copper-covered revolving cylinder, and from that descends to amalgamating surfaces. There is an abundance of ore in close proximity to the mill and facilities for working it are excellent.

EL DORADO.

KELSEY.—Placerville *Democrat*, Dec. 21: Work on this mine is still progressing, notwithstanding many of the workmen have been obliged to lay off on account of sickness. The shaft has been sunk seven feet during last week, and the lower level has been driven ahead eight feet and timbered its entire length. A winze has been started to connect with the lower level at a distance of 75 feet from the shaft. The ore throughout is looking as well as heretofore, and the developments so far are giving great satisfaction to all concerned in the mine. It is said that the clean-up of last week, was better than was anticipated. The sulphurets are giving the most satisfactory results both here and in San Francisco, and I am told that parties in the city are endeavoring to purchase them at a high figure. Work on the first northern extension has commenced and developments so far give great promise.

INYO.

KEARSARGE.—*Independent*, Dec. 14. Superintendent Gray has just finished putting the ventilating apparatus into the long tunnel, preparatory to driving ahead to connect with the shaft. Operations are suspended for the present, but it will be but a few days, or a month at the most, before he will have a full force at work on the two upper tunnels. By early spring he expects to have an Ingersoll drill at work by contract to drive in the main tunnel from just above the mill to the mine, the contract to be not less than 2,000 feet of tunnel. At least, negotiations to that effect are now pending.

MONO.

We take the following from the Bodie *Weekly Standard*, Dec. 18th:

HARRINGTON CON.—This promising property is situated on the eastern slope of Bodie bluff, and is being developed by a tunnel running east. A distance of 300 feet has been made into the hill, and work still progressing with cheering results. Timber and lumber are now on the ground for timbering and the construction of house at mouth of tunnel. The property is under the charge of James Harrington, and is stocked in San Francisco.

SUMMIT.—The engine foundation is completed, and the engine is being set in place. The timbers, etc., for shaft house are framed and ready to be set up. The building is now being put together. As soon as the engine is in place, which will be in a day or two, work will be resumed in the drifts and in the shaft.

INCA.—This mine is situated on the summit of Silver Hill, and at the end of the Champion and Goodshaw. The shaft is down about 35 feet. In the crosscut at the bottom a very fine looking six-inch vein has been cut. This mine is bonded to Lecker & Co., of San Francisco, who, if we are not wrongly informed, have a good bargain.

LONDON.—Ledge looking well in the bottom of the shaft. Work will soon be suspended for the winter. J. C. Lennon has this property bonded, and there is every probability that if he can get it into good hands there will be some valuable developments made in the claim next year.

SOUTH BODIE.—Work on main shaft being pushed along with all possible speed, and the cribbing following the work as fast as distance is gained. Material passed through during the week of a most favorable character, and everything doing well about the works.

SPAULDING.—Since last weekly report the shaft has been sunk 14 feet, making a total depth of 386 feet. Rock in the bottom getting harder. The crosscut west is now in 18 feet. Have cut into a hard formation, which has the appearance of being the east wall of the ledge for which this crosscut is being run.

SOUTH BULWER.—Shaft has reached a depth of 252 feet. The crosscut east, on 200 level, is in from main shaft 35 feet, the face is hard, blasting porphyry, mixed with stratas of quartz. The ground is rapidly assuming a more favorable appearance, and indications point to the near presence of an ore body.

NOONDAY.—The shaft is now down 102 feet, and the ledge is 2½ feet wide. The ore will run from $30 to $60 per ton by assay. This development is noticeable because of its location, nearly two miles north of Bodie bluff.

CALIFORNIA.—The total length of west crosscut is 24 feet; that of east crosscut is 14 feet. Feeders of quartz are frequently cut in each direction.

BLACKHAWK.—The east crosscut was run seven feet the past week; total length 102 feet. The new shaft has been sunk 14 feet; total depth, 162 feet. The entire bottom of the shaft is in vein formation.

DEVELOPMENT IN THE BODIE.—Quite an interesting development has been made in the Bodie mine during the past week. The east crosscut from the bottom of the Bruce vein intersected the Gildea ledge at a distance of 25 feet from the winze. The ledge was of about the same character as on the level above. This winze is 100 feet deep, and assures the continuation of ore for that additional distance, as well as the prospect that the Bruce and Gildea come together at a depth, as they have done in south, where they joined at a distance of 257 feet from the main cross-cut.

PLACER.

ROCK CREEK MINE.—*Herald*, Dec. 21: Molin & Heenan, of the above-named mine, which is undoubtedly one of the best quartz mines in Placer county, are making fine improvements on their mine. They are enlarging their shaft and timbering it with 8x8 red fir timber, and are otherwise adding greatly to the working facilities of the same. The last crushing of 69 tons of rock taken from the 80-foot level of this mine paid $35 per ton. Messrs Molin & Heenan are again about ready to take out quartz, and expect to have another crushing in a few weeks.

HAZARD MINE.—Dutch Flat *Forum*, Dec. 19: This claim is thought to be on the same channel as the Weske and the Swiftshore. Up to the present time about $90,000 has been expended on it. Its present organization under Colonel Keown was completed in 1876. After a partial abandonment, and the burning of the mill by incendiaries, Col. Keown, with the old arastra now in use, commenced crushing the tailings of the dirt taken out years ago, which paid so well that the Colonel set to work among his personal friends and succeeded in forming the company as it now stands. The old arastra is still going, and still pays. The modern buildings are all good, complete and commodious, and arranged, especially the engine house, so as to facilitate the work and secure economy in labor and time. The main shaft is 160 feet deep, 8½x4½ in the clear, and the tunnel running up stream on Volcano canyon, 2,140 feet long, with numerous side drifts to prospect the width and richness of the channel, which they have unquestionably been on all the time. The results of the tunnel have not been as good as was expected. Nevertheless, rich spots have been found and the prospects are good.

SIERRA.

ITEMS.—Downieville *Messenger*, Dec. 21: Water is getting very scarce at the Buttes mine, and report says that a number of men have been suspended from work on this account. We shall soon get rain, and then water will be plenty. Pipe clay begins to appear in the cracks of the lava in the Pliocene shaft. Bald Mt. Extension tunnel was in 125 feet last Friday. The contractor is pushing it at the rate of eight feet a day. The Bonanza company, of Howland Flat, have let a contract for running 1,400 feet of their tunnel. The price is some $3.50 per foot. We are informed that the Bald Mt. mine is very wet just at present, the ground being harder to keep up than at any previous time.

TUOLUMNE.

HUNTER MINE.—Stockton *Independent*: Specimens of rich quartz have been taken from this mine. They were obtained from nearly the top of the ore chimney. A tunnel has been run which strikes the lode at a depth of about 200 feet from the surface, and the rock is found equally rich in free gold. California capitalists inclined to engage in mining enterprises will find in "Old Tuolumne" a field for quite as safe ventures as in the more distant argentiferous regions of the State of Nevada and its neighboring Territories. Ex-Assemblyman W. G. Long is Superintendent of the Hunter mine.

NEVADA.

LINCOLN COUNTY.

RAYMOND & ELY.—Pioche *Record*, Dec. 21: The 30-stamp mill of this company will start up to-day on low-grade ore, of which they have a lot on hand. At the mine, crosscutting is still continued on the 1400 level, expecting to strike the ledge at any time. The upraise on the 12th is looking well, and are taking out considerable low-grade ore on the 10th.

HILLSIDE.—The Hillside furnace will not be started up until the 1st of January, when J. B. McGee, the manager, will return from the Bay. The work at the mine continues as usual.

MOUNT ROSE DISTRICT.

MAMMOTH.—Winnemucca *Silver State*, Dec. 24: Col. W. T. Robinson, Superintendent of the Mount Rose M. Co., arrived here yesterday. He brought down specimens from the mine, some of which weighed 25 or 30 pounds, that equal in richness anything we have yet seen from the Paradise mines. The Mount Rose M. Co.'s mine was formerly known as the Mammoth, that being the name under which it was located and recorded. It cropped out about 30 feet high and over 20 feet thick on the side of the mountain, and was considered a mass of barren quartz, because it had not been prospected. The original owners disposed of it a short time ago to Col. Robinson, for a San Francisco company, by whom it was incorporated under the name it now bears. Ten miners are now at work on the mine, crosscutting the ledge by a drift started in the quartz on the lower side of the croppings, about 30 feet below the apex of the lead, and also drifting along the hanging wall. The crosscut is 25 feet in quartz, and as yet there are no indications of being through it. The ore resembles that found in the Mountain Bride and Red Deer, and a lot of it worked $350 to the ton, while selected specimens assay up in the thousands. About 75 tons of fine ore is now on the dump, having been extracted from the crosscut and the drift on the hanging wall, which is also in good ore.

ARIZONA.

SILVER DISTRICT.—*Sentinel*, Dec. 14: Mr. W. Hammond arrived on Thursday from this promising district, bringing flattering accounts of the developments thus far made. While prospecting he found the old Snively mine, which has long been hunted for and seemed to be lost. Mr. Hammond, however, made some other discoveries, that bid fair to realize all the wonderful predictions made for this region years ago. One especially, to be called the Hammond lode, crops out largely for about three miles, most of it being taken up, and is in a limestone formation. The ridge is capped with hard rock from two to 10 feet thick, like a blanket, under which lies abundant ore, that crops out on each side of the ridge, and the lode must be about 60 feet wide on top. It is five miles from the river, with a good natural wagon road up a wash, directly to the mine. The ore carries much gold, but is full of silver sulphurets.

SANTO DOMINGO.—Much attention is at this time being attracted to this, and the mines belonging to Messrs. Smith & Purdy are truly developing into very valuable properties. These gentlemen own several claims in the district, and have spent much time, labor and capital in opening and prospecting them. The El Manto, Gualalupe and Fresh Start mines have been worked to a greater extent than the others, and at a depth of 110 feet, the bottom of the deepest shaft, the showing is first-class, warranting the investment of any amount of capital. Smith & Purdy also own a mill-site, which from the nature of things, has a great and lasting value, covering as it does, all the available water on the American side of the boundary line, and being very accessible from the mines. The principal mines of the district are about nine miles north of the boundary line and some 40 miles south of the famous Ajo mine. Rarely rich lodes are found on both sides of and close to the line, and the same mill-site has sufficient water for them all. Mexico imposes no duties on the exportation of ore, and that started from the Sonora side of the line could be hauled to and reduced at the mill-site on the American side, thus saving the heavy tax levied by Mexico upon the exportation of precious metals. La Puerta de Liberted, a safe harbor in the Gulf of California, is but 60 miles distant, and supplies could be landed thereat cheaply and safely.

MONTANA.

ITEMS.—Butte *Miner*, Dec. 3: Last week W. A. Clark purchased of John Stinson 100 tons of high-grade manganese smelting ore. Messrs. Rundell & Co. have taken a steam engine to Brown's gulch, to be used in driving their arastra during the winter. Messrs. Gassert & Reeding's claim, on the Burlington lode, has been bonded to Col. L. M. Black and Mr. John Connor for six months, for $30,000. The Green Campbell mill, at Silver Star, is to have five stamps more, making its total capacity 15 stamps. Late sales of interests in the Gagnon claim have taken place at a rate which would make the entire claim worth $200,000. The Dexter mill is to be made practically a new mill. The Clipper mill has been improved. It has reduced as much as 10 tons per 24 hours.

UTAH.

ALTA.—Salt Lake *Tribune*, Dec. 11: Everything looks well in this camp. The discharge of men from the Flagstaff resulted from the fact that a large force was put upon the ore breasts while prospecting was neglected. The ore body gone, less men must be employed until further breasts were found. These were readily discovered, and work goes on again. J. J. O'Toole is superintending the Lavinia. He works about 40 men. Though the recent ore shipments have not been extensive owing to inferior hoisting facilities, rich ore bodies are nevertheless known to exist in the mine, and as soon as the hoisting machinery is set, developments of a highly encouraging character may be expected. Mr. W. E. Hall, superintendent of the Prince of Wales, Big Cottonwood, has after a great deal of dead work, discovered in the lowest level ore which proved richer and more extensive as developments progressed. A real bonanza is expected. The Vallejo is being profitably developed. The Idaho, above Grizzly Flat, has a 6-inch vein of rich ore. It is about to be opened under the management of W. E. Hall. The Toledo, together with the Reed & Benson, City Rock, Live Yankee and Emma, is working a full complement of men, and yielding up the precious metal in gratifying profusion. The great drawback to the successful working of the other mines is the lack of machinery. There are hundreds of properties in Little Cottonwood to-day fully as good, if not better than those above enumerated, which can not be developed because the owners have not the necessary means.

STORMONT.—Silver Reef *Miner*, Dec. 7: The Buckeye and Last Chance are hoisting a large amount of rich ore. We must not forget that Captain Lubbock has struck it rich in the Maggie within a stone's throw of these mines, on the spot where he put down the diamond drill. The drill revealed the existence of the ore, and a shaft was sunk at once to work the same. Some very rich specimens of chloride and native silver were shown us from the new discovery, and ore from the same is being hauled to the Christy mill. The celebrated California mine is but a few rods distant, and is worked by steam hoisting-works. A very small engine and boiler does the work, and we wonder that such machinery is not more extensively used in the district. Others, however, are preparing to erect steam hoisting works.

MOUNT BALDY DISTRICT.—*Tribune:* A shipment of 10 tons of ore from the Deer Trail mine, Mount Baldy district, Beaver county, was made this week which assayed $360 in silver and $30 in gold. The ledge is now over four feet in width and is constantly improving.

Bullion Shipments.

Since our last issue, we have noticed the following shipments of bullion:

California.—Bodie, Dec. 17th, $23,821.40; Dec. 23d, $12,300; Extra, Dec. 10th, $2,062; Dec. 13th, $1,662; Dec. 18th, $2,800; Standard, Dec. 20th, $16,854.94.

Idaho.—Black Jack, $10,700.16.

Nevada.—California, Dec. 21st, $216,541.63; Grand Prize, Dec. 23d, $27,000; Jefferson, Dec. 18th, $2,049.07; Manhattan, Dec. 17th, $10,900; Dec. 19th, $11,100; Dec. 23d, $11,034.88; Navajo, Dec. 23d, $5,200; Northern Belle, Dec. 16th, $4,386.90; Dec. 18th, $3,478.24.

The *Sentinel* reports shipments from Eureka, as follows: Dec. 17th, $1,447.26; Dec. 18th, $1,732.61; Dec. 19th, $4,444.74; Dec. 22d, $5,493.88.

Utah.—We are indebted to the Salt Lake *Tribune* for the following: The bullion receipts at the Union Express office for the week ending Dec. 19th, were as follows: Ely Mill, Dec. 17th, $1,200; Ontario, Dec. 17th, $2,798.73; Dec. 18th, $2,476.00; Dec. 19th, $4,019.52; Ontario Mill, Dec. 13th, $2,645.20; Dec. 14th, $2,765.87; Dec. 16th, $7,026.61; Silver Reef, Dec. 13th, $5,176.90; Dec. 18th, $22,555.52; Dec. 19th, $1,700.60.

New Incorporations

GREAT HOPE M. Co.—Location: El Dorado county, Cal. Capital, $50.000. Directors—Wm. Boden, Alexander Gerdes, Charles Joost, Benjamin Dore and Henry Frank.

IDAHO G. & S. Co.—Location: Eureka district, Nevada. Capital, $10,000,000. Directors—A. B. Forbes, Charles Webb Howard, B. M. Atchison, W. B. Summer and Thomas Findley.

EAST MAMMOTH G. & S. M. Co.—Lake district, Mono county. Capital, $5,000,000. Directors—W. R. Loose, James Morgan, Alexander Rutherford, F. M. Adams and K. Meyers.

CHIMNEY PEAK G. M. & M. Co.—San Diego county. Capital, $1,400,000. Directors—David Neahr, John F. Haviland, W. H. Doxlake, H. M. Ellsworth, and George H. Rice.

THE assessments on Belmont stock since Dec. 9th, 1875, amount to $225,000, and the bullion receipts from the mine, to $37,000.

Notes on Trinity County.

The following information in regard to the mines of Trinity county, we obtain from an old and intelligent resident of that region. The gold product of Trinity will amount tbis year to about $2,000,000, the most of it taken from the placer mines. This is ths largest production mads for the past 20 years, though it is probahle enough tbat it will bs surpassed the coming year, should water be abundant. As Trinity polls only about 800 votes, this gives $2,500 per year to each voter; a hetter showing measursd by this rule, than can he made by any other county in the State. To date the rainfall amounts this season to ahout 7 inches, more thau has heen had in the central or auy of the other mining counties further south, hut not enough to start hydraulic washing, hy which method most of the gold dust is now taken out here. There is a great extent of good hydraulic gravel ground in Trinity, not a tenth part of which has yet heen utilized for want of capital. No sucb opportunities for investing money in this line of business exist elsewhere in California. Buckeye mountain, a high ridge lying hetween Stewart's fork and Rush creek, a few miles east of Weaver hasin, is supposed to he composed wholly of pay gravel. The top of this ridge is 1,500 feet ahove the adjacent streams. It has an average width of four or five miles, and prospecting shafts sunk to a depth of over 100 feet, indicate that the entire mountain would pay to he washed hy tbe hydraulic process. A company have built a ditch for hringing water upon this mountain, hut for lack of sufficient means to properly open up their ground, they have not yet heen ahle to make such a prodnction, as with a small additional expenditure of money could surely he reached. They have pay gravel enough to last a hundred years, and one of the finest water rights in the State. To investors who want something certain, and, to last a life time, this ought to prove an acceptahle property.

Brown's mountain, another high ridge, separated from Buckeye hy Rush creek, contains, to all appearance, an equal amouut of auriferous material. Oregon mountain, west of Weaverville, affords also an endless quantity of rich hydraulic land. All of these places have heen worked steadily for more than a quarter of a century, and yielded enormous quantities of gold dust. As yet they have only been scratched on the surface. Their real wealth remains to he gathered. Bnt it now requires money to open, outfit and work them. It also requires men to take hold of them having a little more enterprise, energy and business tact, than is possessed by the old stock of miners, who are content to work away at them after their ancient and easy-going fashion.

Along Trinity river, for a distance of nearly 100 miles, there are still good placer diggings. These consist of the higher hars along that etream which are both rich and extensive, hut as yet have heen hut little worked for want of water. The low hars, from which the dirt could he easily taken to the river to he washed, or upon which ditches could be readily hrougbt, were washed off first, enriching the early crop of miners, many of whom having made their piles left the country, not stopping to huild ditches or make other costly and permanent improvements. As a general thing, it was the lucky ones wbo left and the less fortunate who stayed behind. These latter, having hut little money and many of them having since lost their grip, mining affairs in Trinity hear largely still the impress of primitive times.

During the past few years, however, a good many small ditches have heen constructed, bringing water upon those higher hars from the mountain gulchee adjacent, and in some instancss from the forks of the Trinity or the main river itself; these ditches being huilt sometimes hy old residents, hut oftener hy newcomers attracted to the country hy the many inducements offered here for the prosecution of mining enterprises. On these hars the dirt is rich, and washes readily, and there is alwaye plenty of fall; the gold heing generally coarse and easily eaved. The cost of hringing in water and rigging up works is small here compared with that reqnired in the more southerly counties, the reverse heing true as regards profits realized.

On the lower Trinity this class of mines are, without exception, yielding well, their annual net earnings being at the rate of ahont $5,000, and often as much as $8,000 or $10,000 on every $20,000 invested; the favorahle feature ahont the husiness heing that these earnings are sure and lasting, as the material is plentiful and water always in good supply. At McGillivray's Ranch, Dixon's Bar, Cox's Bar and Taylor's Flat, very profitable operations have heen carried on the past year, and extensive preparations made for thc coming season. At the latter place Archie McDonald, a well-known California and Nevada miner, has inaugurated a large and promising enterprise, and which, if it do not pay like some of the Comstock honanzas, can be always counted on for a fair return. He has got his property in fine shape, and, like many others here, only waits for a little more liheral rainfall to commence active operations on a large scale. The miners have everywhere improved the last dry eeason to get their claims in good condition for winter work, which they have generally succeeded in doing. Some new ditches have heen dug, and the old ones cleaned out. The flumes have heen re-hlocked, and some additional ones laid down; bedrock cuts and tunnels have heen run and all needed repairs made, and with the usual supply of water a hig crop of gold dust will he gathered in Trinity during the incoming year. The quicksilver and vein mining interests are also in a prosperous condition, the Altoona mine turning out monthly about 360 flasks of quicksilver; and the mines about Deadwood, Indiau Creek, Bullychoop and other quartz mining centers yielding satisfactorily. No large ore reducing mills have yet been huilt up that way, much of the quartz heing, in fact, worked with arastras, hut ths business, with hardly an exception, has been made to pay, and is steadily expanding, a very markad progress having heen made in it the past year. While Trinity offers hut a poor field for purely speculative operations, our informant is of the opinion that it presents many good opportunities for the permanent investment of capital, as well as fair chances for working miners who have enough money to give them a start to make good wages.

The Charter Tunnel.

We publish hy request the following article from the Ruhy Hill *Mining Record*. The account is vouched for as authentic:

Few have even a remote idea of the extent of this gigantic enterprise; its ohjects, what mines it will develop, etc. In 1870, Chas. Dehman, well known all over this section as a reliahle gentleman and a good judge of mines, visited Prospect mountain on a prospecting tour. After a deal of tracing all over the surface for a considerable distance, sinking of shafts and making assays, he finally determined to start what is now known as the Charter tunnel. Thie was about the middle of '72, and from that time to the present, work has been going on in this valuahle property. Up to the time of incorporating, 570 feet bad heen run in the main tunnel, hesides thousands of dollars expended in sinking shafts and running drifts on other portions of the company's ground.

The company was organized under the laws of the State of Nevada, and Geo. M. Sahin was elected President; James Sias, Treasurer; E. J. Butler, Secretary and Gen. P. E. Connor, Superintendent; Trustees, Thos. J. Read and Chas. Dehman, aud the officers above named. The capital stock consisted of 100,000 shares of the par value of $100 each, and 25,000 shares were set apart as a workiug capital, 8,000 of which have already heen disposed of, and sales are heing made every day of the residue. Immediately after incorporating, in June, a contract was let to enlarge the tunncl, lay a track the full length of the same and get everything in excellent order for resuming active operations at once. The next contract is for 200 feet, for which the company is paying $7 per foot. The

First 500 Feet

Was run through harren ground, but as it advanced into the mountain good indications were discovered on every side. The surface formatione were passed through and ledge matter could he seen in stratas across the face. It is now in a total length of 600 feet, and several feeders are coming in which show considerahle silver. At the time of our visit a rich strata was struck, ahout four inches wide, and appears to he getting wider rapidly, as the tunnel is advanced. This tunnel runs nearly southeast. There are 2,500 feet of continuous mining ground ahead of this tunnel helonging to the company, and also a large area of patented claims on either side helonging to other parties, which will he prospected hy crosscuts from the tunnel.

State Pride No. 1.

A crosscut run south from the present face of the tunnel would, in a very short distance, tap the ledge in State Pride No. 1 and several other adjacent claims. This claim has heen prospected to a depth of 54 feet from the surface, and 35 feet down a ledge varying from 20 inches to four feet wide, was cut. Assays have heen ohtained as high as $894.

State Pride No. 2.

This is the next claim that will he reached hy the tunnel. A shaft was driven down 85 feet on the ledge. This ledge assays very high, and seems to run parallel with the ledge in No. 1.

Eleven Different Locations.

In the State Pride series there are 11 different locations, covering 800 feet of ground. Shafts were sunk on several, and as they showed every indication of heing regularly defined ledges, from one to four feet in width, it was not deemed necessary to prospect them all, and the tunnel was then started to develop them. These are interlaced with cross ledges which run ohliquely across. The croppings very much resemhle those on Ruby Hill, only a little darker, perhaps. They cannot he termed hlind ledges, for the croppings can he traced on different points on the surface, and on einking a few feet almost auywhere, ledge matter is encountered.

Monogram.

A shaft was sunk down 30 feet, following the ledge, wbich is 20 inches wide all the way. Several other well-defined ledges crop out on the surface near to this one. Assays of $200 have been obtained. A tunnel was run in on one of these ledges, tracing it lengthwise over 40 feet. Assaye of choice samples reached $500.

Parallel Claims.

Between those ahove-mentioned are several parallel claims on which some little work has been done. The tunnel will tap them all hetween 200 and 300 feet below the eurface. These ledges and tbe tunnel seem to he running in the same direction, southeast.

Firefly.

This shows a splendidly defined ledge about five feet wide, lying hetween two different limestone formations. It appears to be a true fissure vein.

Peer.

Lying south of the Firefly, shows a ledge varying in width from 4 to 15 feet. This claim contains only 800 fest, but has a plainly defined ledge.

Andalusia.

This fine prospect is situated hetween the Charter tunnel and the Peer. The ledge is 15 feet wide, and assays from it were very satisfactory. A tunnel was run in 40 feet and two shafts sunk, one 15 and the other 30 feet. The croppings show up holdly.

Plummets Nos. 1, 2 and 3.

The tunnel is in 85 feet, and the ledge is two feet wide at this writing, with a well-defined surface cropping, which is evidently hecoming wider as the work goes ahead. No assays have been had, hut the quartz contains rich argentiferous galena. A contract was recently let to extend thie tunnel 100 feet more, at $6 per foot. A shaft was sunk down 30 feet at another point on this claim.

Premium.

Some very fine ore has been extracted from this prospect, assaying $500, and the ledge is from three to four feet wide.

Premier.

Situated about 300 feet west of the Premium, and running parallel with the latter. A tunnel was run in 50 feet, which tapped a ehaft, also down 50 feet. The ledge is 15 feet wide and well defined.

Altai.

Southeast from the Charter tunnel is the Altai. The ledge appears to run nearly parallel with and ahout 600 feet west from the well-known Grant mine, from which a large amount of rich ore is now heing extracted.

Needle.

A contract was recently let to sink a shaft 100 feet. They are at present taking out some very high-grade ore, picked specimens assaying $1,500 per ton. The ledge is large and well defined. Ten tons that were worked in 1874 averaged, in different lots, from $200 to $500 per ton.

Dehman.

North of the Needle is the Dehman, in which is encountered the same character of ore. The last named locations were made in 1870.

Coronet.

This claim is near the Prospect Mountain tunnel. This shows a contact vein, and runs north and south. Assays show $500 in gold and silver. The shaft is down 184 feet, and a drift on the ledge from the hottom is iu 50 feet. The ledge has an easterly dip.

On the Ruby Hill Lode.

Northeast is the Jacksou, Jefferson and many others, which are thought to be on the Ruhy Hill lode. The Richmond Con. and Eureka Con. mines are to the northwest of these. A little to the east is the Magnet, Industry, El Dorado, Metamoras, Kit Carson, and many other well-known mines, which either at present or in times past have yielded a large amount of rich ore.

Can be Utilized for Eight Miles.

It is 200 feet lower than any other tunnel can be started, and can he utilized in the development of the large number of mines which it will tap in a distance of eight miles. It is already in permanent sulphurets and helow most of the oxidizing influences. The ore will douhtless prove of that permanent character encountered, which, when fouud at all, is at great depths. A tunnel started at this point must necessarily he a great property, even should the company own none of the mines which it is intended to tap, hut in the present case their own ground is rich enough to warrant advancing the same. Some of their ledges have heen followed down for 85 feet, and are distinctly defined hodies.

Thirty Claims Recorded.

The company have nearly 30 claims on record, which are a much greater number than would be required, at present, to cover their ground, hut in early times, when they were taken up, the law required all croppings to be specially located, hence, so many different claims. The

Enormous Mass of Ledge Matter

Seen on every hand is the very hest indication that a little deeper a large body of ore must he uncovered. In the year 1872 the locators had several assays from different claims, the highest of which was $900 and the lowest $20. In 1873 a numher of assays were made, the average of which was $353.

Depth of the Tunnel.

At its greatest depth the tuunel will he over 3,000 feet helow the highest peak of Prospect mountain.

A Valuable Property.

This is certainly one of the most valuahle properties in the camp, and probably in the next 100 feet an ore hody will be developed which will, in size and richness, equal any vein ever found in the camp. With all the good mines around it, it is hut reasonahle to conclude that it must prove a paying investment, and, perhaps, ere long a dividend paying institution. The stock, with the present outlook, is worth at least $5 per share. By the Recorder's hooks we find that nearly all these locations were made in the years 1870-75, at a time when only mines which are of a high grade were considered worth locating. The early date of their location shows that it was not with a speculative view, hut for permanent and legitimate investment.

What About a Free Library.

We have a grand, growing city; a city destined to attain a population and commanding importance commensurats with the growth of our favored western coast. It is time now to lay foundations broad and deep which shall determine the character and quality of the superstructure which shall hs reared upon them. Passing over the important matters of increasing trade, and providing facilities for its transaction in the time when it shall far outstrip its present dimensions, we come at once to the point we would make, aud that is, provision for the iutellectual growth of our people. We speak not of schools, but rather of a grand repository of availahle knowledge, instruction and entertainment which a grand free library shall furnish to our coming hundreds of thousands. Is it not time now that the foundation for this library should be laid, and the enterprise pushed forward with united zeal and combined interest among all friends of the true progress of our pcople? Is there not in this matter a principle aud a promise involved which should lead us to rise above personal feelings, to accept a sacred trust which we owe to the rising generation to execute? Is there not a hroad duty in thie project for a grand free library which all friends of progress should assume.

It seems now that there is a proposition pending, which shall decide the course of the Mechanics' Institute with refereuce to the huilding up of a free library, as authorized hy the last Legislature. If the Institute ehould decide not to ally its interests with the free library movement, will not the latter go forward enthusiastically by others' aid, and will it not he difficult to maintain a list of subscribing memhers when the free library is well in operation? And could not the Institute, by giving over its library enterprise to the trustees of the free library, go forward more rapidly in other works which are in its legitimate sphere? Could it not develop more fully the lyceum features, and thus contribute to the education and high entertainment of the people in a way which is now made of secondary importance? Could it not develop features for the encouragemeut of the fine arts, for the elevation of the mechanic arts, and for the free instruction of apprentices in directions which are not now open to them, but which would elevate their workmanship, their manhood aud their citizenship?

It seems to us that some action of this kind could be taken with advantage to the grand work of the Institute, and as a splendid contrihution to the progress of the free library project. Ont of 11 trustees of the free library, 5 may he appointed hy the Institute, and would not this he ample assuraace that the work which the Institute has already accomplished in its library should not he permitted to fall to the ground, hut would be used as a stepping-stone to still grander achievement for the henefit of the whole people. This is an important matter; we hope wisdom may guide the final determination.

Ore Sluice and Concentrator.

Geo. K. Evans, of San Francisco, is the inventor of an improved ore sluice and concentrator for saving such valuable heavy metals or sulphurets as may he found in the tailings, which escape from mills and other apparatus employed to work ores. It consists of an inclined tahle, with a feed box and water-dietrihuter at one end, and a trap at the other end to catch the sulphurets, whenever the tahle is sufficiently filled. The tailings mixed with water comes on through the feed hox, the hottom of which ie provided with V-shaped hlocks, to distrihute the tailings evenly. They enter upon the table through a narrow, horizontal slit. They spread evenly over the eurface of the tahle. The lighter, worthless particles are carried down to the lower end of the tahle, and the lid of the trap heing shut at this stage of the process, they pass off upon another table helow. After the tahle is sufficiently charged, water is turned on into a V-shaped trough, that is pivoted ahove the tahle near the upper end of the latter, and the length of which is ahont equal to the width of the table. This trough has a very narrow elit at the apex of the V. Within the trough is a flat piece of wood, which serves to distrihute the water equally to all parts of the slit. As said hefore, this trough is pivoted at each end, and when the water is turned on, a crank at one end is gradually turned so that the thin sheet of water coming from the slit in the trough may sweep the whole tahle from the top to the hottom. Immediately after the water is turned on, the lid of the trap at the lower end of the tahle is let down, so that the "pay," swspt hy the eheet of water, is carried into the trap and thus saved. No blankets and no copper platee are necessary, and comparatively little water is used. The tables may he arranged one helow another, so that what little is lost hy one above may have an opportunity to he caught hy the next helow, and so on. The machine has heen tested in eastern Nevada, and with very satisfactory results. Patented through the Mining and Scientific Press Patent Agency.

A Convention of leading military officers of the different States will he held at New York in Jauuary, to take action looking to a national organization.

Academy of Sciences.

A regular meeting was held on Monday, Dec. 16th, President Davidson in the chair. Among the contributions to the cabinet were the following: Seventeen specimens from the mine of the Pacific Paint mining company, of Los Angeles county, presented by Jean Jay, President of the company. Tin ore from New Mexico, and silver ore showing filiform silver, presented by John Hewston, Jr. Specimens of sandstone, serpentine, indurated sandstone and blue rock from outcrops and from wells in San Francisco, presented by C. D. Gibbes. Specimens of cement gravel, shells and blue clay, taken from a depth of about 300 feet in wells bored in San Francisco bay by Morgan & Co.

Hon. Alex. Del Mar read a paper on the "Evolution of Words." He considered particularly the words "civilization," "money," and "value." His remarks on the "value" were exceedingly interesting. "Value," he said, "had always been the

"Ghost in Political Economy.

"Economists have talked all around the subject, but have never succeeded in talking at it. They have always ended by stating what 'value' arises from, but never what it is." He disagreed even with the latest school of economists, of which Macleod in England, and Perry in America, are representative men. In fact, as the whole of political economy turns upon the conception of "value," Mr. Del Mar may claim to be the founder of a new school. We hope at some future time to present this part of the paper in full.

Mr. Del Mar was followed by Prof. Price, who read a paper on

Arteslan Wells,

Prepared by C. D. Gibbes, C. E. This paper also we will present more fully in a few weeks. The writer considered the wells of San Francisco, devoting most of his time to those of the Van Ness basin, presenting drawings of the latter, and also of the outcrop of sandstone and serpentine in the neighborhood. He next took up the wells bored in San Francisco bay under the direction of Morgan & Co., the oyster raisers. The most interesting part of the paper was that descriptive of a section presenting the country from San Francisco east through Mt. Diablo and Stockton to the foothills of the Sierra Nevadas. The section showed the Stockton well, and also that upon the Norris grant. The latter is now about 2,120 feet deep. The question as to whether deep borings in San Francisco will succeed in striking water from the Sierra Nevadas, was discussed. Mr. Gibbes' conclusion was that no such water can be struck in San Francisco. However, we do not think that his arguments were at all conclusive. He had no data whatever to prove that deep-lying strata, having their outcrop in the Sierras, do not pass under us to the ocean. And such strata might be so bent and tilted to be much nearer the surface at San Francisco than they are at the Norris grant, and at the same time sufficiently regular to hold water. This is of course mere theorizing, with no facts to back it; but at any rate Mr. Gibbes presented no facts to the contrary.

After the paper was read, the subject was discussed at some length by the members. Dr. Harkness gave further facts concerning the Norris well. The water changes in bight quite frequently, the level varying as much as 36 to 50 feet. Several layers of wood have been passed through and illuminating gas has been struck. Prof. Davidson spoke of the change in level in wells near tide water. He thought it due to the increase and decrease of pressure on flexible strata. When it was questioned whether the small rise of tide, in San Francisco bay for instance, could affect strata at depths of 200 feet or more, Prof. Davidson cited the instance of the tilting of the hill on which Greenwhich stands, in support of his opinion. Every 24 hours the hill rises and falls, an extremely minute distance of course, but sufficient to be detected by delicate instruments. Prof. Davidson though it due to the rise and fall in the Thames. Prof. Thos. Price reported his analyses of water from San Francisco wells, that from the Van Ness basin was characterized by a large percentage of calcareous matter. That from the lower portion of the city contained more magnesia, indicating that it washed upon the underlying serpentine. The difference in the waters from the two localities proved that they were in separate basins, and did not come into contact with each other. One remark of very great importance was made by Prof. Price, viz: that the water was noticeably free from all sewage matter. Dr. Gibbons seemingly contradicted this. He believed that sooner or later the water *must* be contaminated with sewage, as there were no truly artesian wells in San Francisco, all of them being supplies by drainage from the immediate locality.

After the discussion the nominations of officers for the ensuing year, were accepted from the committee. With the exception of S. B. Christy, corresponding secretary, the officers will be the same as at present. A eulogy on the late D. D. Colton, trustee of the society, was read, and resolutions of esteem and sorrow were accepted.

The meeting adjourned, the session having been a very interesting one.

Useful Information.

Glass Gilding.

A new process by M. Dodon, is thus given by the *Moniteur de la Ceramique:*

Gold, chemically pure, is dissolved in aqua regia (one part nitric and three parts hydrochloric acid). The solution effected, the excess of acids is evaporated on a water-bath, till crystallization of the chloride of gold takes place; it is then taken off and diluted with distilled water of such quantity as to make a solution containing 1 gram of gold to 200 cubic centimeters of liquid; a solution of caustic soda is then added until the liquid exhibits an alkaline reaction. The solution of gold is now ready for reduction. As a reducing agent, an alcoholic solution of common illuminating gas is used. This is prepared by simply attaching a rubber tube to a gas-jet and passing the current of gas for about an hour through a quart of alcohol. This liquid (which should be kept in a closed vessel) is added in quantities of from two to three cubic centimeters to 200 cubic centimetere of the alkaline solution of gold before mentioned; the liquid soon begins to turn to a dark green color, and at length produces the metallic layer of gold of known reflecting power.

If the gold employed ie an alloy, the foreign metals must in all cases be first removed; and especially the least traces of silver, because the very smallest quantity of this metal totally prevents the regular and uniform deposition of the gold.

The bath thue once prepared, it is proposed as a method of gilding mirrors, and also for all the articles of various branches of industry where this process of gilding could be used with success and to advantage.

Felling Trees by Electricity.—The destructive effect of a stroke of lightning upon a tree has led an ingenious gentlemen in India to test the value of artificial electricity in cutting down trees. The two ends of the copper wires of a galvanic battery were connected with platinum wire, which of course became instantly red-hot, and was then passed backward and forward across the trunk of the tree to be felled. Unfortunately the platinum wire at hand was too fine for the purpose, and was consumed long before the work was accomplished. But the tree was sawn one-fifth through, and there seems to be no reason to doubt that with larger wire and a battery of suitable strength the axe and saw may find a formidable rival in electricity. It is calculated that a tree which requires two hours to fell with an ax may be brought down in 15 minutes by the new process, and that without sawdust or waste of wood in chips. A patent for this mode of felling trees was taken out in this country some two or three years since; but we have had to wait for the "ingenious gentleman in India" for the first effort at a practical method.

Warning to Locomotive Engineers.—Drs. Charles M. Cresson and Robert E. Rogers, of this city, says the Philadelphia *Ledger*, well known as experts in chemistry and dynamics, were appointed by the Reading railroad company to inquire into and report upon the causes of the recent explosion of the boiler of the express locomotive "Gem," at Mahoney City, by which five lives were lost. Their report, which is designed to cover the whole scope of a most careful investigation, is not yet made public, but they have arrived at the following specific conclusion, which we give in their own language: "We are, therefore, of the opinion that the explosion of the boiler of the locomotive 'Gem,' was produced by the projection of foam upon the heated crown bars of the furnace, caused by suddenly and widely opening the safety valve, at a time when the water had been permitted to get so low as to overheat the crown of the furnace." This is an important matter that should be carefully noted by locomotive and other engineers.

Just So.—A man in Fulton, N. Y., recently laid his finger on the table in front of a buzz saw to feel the momentum of the air. The saw was going so fast that the teeth were not to be seen. His finger was taken off. While he was looking at it the foreman came up with the question: "How did you do it?" "Why, I put my finger down so," answered he, placing the other forefinger, as he thought, well away from the teeth. To his horror, the saw took off that one, too, at the second joint.

Folding Fans were invented A. D. 670. The fan which opens and shuts is a distinct unchallenged Japanese production, the model being a bat's wing. So various are its uses in Japan for artistic decoration, in etiquette, in war, in peace, in literature, and in ways unknown in other countries, that Japan has been called the "fan country."

The Luminous Clock-dial.—The inventor of the luminous clock-dials, of which so much has been itemized in the newspapers, appears to be W. H. Balmain, and his secret consists in mixing a phosphorescent salt with paints and varnishes, which will store up light during daylight, and give it out at night. He uses a mixture of lime and sulphur.

Steam as a Light Reflector.

As everything pertaining to the improvement of the methods and paraphernalia of illumination is at the present time looked upon with special interest, we reproduce, for the benefit of our readers, an account of a recent patent granted in Germany to Herr L. Brandau, of Berlin, in which he proposes to utilize the emissive properties of steam for illuminating purposes. In describing his plan, the patentee refers to the fact that steam in condensing forms dense white vapors, which possess the property, when exposed to an intense source of light, of partly reflecting and partly absorbing and subsequently emitting it, as the clouds behave toward the sunlight, diffusing a mild and uniform brightness. In adapting his system to overhead and side lights, Herr Brandau employs an apparatus consisting essentially of a glass chamber, into which steam is admitted, a passage way for its exit being also provided. This is then either illuminated directly, or with the aid of mirrors, by the source of light.

Novel as it may seem, the plan appears to us to have decided merit, and it is not impossible that the idea of Herr Brandau may contain in it the elements necessary for the successful moderation and diffusion of the blinding brilliancy of the electric light, which has in most situations proved to be a serious drawback to its usefulness.

The high absorptive and emissive properties of water vapors, both for heat and light, are well-known physical facts; and the commonplace allusion to the sudden gleam of brightness that follows the escape of clouds of steam, especially noticeable when the sunlight is hidden, will serve as a familiar example of a principle that Herr Brandau proposes to turn to useful account.

The Motion of a Wagon Wheel.

The most of our readers will recollect the newspaper discussion, some three years ago, in regard to the relative motions of the upper and lower portions of a wagon wheel. The *Scientific American* thinks the position it took in regard to that question has been fully demonstrated as follows: "The instantaneous photographs of trotting horses, taken by Muybridge, of San Francisco, furnish the first visible demonstration of the much disputed fact that the top of a wagon wheel, when running along the ground, moves faster than the bottom. It is obvious that an instantaneous photograph of a wheel, revolving upon its axle in the air, would show all parts of the wheel with equal distinctness. But if the wheel have a progressive motion, and any one portion has a greater motion than its corresponding part, above or below, there must be a liability to blurring in that part of the picture.

These pictures are taken with so brief an exposure that the horse, though moving at a 2:24 gait, is sharply outlined. The wheels of the driver's sulky, however, have a different tale to tell. The lower third of each wheel is sharp and distinct as if absolutely at rest. Not so with the top, that part of the wheel showing a perceptible movement during the two-thousandth part of a second of the exposure of the plate. The upper ends of the spokes are blurred, and the rim likewise, thus giving a physical demonstration of the truth which mathematics establishes.

Good Health.

The Art of Prolonging Life.

Persons living in marshy districts, says the Baltimore *Underwriter*, who are necessarily exposed to miasmatic exhalations, will find that lime juice mixed with water and taken freely as a beverage, will prove an excellent preventive of malarial fevers. Those who are suffering from intermittents will find that the antiperiodics, which are cheaper than quinine, the great type of the class, will answer as good purpose if taken in the only proper way, that is a full or even heroic does one hour before the expected recurrence of the chill. When distributed throughout the intermission in very small doses their effect is lost, and disappointment follows.

The medical gentlemen who so carefully prepared the tabulated reports of the mortuary experience of the Mutual Life, of New York, have shown in their admirable analysis of the causes of death, that the proportion of loss from consumption has been 19.17% of the total mortality of the company, and 19 per 10,000 annually. Such figures show the immense importance of more effective methods of treatment, and we are glad to observe in the *Medical Record* the details of a treatment that, so far, has been very promising in its results.

The theory of cure is to clear the lungs by a mechanical effort, chiefly by manipulating the muscles of the throat so as to cause more forcible breathing; second, to establish perfect digestion; third, to promote a process of healing the tubercles, so that they shall become chalky or calcified masses; fourth, to compel the patients to take plenty of fresh air, sunlight, and out-door exercise. To secure perfect digestion, a special diet is ordered in each case, and the food is changed as the power of assimilating it improves.

To promote the calcifying of the tubercles, the salts of lime, which are found in most vegetable and animal food, must be supplied in a soluble condition; the theory is that too much heat in ordinary cooking destroys the natural combination of these salts with albumen, and renders them insoluble to a weak digestion. Out-door exercise is regarded as so important that the patients are instructed to go out in rain, snow, dampness, or even night air or dew, the habit thus acquired neutralizing the danger of catching cold from such exposure. Only strong head winds and extreme hot weather need be guarded against. The patients sleep with the windows open, summer and winter.

A Minneapolis physician, whose cinchona recipe for the cure of drunkards recently attracted attention, recommends this highly carbonaceous mixture in the treatment of consumption: One half pound finely cut up beef-steak (fresh); one drachm pulverized charcoal; four ounces pulverized sugar; four ounces rye whisky; one pint boiling water. Mix altogether, let it stand in a cool place over night, and give from one to two teaspoonfuls, liquid and meat, before each meal. The value of this method of supplying a sufficiency of carbon in a form that may be readily appropriated is obvious.

Benefit of Laughing.—Dr. Greene, in his "Problem of Health," says there is not the remotest corner or little inlet of the minute blood-vessels of the human body that does not feel some wavelet from the convulsion occasioned by good, hearty laughter. The life principle, or the central man, is shaken to its innermost depths, sending new tides of life and strength to the surface, thus materially tending to insure good health to the persons who indulge therein. The blood moves more rapidly, and conveys a different impression to all the organs of the body, as it visits them on that particular mystic journey when the man is laughing, from what it does at other times. For this reason every good, hearty laugh in which a person indulges tends to lengthen his life, conveying, as it does, new and distinct stimulus to the vital forces. Doubtless the time will come when physicians, conceding more importance than they now do to the influence of the mind upon the vital forces of the body, will make their prescription more with reference to the mind, and less to drugs for the body; and will, in so doing, find the best and most effective method of producing the required effects upon the patient.

Sanitary Science. — At a recent meeting of the N. Y. Academy of Sciences, an interesting discussion was held on Sanitary Science, in which Dr. Minor attributed disease to what Richardson calls "ultra-microscopic molecular aggregates," which always exist in the air, but take hold of us only when our vitality is reduced to a certain point. It has been shown that decay is absolutely impossible in vessels from which they are excluded. But for them the earth would now be heaped with the undecomposed remains of animals and vegetables. According to this view, the future efforts of sanitary science must be simply in the direction of learning how to protect ourselves against the "ultra-microscopic molecular aggregates." Much can be said in regard to the unhealthy conditions arising from the use of illuminating gas, which not only withdraws from our rooms a large amount of oxygen, but also fills them with noxious products of combustion. Considerable gratification was manifested at the probable avoidance of much of this trouble from the expected introduction of the electric light.

Food too Easily Digested. — The healthy adult requires food which will give the stomach work to do. The stomach requires work as much as the legs or arms. The nutriment of food for such should not be abstracted and ready prepared, as, for instance, it is, in milk, eggs, meat; it is better that the stomach abstract it by the process of digestion from food. With the sick and the young, however, the case is very different. The stomach of a strong man is like a quartz crushing machine, capable of doing vigorous work. That of a dyspeptic is quite different, and may need great care to enable it to do its work at all. Weak stomachs, however, may be trained by slow degrees to do their work well by giving them just the right food, properly chewed, and stopping the expenditure of nerve force in other directions so that the blood may go to it. By such a course half the dyspepsia might be avoided or cured.—*Herald of Health.*

Effect of Quinine on the Hearing.—It is a well-known fact to medical men that there exists a great prejudice among a large number of people against taking quinine, the idea being very prevalent that a prolonged use of it not only affects the hearing, but (to use the common expression) that it "gets into the bones." As regards the former belief, Dr. Roosa, of New York, has recently been collecting and examining the evidence as far as possible, and has come to the conclusion that in some cases there really is a permanent nervous affection of the ear produced which justifies common opinion. Hitherto physicians have generally disbelieved this and ascribed the notion to prejudice.

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SAN FRANCISCO:
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Assessment Notice—Cherokee Flat Blue Gravel Company; Annual Meeting—California and Oregon Land Company.

The Week.

This week closes a semester that has been very rich in promise for the miuers of the coast. There have been signs throughout the six months past of the increasing interest in our mines, throughout the United States. Eastern capitalists have been advised hy their press, that there was no more promising investments now to be made, than in developing mines. An unusual numher of mining companies have been incorporated in San Francisco, and many in the East. Among those incorporated here, probably a larger percentage have declared it their intention to mine in Mono county, than in any other portion of our State. Nevada claims a goodly numher of new incorporations, hut hardly so many as Arizona. Among the eastern companies, Arizona figures largely, and after her Idaho comes in for a share, and Colorado and Utah are not behind hand. Of this, however, we have not the data to judge. The promise for the future is great. Leadville, Colorado, has made remarkahly rapid advances, and one is very excusahle if sanguine on the suhject of the developments that will be made by the two railroads now pushing towards her. Arizona is to he opened up immediately by one road, and soon hy two or three. The Utah Northern will give the Snake river placers, and Idaho generally, a more convenient highway. And Bodie, too, may soon be connected with the outside world with more vital ties. As these roads grow, the mining world will grow, and we shall have much to think about and do before 1879 is over.

AT the dinner of the New England Society on Forefathers' Day, Evarts, Sherman and Blaine were among the guests.

THE heaviest snow-storm for years occurred at Montreal on the night of the 21st inst.

What We Have Done.

As we bid "Happy New Year" to our friends, and start to carry out our good resolutions, it is fitting for us to glance back over the lahors of the last six months and see what we have tried to do and what we have really accomplished. It is the duty of a conscientious paper to be a leader and a follower—and what conscience dictates, self-interest strongly seconds. The endeavor of a paper must be to direct the minds and the energies of its supporters into new and advantageous channels. None the less must it be to watch the sense of the people and aid them in following the channels that themselves have selected.

In some great moral and material interests we have tried to he leaders. We have continued to uphold the distinction hetween mining as an industry together with its necessary accompaniments, legitimate stock markets—and that cursc to the eommunity, pure and unadulterated stock gamhling. We have endeavored to lay stress upon the truth—for it is a truth—that the tendency to attach too much importance to auy one mining district is a narrow and injurious, though much loved policy. In pursuance of this purpose we have tried to keep our readers informed as to new mining districts, at the same time heing careful, where reports were questionahle, to sift the evidence, before making statements that might lead anyone to hasty or unadvised action. We have given great prominence, in our "Mining Summary," to Mono county and Shasta couuty mines, hecause they have seemed worthy of encouragement. Likewise with the Silverado mines, of Los Angeles county. We have tried to he fair in our judgments and notices of the Snake river placers, and shall continue to do so. The whole circle of our neighhors—Oregon, Washington, Idaho, Montana, Colorado, Utah, Nevada and Arizona—seem to have very cheerful prospects as regards mining. We have watched the feeling among them, and have attempted to rightly indicate it.

In regard to more special interests, we may refer to our work on the mines of Almaden, and on artesian wells. It is important to our quicksilver-producing communities to have in their possession all the experience of the Old World in the mining and working of ores of mercury. A knowledge amoug the people of artesian water supplies, and of methods for ohtaining them, is of great and growing importance.

In our departmeuts of "Mechanical Progress," "Scientific Progress," "Engineering" and "Useful Information," we have kept our readers ahreast with the world at large. Edison has occupied a goodly portion of the popular attention. Our columns have accorded him a proportionately liberal space. Iu our "Correspondence" column we have had useful letters regarding mines and mining, and artesian wells, and many other subjects of general and special interest. We are happy to say that we have made some progress in exciting discussions through our columns. We earnestly urge its coutinuance.

Elsewhere we make promises for the future. May our friends and supporters help us to keep our promises.

The "Press" for 1879.

We will continne in the coming year to endeavor to represent the mining and scientific interests of our coast. The PRESS for 1879 will contain articles of local and general interest on all suhjects that come within our province. We shall make efforts to he of as much practical use to miners as possible. To this end we contemplate a series of articles on mineralogy and hlow-pipe assaying, adapted hoth in style and matter to the every-day needs of the prospector and miner. We have tried to give heretofore the market price of metals. We shall render our list much more useful hy quoting the price of ores of different metals and grades. In the interest of a new and attractive country, we shall present to the people a series of articles on Arizona, giving as far as possihle new information concerning it, derived from reliahle sources. On the second Saturday of January we will puhlish a supplement, in which will he found a most interesting article on Sonora, Mexico, accompanied by a map. Also a very fully illustrated article on "Artesian Wells," lately read hefore the Academy of Sciences, by C. S. Gihhes, C. E. Among the illustrations is a section of the country made through San Francisco, Mount Diahlo and Stockton to the foothills of the Sierra Nevadas. This will deserve special attention, not only from those who are seeking artesian water in the neighborhood of the regions treated of, hut also from all interested in any way with artesian well supplies in general. In the line of purer science we can promise a paper hy the Hon. Alex. Del Mar, entitled "The Evolution of Words," heing really an addition to political economy.

By pursuing a policy of this kind in selecting matter for our readers, we hope to satisfy the wants of practical, every-day work, and at the same time the desire for higher culture which is the honor of Americans.

Mines and Works of Almaden.—No. 15.

[Translated for the PRESS from "ANNALES DES MINES."]

One sees that the special expense of metallurgical treatment forms hut a small part of the total expenses, and that a considerahle sum should he reckoned for the filling up with details. The annual production is usually from 32,000 to 36,000 frascos of mereury. Each hottle costs ahout six francs, and hence there should he allowed ordinarily 192,000 to 216,000 francs a year for the purchase of hottles alone.

It is this which explains that in the last five years the total expenses of the works for distillation have heen:

	francs.
In 1870-71	386,310.54
" 1871-72	395,800.64
" 1872-73	258,449.62
" 1873-74	278,205.55
" 1874-75	417,102.35

For the following quantities of ore treated and of mercury produced:

Years.	Ore Treated.	Mercury Produced.
1870-71	15,867 tons.	1,185.007 tons.
1871-72	15,835 "	1,135.045 "
1872-73	16,094 "	1,155.280 "
1873-74	16,379 "	976.104 "
1874-75	18,815 "	1,264.355 "

This gives for the ton of mercury produced the following costs:

1870-71	325.90 francs
1871-72	348.40 "
1872-73	228.70 "
1873-74	285.00 "
1874-75	329.90 "

And per ton of ore treated:

1870-71	24.35 francs.
1871-72	24.97 "
1872-73	16.07 "
1873-74	16.98 "
1874-75	22.17 "

In resume, the expenses of all kinds, particularly at the works, may he ascertained from the following figures:

	Per ton of Mercury.
Special expenses of distillation	45 to 60 francs.
Bottling and costs of bottles	170 to 180 "
Repairs (sorting of ores, etc., etc.)	50 to 100 "
	265 to 340 francs.

In order to ascertain the cost per ton of mercury, in order to fix its selling price, add the general expenses of the administration and the cost of extracting the ore.

The cost of exploitation per ton of ore varies hetween 50 and 60 francs. At present, owing to the augmentation of the production of the mines, during the last few years, and ahove all, owing to the considerahle improvements in the arrangements for working the mine, the price tends towards the first figure, 50 francs; we will take 55 francs as the cost of a ton of ore, rendering 7% to 7.50% of mercury.

The general expenses of the direction and the whole of the establishments of Almaden, naturally reach a considerahle sum, and it is a rather small quantity of mercury which should support them. They increase the expenses of a ton of metal as follows:

Nature of the Expenses.	1870-71	1871-72	1872-73	1873-74	1874-75
	Francs	Francs	Francs	Francs	Francs.
Personal.....	109.90	114.60	100.60	128.00	105.50
Expense of office	4.20	4.40	4.20	4.20	3.60
Shops.....	13.00	14.10	25.60	32.10	23.00
Hospt'l & Chapel	20.90	22.60	16.70	22.10	17.00
Domain of Castilseras.....	17.60	14.60	14.60	17.40	12.70
Sundries.....	0.30	0.20	1.50	1.50	0.00
	166.50	170.20	172.20	204.60	161.80

Thus the price of a ton of ore, comprehending all the expenses, oscillates hetween the following figures:

General expenses	160 to 700 francs.
Ore	700 to 900 "
Distillation	45 to 60 "
Bottling	170 to 180 "
Repairs	50 to 100 "
	1,125 to 1,440 francs.

See, also, for the variations in the price, the able placed at the end of the present work.

III. Losses of Treatment.

On account of the high value of mercury, the essential element upon which to fonnd a judgment of this or that metallurgical process is not the general expense of treatment, which may he a little greater or less in any special case; these expenses are always very small in comparison with the value created, or at least in the case of a rich ore like that of Almaden. The loss of the mercury contained has an importance much greater. We have said that the ton of ore contains ou an average 8.30% of metal, (83 kilograms consequently), while the yield is 78.4 kilograms. If now the loss rises only as high as 10% of the mercury contained, it will not yield more than 74.7 kilograms, and the cost of extracting a ton of mercury will increase consequently in the ratio of 78.4 to 74.7; in place of being on average of from 1,200 to 1,400 francs, it will be from 1,259 to 1,469 francs; the increase will therefore he greater than the expense of the distillation, properly speaking.

The metallurgy of mercury at Almaden is very far, according to this ratio, from presenting the inferiority which is generally attrihuted to it hy the opinions of many authors whose assertions have heen everywhere repeated without reservation. These assertions have heen wanting in foundation; there were taken it is true a great number of assays in order to arrive at a determination of the richness of the ore, but they never seem to have proceeded in such a manner that the value of the assay might represent with the least degree of certainty the value of a heap of ore which was required. It is well known with what facility a chemist or an engineer little experienced in this altogether speeial operation of taking samples, will allow himself to select from a heap of ore the pieces especially rich; comparative results can he ohtained only by the use of all the precautions taken at Swansea or at Freihurg, which consist in a thorough mixing of the heap, the division of the heap into several others, and a series of such divisions systematically arranged.

They had, therefore, arrived by an extremely defective method, at a conclusion absolutely false, that the ore of Almaden contained on an average 14% of mercury; and as they neither weighed the ore charged into the furnace nor the slag taken from it when the roasting was finished, the control was very nearly impossihle. They were consequently forced to come to the conclusion that they lost in the treatment at least 30% to 40% of the mercury contained; M. M. Feruando Bernaldez and Ramon Rua Figueroa, in a memoir printed in 1861, by a royal order, declared that the loss was 53.40% of the mercury contained in the case of the Idria furnace and 49.82% in the case of the Bustamente. Other engineers, as M. Salazar, admitted the figure quite as arhitrary of 30%, from analogy with the results known at Idria.

They regarded as not less incontestihle, that the loss should be a little greater in the case of the furnace with aludels than in that of the one with condensation chambers; the latter in other words heing more recent should be the more preferahle. A long series of experimeuts seems certainly to show that there was nothing in this, and to indicate a small superiority in favor of the old furnace. The figures of M. M. Bernaldez and Rua Figueroa, without any absolute value it is true, have assuredly some value relatively.

Admitting a loss of 30% to 50% of mercury, let us see by what defects of apparatus they pretended to explain this loss:

1st. The furnace, properly speaking. The chimney placed above the *atizadero*, hy which the products of combustion, etc., should escape, created an inverse draft, which forced the mercurial vapors through the aludels or the condensation chambers; it may happen that the vapors should he drawn into the fire and he lost up the chimney in front of the furnace. The grate of bricks, and the bed of poor ore which is placed upon this grate, does not suffice always to prevent the falling of fragments of the ore iuto the fire. The walls of the furnace are not impermeahle.

2d. The aludels form a condnit, hadly jointed, although luted; their walls, although thin, are bad conductors of heat, and cool hadly in contact with the exterior air, so that condensation takes place in them very poorly. These aludels, exposed to all the inclemency of the weather and to frequent variations of temperature, break easily, or at least crack during the operation, and give rise to leakage.

3d. The condensation is not terminated when the vapors escape from the chimney; the latter are credited with dispersing in the atmosphere torrents of gas, which contain an enormous quantity of mercnry.

All these ohservatious are not assuredly deficient of all foundation; but they have much exaggerated the influence of these little defects. In fact, the draft of the Bustameute, as well as the Idria furnace, maintains itself with great regularity; the return of the vapors into the fire, and their escape hy the chimney or hy the charging door is an accidental fact, and assuredly very rare. The fall of the ore into the fire is no longer possible; it might, without doubt, have some importance if the ore was in dust, or friable, hut it is never so.

The non-impermeability of the joints of the aludels is less great than it is claimed; hesides, nothing could he more easy, if the joints were really the cause of a considerahle loss, to remedy it hy a more careful lutiug. The rupture of the aludels during the operations is also rare. If one of them is hroken, it is nearly always during the operation of cleaning them, and then their contents are not lost.

[To be Continued.]

TRANSMUTATION OF THE METALS.—In another column will he noticed an article, headed "A New and Startling Contribution to Science." Quotations are made from Lockyer, and, if a daily newspaper may he mentioned in the same hreath with that great scientist—from the London *News*, relating to experiments performed hy Lockyer with a view to proving that the elements of modern chemistry are really compound hodies. At some future time we will puhlish the true state of the case; and will say here merely, that the *News'* report was a sensational one, Lockyer having denied nearly, if not quite all, that that journal says regarding his experiments.

"HANDSOME ANTLERS."—We have received a handsome present, with the compliments of the season, from J. R. Peck, of Healdsburg, Sonoma county, consisting of a neatly mounted pair of antlers, which will serve as an ornament. We only regret that we were not with Mr. Peck when that huck was dropped and quartered.

THE Ameer has backed out of the war. He leaves his son to settle affairs witb England.

THE funeral services of the late Bayard Taylor took place in Berlin on Dec. 22d.

Lake District, Mono County.

From an interview with Judge J. D. Thompson, who is interested in Lake district, we gain the following information concerning that part of Mono county, in this State. The diagram accompanying this will show the location of the principal mines of the district:

The Lake district is situated in Mono county, some 50 miles southeast of Bodie and 25 miles south of the southern portion of Lake Mono, on the east side of the Sierra Nevada mountains, and but a few miles from the head waters of the north fork of the San Joaquin river, and about 80 miles north from Borden, on the Southern Pacific railroad, easy of access by wagon from Bodie or Benton, and by wagon road and trail from Borden.

This district is now attracting a large amount of attention from mining men and capitalists, and bids fair to become one of the most profitable sections for investment in mining at present known. The work that has been done in the district since the spring opened has been exceedingly satisfactory to those who have engaged in developing it. Veins of ore already uncovered prove not only its richness, but go far to prove its permanency.

The ledges are wide and bear ore of uniform quality, though thus far not of high grade, yet sufficiently rich to pay well.

The extensive bodies of fine timber and numerous water-powers reduce the cost of mining and milling the ore, so that there can be no doubt of its being highly remunerative.

The principal mines shown by the accompanying sketch are located on Mineral hill, a table mountain situated in the midst of, and nearly surrounded by volcanic mountains and extinct craters. Mineral Hill is some 7,500 feet in length, and about 2,000 feet in width at the top, the north end and the sides being very abrupt and precipitous; the hight at the north end and on the west side is about 1,000 feet, while on the east the valley extends close to the base, and lies nearly or quite 1,500 feet below the summit. Running lengthwise, and nearly through the center of this mountain, 38° east of south and almost parallel with its sides, is the ledge known as the Mammoth ledge, on which are the Mammoth and Head-Light mines, owned and worked by the Mammoth G. & S. M. Co., of this city. It is 25 feet in width, and has been prospected at different points for 6,000 feet along the ledge. From 600 to 800 feet east of this, and nearly parallel with it, is the Silveropolis, or Don Quixote ledge, which shows equally as rich as the Mammoth ledge, though only about half as wide. Still to the east, and below the summit, is the Monumental ledge. On the west side of the mountain, and partly down the side, is the Crescent ledge; and to the north, and still lower down the mountain side, is the Alpha ledge.

These ledges all bear a uniform quality of quartz and ore, and in every instance have improved in richness as they have been worked. Assays from different mines show the ore to be free milling ore one-third gold and two-thirds silver, and give a general average of from $40 to $50 per ton.

The Mammoth mine is now being worked at the end of the ledge on the north end of the mountain some 200 feet below the croppings, the ore without selecting milling over $40 per ton, the last run of 200 tons yielding $11,000 at an expense for mining and milling of less than $5 per ton. Adjacent to the Head-Light and on the same ledge, is the Monte Cristo, a mine that bids fair to be a rival of the Mammoth in richness. It has two shafts down 40 feet on side of the ledge, but no crosscutting done.

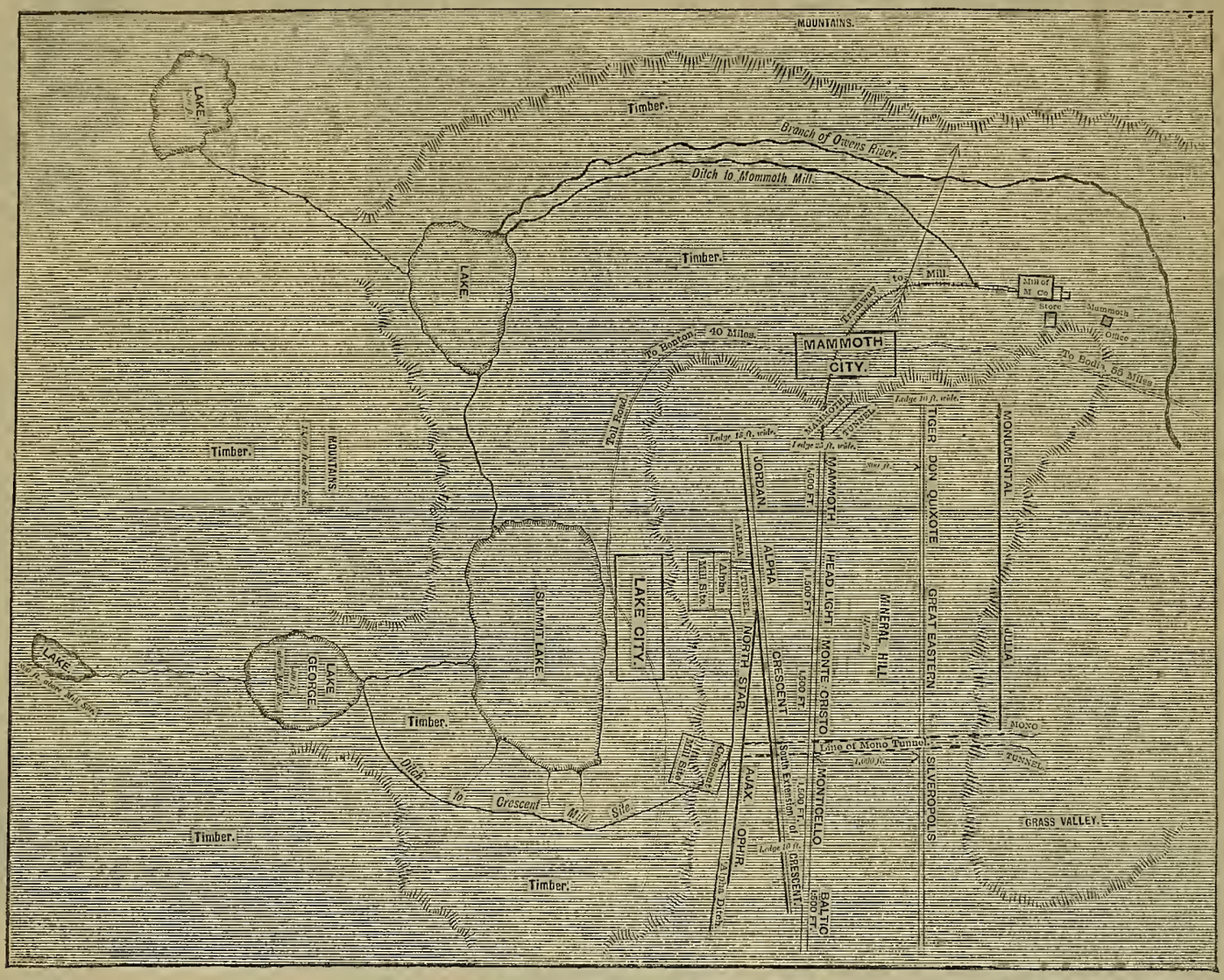
On the Alpha ledge the mine most developed is the Alpha. It has a tunnel in nearly 300 feet and is now within 20 feet of the main ledge, whose croppings 15 feet in width, give great promise of rich ore at the depth the tunnel will cut the ledge. It has already passed through three ledges of low grade ore of from two and one-half to six feet in width, with streaks of very rich quality, assaying up in the hundreds. Adjacent to this on the north is the Jordan, and on the south the North Star, both mines of great promise.

The Crescent is being worked from the side of the mountain, and though not yet into the main ledge, has cut many wide stringers of fine ore, and gives promise of being a valuable mine. Assays from the croppings, which are from eight to ten feet wide, and from the feeders cut, range from $40 to $300 per ton.

Recent developments in the Don Quixote prove that to be entitled to rank with the leading mines of the district, while the Silveropolis on the south end is equally as promising. The Julia, on the extreme east side of the mountain, has also fair prospects. The shape of the mountain and the position of the ledges in it, will enable them to be worked advantageously. The tunnel now being run by the Mammoth Co., will strike that ledge at a distance of less than 600 feet, 1,000 feet below the surface; while the Mono tunnel on the east side of the mountain, will, when extended from that side 800 feet, cut the Silveropolis ledge 1,200 feet below, and worked from the west, will, at a distance of 400 feet, cut the Crescent ledge, and when extended 400 more, will cut the Monte Cristo 1,000 feet below the surface.

The Mammoth has a fine mill of 20 stamps run by water-power supplied by water from the lakes hundreds of feet above it. The Alpha has a mill site at the mouth of the tunnel, and an abundance of water already brought to it sufficient to run a mill of the same size, and the Crescent has water-power of equal capacity; other mines also have water-rights. These are inexhaustible, supplied as they are by large springs, and from the numerous lakes, 12 in number, surrounding the mines, situated among the mountains many hundred feet above the mill sites and conveniently located to be utilized without great expense.

With these advantages over other districts, there can be little doubt but that in the near future those who have invested in Lake district, will be richly remunerated for their time, labor, and capital.



MAP OF LAKE DISTRICT, MONO COUNTY, CALIFORNIA.

Colton Marble.

The Los Angeles *Express* speaking of this marble says: Henry G. Hanks, President of the State Geological Society, has made a study of the Colton marble. He concludes that it compares in every way with the best Carrara marble. The total consumption per year of Carrara marble is on an average of 30,000 tons. Mr. Hanks asks why California should not be able to take some of this to market. He closes his letter to the *Express* as follows: "The flimsy buildings we are now constructing will surely be replaced by those built of better and more durable materials. The wood which has been so abundant, so easy to get, and so easy to work, will be exhausted, or will have to be brought from greater distances, and as the State grows older the people will see the folly of building redwood palaces which cannot by any possibility last more than 25 to 30 years. As this will come about in time, it will be well for us to encourage the prospectors who are roaming over the hills to look for these materials, and to publish the results of their discoveries for the benefit of our citizens. In this connection I desire to mention again the importance of a State Museum at San Francisco, where specimens from such discoveries may be kept for all time—for the benefit not only of ourselves, but for the advantage of foreign visitors who wish to know the resources of the State." On this latter point we beg to suggest that the University is the place for such museum. Berkeley is very accessible from San Francisco, and we have there the men capable of exhibiting the collection to its best advantage; and there, at the same time, our young men may profit from it, as well as the State at large through information given visitors.

Another Long Tunnel.—We learn from the Nevada county papers that the Derbec Gravel M. Co. contemplate running a tunnel into their claim, at a point above the town of North Bloomfield, and working it upon the plan of the Bald Mountain claim, in Sierra county, drawing the gravel to the mouth of the tunnel by locomotive power. The tunnel will be between 3,000 and 4,000 feet in length. If this plan is adopted, both the ground of the Derbec and Watt gravel companies can be worked through the same tunnel.

Kendall's one-stamp mill is said to be more than a success with those who understand how to work it. It was promised that the mill would crush five tons per day. It has been found capable of crushing seven.

A Government financial clerk drew about $10,000 the other day, for salaries. He *lost* the amount. It has since been returned on "no questions" conditions.

One of the school scandal witnesses has gone to Honolulu. A delinquent witness has been bound to appear before the committee.

One Maudle, a naturalized American, has been prohibited from lecturing in Berlin on the improved prospects of our Western States.

Governor Stanford is importing 20 thorough-bred mares from Lexington, Ky.

Reports of dreaded socialistic movements in Germany are followed by rumors of Nihilistic uprisings in Russia.

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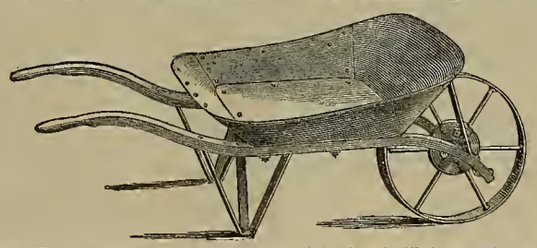

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Mr. Perkins' device is an infringement on a patent owned by Mr. Craig, who is about to institute legal proceedings to protect his rights. Miners are advised to stand from under. A word to the wise is sufficient. R. HOSKIN,

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METALLURGICAL WORKS,

STRONG & CO., 10 Steveneon Street,

ORES SAMPLED, TESTED, ASSAYED.

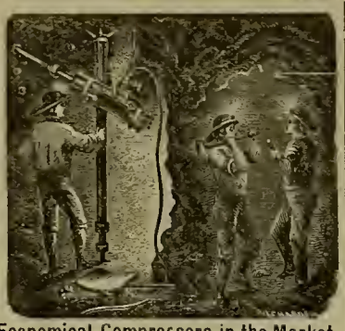
GUIDO KUSTEL,

MINING ENGINEER and METALLURGIST.

P. O Address: ALAMEDA, CAL.

San Lorenzo, December 6th, 1877.
Messrs. Dewey & Co.—*Gentlemen:* I received the Letters Patent for my invention on the 5th inst., and beg to thank you for the gentlemanly and business-like manner in which you have dealt with me from the beginning of my application. I shall always feel it a pleasure to recommend you to all I come in contact with who need Letters Patent. Respectfully, Wm. Dale.

Ingersoll Rock Drills.



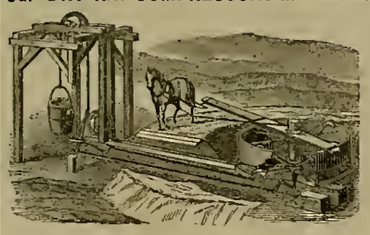
In use in the largest and best Mines of the Coast.

HAS AUTOMATIC FEED.

Has less Repairs.

Is Lighter and more Easily Adjusted than any other Drill.

Our DRY AIR COMPRESSORS are the most Economical Compressors in the Market.



MINERS' HORSE-POWER.

This Power is especially adapted to working mines, hoisting coal or building material, etc. It will do the work of a Steam Engine with one-tenth the expense. One Horse can easily hoist over 1,000 pounds at a depth of 500 feet.

The Power is mainly built of wrought iron, and cannot be affected by exposure. The hoisting-drum is thrown out of gear by the lever, while the load is held in place with a brake by the man tending bucket. The frame of the Power is bolted to bed-timbers, thus avoiding all frame work. When required these Powers are made in sections for packing.

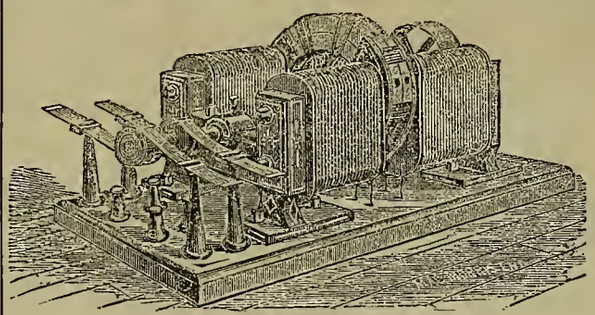
REYNOLDS, RIX & CO., 18 & 20 Fremont St., San Francisco.

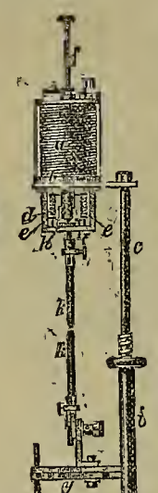
ELECTRIC LIGHT.

BRUSH PATENT.

The Best, Cheapest, Cleanest, and Most Powerful Light in the World.

In daily use at the Palace Hotel and the Union Iron Works, S. F.





For Lighting Mines, Factories, Mills, Streets, Theaters, Public Halls, Etc., It has no Equal, either for Brilliancy or Cheapness.

For further particulars, Catalogues, Prices, Etc., apply to

WILLIAM KERR,
President S. F. Telegraph Supply Co.,
903 Battery St., San Francisco.

Elephant Ore Stamp.

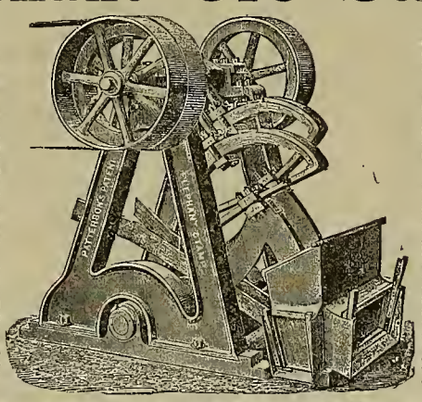
We beg to call your attention to this engraving representing the Elephant Ore Stamp. The advantages claimed for this Stamp are as follows:

Capabilities.—The "Elephant" is capable of crushing as much stuff as a 12-Stamp Battery of the present system, having crushed as high as 1½ tons of tough copper ore in one hour, through a No. 4 punched screen. The undersigned, however, will guarantee 20 tons per day of ordinary quartz through the same size screen.

Wear.—The 'Elephant' having only two pairs, Shoe and Dies, the wear in this instance is equal to one-sixth of a 12-Stamp Battery. There being no Cam Tappets, Cam Shafts or Guides, the consequent wear on these parts is done away with; the leather thoroughbrace, uniting the lever with the spring, would only require replacing at most, once a year.

Power.—The "Elephant" only requires a seven horse-power engine to drive it, where a 12-Stamp Battery would require from 18 to 20 horse-power.

Portability.—The entire Battery, including Mortar, will weigh about six tons, thereby causing an immense saving in the way of freight to such places as Arizona, Mexico, Cariboo and Bodie. As no part of the Machine weighs more than 1,200 pounds, the handling of the Machine is comparatively easy, and in places where it would be necessary to pack the Machine on mules, it could be easily made in pieces not to weigh over three hundred pounds.



The above engraving shows the Machine in exactly the position it would be placed in a mine; the reader will therefore see that all wood work is done away with, and that once the Machine is on the ground it will take but a few days to set it up and have it in full working order. The "Elephant" can be seen working every day from 2 to 4 P. M. at No. 342 Main street, near Harrison, San Francisco. For particulars apply to

EDMUND WHITE, Care of A. B. Grogan, 705 Sansome Street, San Francisco.

D. F. Hutchings. D. M. Dunne. J. Sanderson

PHŒNIX OIL WORKS,

HUTCHINGS & CO.,

OIL and COMMISSION MERCHANTS,

Manufacturers and Dealers in Sperm, Whale, Lard, Machinery and Illuminating Oils.
517 FRONT STREET SAN FRANCISCO.

Machinery.

PACIFIC MACHINERY DEPOT.

H. P. GREGORY & CO.,

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Importers of and Dealers in

MACHINERY of all Descriptions.

SOLE AGENTS FOR PACIFIC COAST FOR

J. A. Fay & Co.'s Woodworking Machinery,
Bement & Sons' Machinists' Tools,
Blake's Patent Steam Pumps,
N. Y. Belting & Packing Co.'s Rubber Goods
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Tanite Co.'s Emery Wheels and Machinery
Payne's Vertical Engines and Boilers,
Judson's Standard Governors,
Dreyfus' Self Oilers,
Gould Manufacturing Co.'s Hand Pumps,
Platt's Patent Fuse Lighters,
Lovejoy's Planer Knives.

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Belting, Packing, Hose, and Other Mill and Mining Supplies on Hand.

☞Send for Illustrated Catalogue.

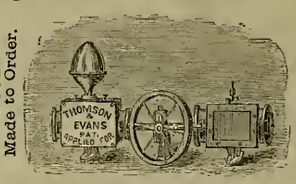
J. Thomson. C. H. Evans.

THOMSON & EVANS,

(Successors to Thomson & Parker.)

Engineers and Machinists.

Rubber Suction HOSE Made to Order.



All Sizes of Gas and Tube FLANGES.

Steam Pumps, Steam Engines, Hoisting, Pumping, Quartz Mill, Mining, Saw Mill Machinery, Specialties.

Plans and Specifications for Machinery furnished. Repairing promptly attended to.

110 & 112 Beale St., San Francisco.

Established 1844.

JOSEPH C. TODD,

ENGINEER

—AND—

MACHINIST.

Flax, Hemp, Jute, Rope, Oakum and Bagging Machinery, Steam Engines, Boilers, etc. I also manufacture Baxter's New Portable Engine of 1877, of one horse-power, complete for $125; can be seen in operation at my store. Two horse-power, $225; two and a half horse-power, $250; three horse-power, $275. Send for descriptive circular and price.

Address J. C. TODD,
10 Barclay Street N. Y., or Patterson, N. J

CAUTION

To Hydraulic Miners.

The public generally and Hydraulic Miners especially are hereby notified that any parties making or using the contrivance known as the HOSKIN DEFLECTOR will be prosecuted to the full extent of the law, said machine having been declared by the U. S. Circuit Court an infringement upon my patent, the

Bloomfield Deflecting Nozzle.

The public are also cautioned against using the Hoskin Deflector because of its danger to life and limb, this device having already occasioned several deaths and other serious accidents. The BLOOMFIELD DEFLECTOR is entirely safe, its two and a half years use without accident, as well as its construction, proves it to be a reliable contrivance.

Any parties wishing to purchase the right to use these Deflectors can do so by applying to the undersigned,

HENRY C. PERKINS,
North Bloomfield, Nevada Co., Cal., October 1st, 1878.

Engraving. Superior Wood and Metal Engraving, Electrotyping and Stereotyping done at the office of the Mining and Scientific Press, San Francisco, at favorable rates. Send stamp for our circular and samples.

PATENTS AND INVENTIONS.

List of U. S. Patents Issued to Pacific Coast Inventors.

[From Official Reports for the Mining and Scientific Press, DEWEY & Co., Publishers and U. S. and Foreign Patent Agents.]

By Special Dispatch from Washington. D. C.

For the Week Ending December 10th, 1878.

Ore Washers.—Frank A. Huntington, S. F.
Ore Stamps.—Frank A. Huntington, S. F.
Car Trucks.—James C. Tait, Stockton, Cal.
Loading and Unloading Ships.—H. P. Tothammer, S. F.
Lawn Rakes.—John Weichhart, S. F.
Spark Extinguishers.—James H. Bartlet, Woodland, Cal.
Street Sweepers.—Charles W. Cunningham, S. F.
Hinges —Henry E. Griffin, Olympia, Washington Ter.
Pump Valves.—Eugene Hawks, San Diego, Cal.
Pumps.—William C. Nelson, Vallejo, Cal.
Teas.—Trademark—Griffin & Co., S. F.
Self-Measuring and Scale Package.—Label—Cuittard & Co, S. F.

——The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

Note.—Copies of U. S. and Foreign Patents furnished by Dewey & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

News in Brief.

Great railway accident in Russia.

Severe weather throughout Great Britain.

More strikes apprehended among the English collieries.

Silver Reef is the largest bullion producer of Utah.

The Duke of Edinburgh may be proposed as Prince of Bulgaria.

The distress among the lahoring classes of Englaud continues.

The report is reiterated that Grant will return home via India and California, in a little over one year.

The Congress of the United States adjourned until January 7th.

Trouble continues in Russia hetween the government and students.

Daring robhery in the Fremont House, Boston. Victim chloroformed.

Advices from El Paso, Texas, iudicate that trouhle is impending there.

Boston has voted $1,000,000 for improvements in her sewer system.

The Illinois and St. Louis bridge has heen sold at St. Louis for $2,000,000.

The severest snow storm since 1871 visited western New York, December 22d.

The cadets at the Naval Academy are refused leave of ahseuce for the holidays.

It is proposed to consolidate the Betchel and Sitting Bull mining companies.

Report says that the King of Denmark has been threatened with assassination.

Many coal miners and their families are reported to he famishing in Pennsylvania.

The ground is as dry as in midsummer at Austin, Nevada, no raiu or suow having fallen.

Vigorous measures are to be taken to suppress the lawlessness in Breathitt county, Ky.

Complete anarchy is said to prevail in the country between Cabul and Jellalahad, Afghanistan.

The aggregate amount of mining assessments paid on this coast during the year is $13,951,000.

The Salt Lake *Tribune* thinks that Salt Lake stauds first ou the Pacific coast as an ore market.

John P. Hoyt, of Michigan, has been nominated for Associate Justice of Washiugtou Territory.

The amount stolen from the Loudon and San Francisco Bank, by Hall, the missing clerk, is stated at $36,000.

On the 20th instant Chief Moses, his nephew and several warriors were captured by Washington Territory volunteers.

Roger S. Greene has been nominated by the President to be Chief Justice of the Supreme Court of Washingtou Territory.

Reports of terrible distress among the poor of Great Britain continue to arrive. Severe cold weather is also reported in all parts of Europe.

One hundred picked cavalrymen, under Col. Forsythe, have started for the scene of the threatening Indian trouble in Washington Territory.

A copper mine of considerable value has been discovered near Date creek, Arizona, assay ranging from 65% to 80%. Wm. Craibs, from Oakland, was the discoverer.

Judge Heard, of Sacramento, intends putting up a quartz mill on Bear river, a short distance above Taylor's bridge, on a ledge that has been prospected with good results.

Fresh attractions are constantly added to Woodward's Gardens, among which is Prof. Cruber's great educator, the Zoographicon. Each department increases daily, and the Pavilion performances are more popular than ever. All new novelties find a place at this wonderful resort. Prices remain as usual.

Examine the accelerative endowment plan, as originated by the Mutual Benefit Life Insurance Co., of Newark, New Jersey. Assets, $30,533,429.94. Lewis C. Grover, President; L. Spencer Coble, Vice-President; Benjamin C. Miller, Treasurer; Edward A. Strong, Secretary; Bloomfield J. Miller, Actuary. Send for circulars to James Munsell, Jr., agent of insured, 224 Sansome St., San Francisco.

Model Maker and Machinist.—I. A. Heald, No. 514 Commercial St., San Francisco, (fourth floor.)

Chew Jackson's Best Sweet Navy Tobacco

Life Insurance.

It is probable that at this present time the doctrine of co-operation, which is at the root of human progress, finds its most beneficent illustration in life insurance. The development of insurance in all its forms has been one of the prominent features of this century. We have iusurance against death, against accident, against fire, against shipwreck, against all possible perils and all manner of losses.

We pnt up lightning rods to insure us from the electric holt, and the doctor vaccinates to insure from the danger of a fearful disease. Bnt all forms of insurance are of really trifling value as compared with life insurance. Other insurances can only be looked at from a pecuniary, economical and business point of view. Life insurance occupies a higher and nobler position.

If the property of a citizen is destroyed by fire, and he has no insurance, his energy and industry may in time retrieve the loss; but when death takes away the bread-wiuner from his family, the loss is total and irreparable.

If that fatal day has not been provided for, what follows to a family? What can follow, but unexpected privations—possihly the breaking up of a home, separation, and dependence upon the cold charity of the world.

We hold that no man—no matter how healthy nor how wealthy—who has auy one dependent upon him, has any right to be uninsured. In our speculative country and age, the rich man of to-day may be the poor man of to-morrow, and *vice versa*.

Every reader can recall the name of some acqnaintance, who, insuring when he never deemed his family would need the amount, has died, leaving them the insurance money as their only portion. It has been fashionable of late years to sneer at life insurance companies as mnshroom institutions about on a par with lottery offices, and this has been especially the case on the Pacific coast.

It has happened that almost all of the half dozen companies that since the panic have failed in the Eastern States did a large business on this coast, and consequently our people have beeu extensively suffering; but if these will look at the position of savings banks, railroad, manufacturing and other corporations of the Eastern States, they will notice that the life insurance companies have more successfully weathered the storm than any other moneyed organizations.

The fact is the more business a company did, with currency at 50 cents to 75 cents on the dollar, the worse it was. The funds were loaned on real estate at inflated figures, and when the inevitable period of contraction came, the loss cut both ways, by shrinkage in nominal assets and by paying death losses in currency at par with gold. Under these circumstances the fact that so few companies failed entirely or were obliged to scale their liabilities is the greatest tribute to the inhereut strength of the system. We have one company in our midst that has escaped all such perils. We refer to the Pacific Mutual Life of California. For more thau half a score of years it has dons bnsiness on a solid gold hasis, insuring the lives of our neighhors and friends, paying its death losses promptly and without expense to the beneficiaries, and iuvesting its funds in loans on farming lands, the best of all securities.

The company is now offering a new form of cheap insurances, rnnniug in terms of from 20 to 30 years. This is a form of protection for the most critical period of a man's life, when he is exposed to the vicissitudes of trade and probably has a young and dependent family. It is cheap and meets a want long felt in the business. We believe to-day that if svery farmer and fruit-grower in the land had a policy of insurance upon his life, moderate in amount according to his circumstances, in some thoroughly reliable company, it would be better for himself, his family, and society generally. To all who read this and who think of acting ou it, we cordially and with a full knowledge of its management and resources, recommend the Pacific Mutual Life Insurance Company of California.

W.

Preparations are making for ths rsturn of 100,000 more Russians from Turkey.

There is great suffering among the poorer classes in Europe.

METALS.

[WHOLESALE.

Wednesday M., December 25, 1878.

Iron.—		
American Pig, soft, ton	23 00	@25 00
Scotch Pig, ton	25 50	@25 50
American White Pig, ton	23 00	@— —
Oregon Pig, ton	25 50	@— —
Refined Bar	2½	@ 3
Horse Shoes, keg	5 00	@— —
Nail Rod	—@	7½
Norway, according to thickness	5½	@ 7
Copper.—		
Sheathing, lb	34 @	35
Sheathing, Yellow	19 @	20
Sheathing, Old Yellow	— @—	
Steel.—		
English Cast, lb	15 @	17
Black Diamond, ordinary sizes	15 @—	—
Drill	15 @	17
Flat Bar	15 @	19
Plow Steel	8 @	12½
Tin Plates.—		
10x14 I C Charcoal	8¾@	9
10x14 I C Coke	7 @	7½
Banca Tin	18 @—	20
Australian	15¾@	17
Zinc.—		
By the Cask	9 @—	—
Zinc, Sheet 7x3 ft. 7 to 10, lb, less than cask	9¾@—	10
Nails.—		
Assorted sizes	2 90@3	00

GENERAL MERCHANDISE.

[WHOLESALE.]

Tuesday M., December 24, 1878.

BAGS—Jobbing.		
Eng Standard Wheat	9 @	9½
Cal. Manufacture.		
Hand Sewed, 22x35	9 @	9½
24x36	—@—	
23x40	11 @—	
Machine Swd, 22x36	9 @	9½
Flour Sacks, halves	8¼@10	
Quarters	5½@	6¾
Eighths	3¾@	4
Hessian, 60 inch	12 @13	
45 inch	8¾@	9
40 inch	7¾@	8
Wool Sacks,		
Hand Sewed, 3½ lb	47½@50	
4 lb do	52½@—	
Machine Sewed	50 @—	
Standard Cunnies	13 @14	
Bean Bags	7½@	8¾
CANDLES.		
Crystal Wax	17 @—	
Eagle	12 @—	
Patent Sperm	30@—	
CANNED GOODS.		
Assorted Pie Fruits,		
2½ lb cans	2 00 @	—
Table do	3 00 @	—
Jams and Jellies	3 50 @	—
Pickles, hf gal	3 15 @	—
Sardines, qr box	1 67½@1	90
Hf Boxes	2 50 @2	75
Preserved Beef,		
2 lb. doz	4 00 @	—
do Beef, 4 lb. doz	5 50 @	—
Preserved Mutton,		
2 lb. doz	4 50 @	—
Beef Tongue	5 50 @	—
Preserved Ham,		
2 lb. doz	5 50 @	—
Deviled Ham, 1 lb. doz	5 50 @	—
do Ham, ½ lb doz	3 00 @	—
COAL—Jobbing.		
Australian, ton	8 00 @—	—
Coos Bay	5 50 @	7 00
Bellingham Bay	5 50 @—	
Seattle	5 00 @	5 50
Cumberland	14 00 @—	—
Mt Diablo	4 75 @	5 00
Lehigh	13 50 @—	—
Liverpool	7 50 @	8 00
West Hartley	10 50 @—	—
Scotch	10 50 @—	—
Scranton	11 50 @—	—
Vancouver Id	7 00 @—	—
Charcoal, sack	75 @—	—
Coke, bbl	60 @—	—
COFFEE.		
Sandwich Id, lb	— @—	—
Costa Rica	15 @	16
Guatemala	15 @	15
Java	23 @—	25
Manila	17 @—	—
Ground, in cs	25 @—	—
FISH.		
Sac'o Dry Cod	4½@	5¼
do in cases	5 @	5
Eastern Cod	— @—	—
Salmon, bbls	8 00 @	9 00
Hf bbls	5 00 @	5 50
1 lb cans	1 40 @	1 45
Pkld Cod, bbls	22 00 @—	—
Hf bbls	11 00 @—	—
Mackerel, No. 1	— @—	—
Hf Bbls	9 50 @	10 50
In Kits	1 85 @	2 10
Ex Mess	3 25 @—	—
Pkld Herring, bx	3 00 @	3 50
Boston Smked Hlg	70 @—	—
LIME, Etc.		
Lime, Sta Cruz, bbl	1 25 @	1 50
Cement, Rosendale	2 00 @	2 25
Portland	4 00 @—	—
Plaster, Golden Gate Mills	3 00 @	3 25
Land Plaster, tn	10 00 @	12 50
NAILS.		
Ass'ted sizes, keg	2 90 @	3 00
OILS.		
Pacific Glue Co's		
Neatsfoot, No 1	1 00 @	90
Castor, No 1	1 10 @	—
do, No. 2	1 05 @	—
Baker's A A	1 25 @	1 30
Olive, Flagniol	5 25 @	6 75
Fossil	4 75 @	5 25
Palm, lb	9 @	—
Linseed, Raw, bbl.	72 @	—
Boiled	75 @	—
Cocoanut	55 @	—
China nut, cs	70 @	72½
Sperm	1 40 @	—
Coast Whales	40 @	—
Polar	45 @	—
Lard	90 @	1 00
Oleophine	22 @	22½
Devoe's Brill't	22 @	23½
Photolite	— @	—
Nonpariel	31 @	32½
Eureka	18 @	42½
Barrel kerosene	20 @	—
Downer Ker	37½@	—
Elaine	37½@	—
PAINTS.		
Pure White Lead	8 @	8¼
Whiting	1½@	
Putty	4 @	5
Chalk	1½@	—
Paris White	2½@	—
Ochre	3½@	—
Venetian Red	3½@	—
Averill Mixed Paint, gal.		
White & tints	2 00 @	2 40
Green, Blue & Ch Yellow	3 00 @	3 50
Light Red	3 00 @	3 50
Metallic Roof	1 30 @	1 60
RICE.		
China, Mixed, lb	5 @	5¼
Hawaiian	7 @	7½
SALT.		
Cal. Bay, ton	15 00 @	22 50
Common	10 00 @	12 00
Carmen Id	12 00 @	14 00
Liverpool fine	19 00 @—	—
SOAP.		
Castile, lb	10 @	10½
Common brands	4¾@	5
Fancy brands	7 @	8
SPICES.		
Cloves, lb	45 @	50
Cassia	22½@	25
Nutmegs	85 @	90
Pepper Grain	15 @	17
Pimento	15 @	15
Mustard, Cal., ¼ lb glass	1 50 @	—
SUGAR, ETC.		
Cal. Cube, lb	11½@	—
Powdered	11@	—
Fine crushed	11½@	—
Granulated	11 @	—
Golden C	9¼@	—
Cal. Syrup, kgs	70 @	—
Hawaiian Mol'sses	25 @	30
TEA.		
Young Hyson, Moyune, etc	27 @	30
Country pckd Cun-powder & Imperial	50 @	50
Hyson	30 @	35
Fooo-Chow O	35 @	—
Japan, 1st quality	40 @	—
2d quality	20 @	25

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by Sutro & Co.]

San Francisco, December 24, 3 P. M.

Legal Tenders in S. F., 11 A. M., par. Silver, 2@2¼.
Gold in New York, par.
Gold Bars, 890@910. Silver Bars, 8@22 ₱ cent. dis count.
Exchange on New York, 35, on London bankers, 49¼@49½. Commercial, 50; Paris, five francs ₱ dollar; Mexican dollars, 88@90.
London Consols, 94 7-16; Bonds, 106½.
Quicksilver in S. F., by the flask, ₰ lb, 40@41c.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Cherokee Flat Blue Gravel Company.—

Location of principal place of business, San Francisco, California. Location of works, Cherokee Flat, Butte County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 20th day of December, A. D., 1878, an assessment (No. 40) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, 318 Pine street, Room 6, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 28th day of January, 1879, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Tuesday, the 18th day of February, 1879, to pay the delinquent assessment, togethe with costs of advertising and expenses of sale. By order of the Board of Directors. R. N. VAN BRUNT, Secretary.

Office, 318 Pine Street, Room 6, San Francisco, California.

General Robert Allen Silver Mining Company.—

Location of principal place of business, San Francisco, California. Location of works, Globe Mining District, Pinal County, Arizona.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 1) levied on the 29th day of October, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
John J Cushing	8	3000	$750 00
Robert Allen	12	1000	250 00
Robert Allen	13	440	110 00
Wm N Grier	23	200	50 00
Rufus Ingalls	31	100	25 00
Rufus Ingalls	32	100	25 00
R M Batchelder	35	200	50 00
H Prince	36	200	50 00
W H Jameson, Jr	37	200	50 00
W H Duryea, Trustee	46	10	2 50
W V Kingsbury, Trustee	56	500	125 00
S Simon, Jr	57	500	125 00
S Simon, Jr	58	500	125 00
S Simon, Jr	59	500	125 00
S Simon, Jr	60	500	125 00
S Simon, Jr	61	500	125 00
S Simon, Jr	62	500	125 00
S Simon, Jr	63	500	125 00
S Simon, Jr	64	500	125 00
S Simon, Jr	65	500	125 00
S Simon, Jr	66	500	125 00
S Simon, Jr	67	100	25 00
S Simon, Jr	68	100	25 00
S Simon, Jr	69	100	25 00
S Simon, Jr	70	100	25 00
S Simon, Jr	71	100	25 00
S Simon, Jr	72	100	25 00
S Simon, Jr	73	100	25 00
S Simon, Jr	74	100	25 00
S Simon, Jr	75	100	25 00
S Simon, Jr	76	100	25 00
Julius Fay	77	300	75 00
W H Duryea, Trustee	79	5000	1250 00
E Heller	81	25	0 25
John D Wilson	82	25	6 25
Robert Allen	84	100	25 00
John D Wilson, Trustee	88	500	125 00
Marie Pascal	01	600	150 00
H H Lawrence, Trustee	113	335	83 75
H H Lawrence, Trustee	114	50	12 50
H H Lawrence, Trustee	118	250	62 50
H H Lawrence, Trustee	119	100	25 00
H H Lawrence, Trustee	120	150	37 50
Wm V Kingsbury	121	500	125 00
Jacob Hardy, Trustee	122	20	5 00
Jaoob Hardy, Trustee	124	20	5 00
Jacob Hardy, Trustee	128	115	28 75
Jacob Hardy, Trustee	129	50	12 50
C E Stevens, Trustee	130	10000	2500 00
C E Stevens, Trustee	131	10000	2500 00
C E Stevens, Trustee	133	10000	2500 00
C E Stevens, Trustee	134	10000	2500 00
John D Wilson, Trustee	139	1550	387 50
Thomas Arthur	140	100	25 00
C Stevens	141	100	25 00
H H Lawrence	142	10	2 50
Jos C Wilson	47	10	2 50
U Simon	149	1000	250 00
U Simon	150	1000	250 00
U Simon	151	1000	250 00
U Simon	152	1000	250 00
U Simon	153	1000	250 00
U Simon	154	1833	458 25
C E Stevens, Trustee	155	5000	1250 00
C E Stevens, Trustee	156	50	12 50
C E Stevens, Trustee	157	733	105 75
C E Stevens, Trustee	159	4000	1000 00
C E Stevens, Trustee	161	2000	500 00
C E Stevens, Trustee	163	2000	500 00
M C Southard, Trustee	164	7890	1972 50
H H Lawrence	158	1400	350 00
John D Wilson	138	10	2 50

And in accordance with law, and an order of the Board of Directors made on the 29th day of October, 1878, so many shares of each parcel of such stock as may be necessary will be sold at public auction, at the office of said association, 411½ California street, San Francisco, California, on Thursday, the second (2d) day of Januar' 1879, at the hour of 12 o'clock of said day, to pay said delinquent assessment thereon, together with cost of advertising and expenses of the sale.

M. C. SOUTHARD, Secretary.

Office, Room 11, 411½ California St., San Francisco, Cal.

Land Purchaser's Association.—Office,

No. 318 Montgomery Street, San Francisco, California.

NOTICE -There are delinquent upon the following described stock, on account of assessment (installment No. 43) levied on the 5th day of November, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount
Mrs Matilda Stohr	38	1	$4 00
James L Beyea	43	1	4 00
V Chevallier	04	1	4 00
Geo S Dickey	98	1	4 00
W G Koch	178	1	4 00
Asa Fisk	220	1	4 00

And in accordance with law, and an order of the Board of Directors, made on the 5th day of November, 1878, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the Secretary, No. 318 Montgomery street, San Francisco, California, on Saturday, the fourth (4th) day of January, 1879, at the hour of 10 o'clock A. M. of said day, to pay said delinquent assessment thereon, together witb costs of advertising and expenses of the sale.

C. S. WRIGHT, Secretary.

Mineral Fork Mining and Smelting Company.—

Location of principal place of business, San Francisco, California. Location of works, Big Cottonwood District, Salt Lake County, Utah Territory.

NOTICE —There are delinquent upon the following described stock on account of assessment (No. 1) levied on the 31st day of October, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
C Areskog	156	50	$ 1 00
C Areskog	157	50	1 00
W H Atwood	185	100	2 00
W H Atwood	186	100	2 00
W H Atwood	187	100	2 00
W H Atwood	188	100	2 00
W H Atwood	189	100	2 00
Wm Atwood	190	100	2 00
Wm Atwood	191	100	2 00
Wm Atwood	192	100	2 00
Wm Atwood	103	100	2 00
Wm Atwood	104	100	2 00
G Bearson	105	100	2 00
O Bearson	115	100	2 00
C Bearson	110	100	2 00
G Bearson	117	100	2 00
G Bearson	118	100	2 00
C Bearson	119	100	2 00
C Bearson	136	66	1 32
H L A Culmer	295	50	1 00
H L A Culmer	296	50	1 00
H L A Culmer	297	100	2 00
H L A Culmer	298	100	2 00
H L A Culmer	209	100	2 00
Wm H Culmer	378	10	20
Wm H Culmer	379	50	1 00
Wm H Culmer	380	50	1 00
Chs G Denicke	434	50	1 00
Chs G Denicke	435	50	1 00
Chs G Denicke	436	50	1 00
Chs G Denicke	437	50	1 00
A S Easton	4	75	1 50
A S Easton	365	350	7 00
E E Elliott	105	100	2 00
E E Elliott	106	100	2 00
E E Elliott	107	100	2 00
E E Elliott	198	100	2 00
E E Elliott	201	17	34
E E Elliott	271	25	50
E E Elliott	272	25	50
E E Elliott	274	10	20
E E Elliott	275	10	20
E E Elliott	217	50	1 00
E E Elliott	218	50	1 00
E E Elliott	220	50	1 00
E E Elliott	222	200	4 00
E E Elliott	224	200	4 00
E E Elliott	225	200	4 00
E E Elliott	226	200	4 00
E E Elliott	228	200	4 00
E E Elliott	229	200	4 00
E E Elliott	230	200	4 00
E E Elliott	231	200	4 00
E E Elliott	233	100	2 00
E E Elliott	234	100	2 00
E E Elliott	371	50	1 00

Names.	No Certificate.	No. Shares.	Am't
E E Elliott	372	50	1 00
E E Elliott	373	50	1 00
E E Elliott	374	50	1 00
E E Elliott	375	100	2 00
E E Elliott	376	100	2 00
E E Elliott	377	100	2 00
E E Elliott, Trustee	503	10	20
E E Elliott, Trustee	504	10	20
E E Elliott, Trustee	505	10	20
E E Elliott, Trustee	506	10	20
E E Elliott, Trustee	507	10	20
E E Elliott, Trustee	508	10	20
E E Elliott, Trustee	509	10	20
E E Elliott, Trustee	510	10	20
E E Elliott, Trustee	511	10	20
E E Elliott, Trustee	513	10	20
E E Elliott, Trustee	514	10	20
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E E Elliott, Trustee	525	10	20
E E Elliott, Trustee	526	10	20
E E Elliott, Trustee	527	10	20
E E Elliott, Trustee	528	25	50
E E Elliott, Trustee	529	25	50
E E Elliott, Trustee	530	25	50
E E Elliott, Trustee	531	25	50
E E Elliott, Trustee	532	25	50
E E Elliott, Trustee	533	25	50
E E Elliott, Trustee	534	25	50
E E Elliott, Trustee	535	25	50
E E Elliott, Trustee	536	25	50
E E Elliott, Trustee	537	25	50
E E Elliott, Trustee	538	50	1 00
E E Elliott, Trustee	539	50	1 00
E E Elliott, Trustee	540	50	1 00
E E Elliott, Trustee	541	50	1 00
E E Elliott, Trustee	542	50	1 00
E E Elliott, Trustee	543	50	1 00
E E Elliott, Trustee	544	50	1 00
E E Elliott, Trustee	545	50	1 00
E E Elliott, Trustee	546	50	1 00
E E Elliott, Trustee	547	50	1 00
E E Elliott, Trustee	512	10	20
W W Elliott	208	100	2 00
W W Elliott	209	100	2 00
W W Elliott	210	100	2 00
Frank Foote	381	250	5 00
B A M Troisith	568	20	40
B A M Troisith	569	20	40
Edwin Gardner	202	100	2 00
Edwin Gardner	203	100	2 00
Edwin Gardner	204	100	2 00
Edwin Gardner	205	100	2 00
Edwin Gardner	206	100	2 00
S J Jonasson	181	25	50
S J Jonasson	182	25	50
S J Jonasson	184	07	1 34
Peter Jhonson	333	100	2 00
Peter Jhonson	334	100	2 00
Peter Jhonson	336	100	2 00
Peter Jhonson	338	100	2 00
Peter Jhonson	340	100	2 00
Peter Jhonson	342	100	2 00
Peter Jhonson	340	50	1 00
Peter Jhonson	348	50	1 00
Peter Jhonson	349	50	1 00
Peter Jhonson	350	50	1 00
Peter Jhonson	351	50	1 00
Peter Jhonson	353	50	1 00
Peter Jhonson	354	50	1 00
Peter Jhonson	355	50	1 00
Peter Jhonson	357	50	1 00
Peter Jhonson	358	50	1 00
Peter Jhonson	350	50	1 00
T F Nystrom	247	100	2 00
T F Nystrom	248	100	2 00
T F Nystrom	249	50	1 00
T F Nystrom	250	50	1 00
T F Nystrom	251	33	00
R B Noyes	270	300	6 00
Samuel Purdy	259	100	2 00
W C Pease, Trustee	607	18	36
W C Pease, Trustee	608	18	36
G Peterson	75	100	2 00
G Peterson	85	100	2 00
G Peterson	87	100	2 00
G Peterson	88	100	2 00
G Peterson	89	100	2 00
G Peterson	90	50	1 00
G Peterson	100	50	1 00
G Peterson	102	50	1 00
William Russell	276	10	20
William Russell	277	5	10
William Russell	278	5	10
P H Sumner	19	5	10
P H Sumner	20	70	1 40
P H Sumner	180	66	1 32
Edgar Sheldon	291	250	5 00
Edgar Sheldon	292	250	5 00
Edgar Sheldon	293	250	5 00
Edgar Sheldon	294	250	5 00
F C Thompson	243	50	1 00
F C Thompson	244	50	1 00
F C Thompson	245	33	00
Theodore Tangvell	328	50	1 00
C F Winslow, Trustee	555	500	10 00
C F Winslow, Trustee	556	277	5 54
C F Winslow, Trustee	561	50	1 00
C F Winslow, Trustee	562	100	2 00
C F Winslow, Trustee	563	100	2 00
C F Winslow, Trustee	564	100	2 00
C F Winslow, Trustee	565	100	2 00
C F Winslow, Trustee	566	100	2 00
C F Winslow, Trustee	567	50	1 00
C F Winslow, Trustee	570	250	5 00
C F Winslow, Trustee	571	250	5 00
C F Winslow	237	5150	103 00
C F Winslow	301	1000	20 00
C F Winslow	308	1700	34 00
C F Winslow	309	1000	20 00
C F Winslow	310	1000	20 00
C F Winslow	311	1000	20 00
C F Winslow	312	1000	20 00
C F Winslow	314	250	5 00
C F Winslow	318	100	2 00
C F Winslow	324	100	2 00
Ronde N Walter	246	84	1 08
A Winguist	56	100	2 00
A Winguist	62	100	2 00
A Winguist	66	50	1 00
A Winguist	67	50	1 00
A Winguist	68	50	1 00
A Winguist	09	50	1 00
A Winguist	70	50	1 00
William Schade	24	50	1 00
William Schado	25	50	1 00
William Schade	53	100	2 00
William Schade	54	100	2 00
William Schade	55	100	2 00
Otto Metchke, Trustee	009	14	28

And in accordance with law, and an order of the Board of Directors, made on the 31st day of October, 1878, so many shares of each parcel of such stock as may be necessary, will be sold at public auction at the office of the Company, Room 20, Safe Deposit Building, No. 323 Montgomery Street, San Francisco, California, on Monday, the thirtieth (30th) day of December, 1878, at the hour of 12 o'clock M. of such day, to pay delinquent assessments thereon, together with costs of advertising and expenses of the sale. OTTO METCHKE, Secretary.

Office, Room 20, Safe Deposit Building, No. 323 Montgomery St., San Francisco, California.

Orion Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Iowa Hill, Placer County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 12th day of December, 1878, an assessment (No. 1) of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, No. 23 Sansome street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 13th day of January, 1879, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Tuesday, the 28th day of January, 1879, to pay the delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors. P CONKLIN, Secretary.

Office, No. 23 Sansome St. (up-stairs) San Francisco, Cal.

Summit Mining Company.—Location of principal place of business, San Francisco, California Location of works, Mineral Point Mining District, Plumas County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the nineteenth day of November, A. D., 1878, an assessment, (No. 6,) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of said Company, 318 Pine street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the sixth (6th) day of January, A. D., 1879, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the fourth day of February, A. D., 1879, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK, Sec'y.

Office, Room 6, No. 318 Pine Street San Francisco, Cal.

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Office, No. 6 California St., San Francisco.

ANNUAL MEETING.

The annual meeting of the stockholders of the Peacock Mountain Silver Mining Company will be held at the office of the Company, No. 306 Clay Street, San Francisco, at one o'clock P. M. on Thursday, the 9th day of January, 1879, for the election of a Board of Directors for the ensuing year, and the transaction of such other business as may properly come before the meeting.

ED. B. PARTRIDGE, Secretary.

Office, No. 306 Clay Street, San Francisco, Cal.

ANNUAL MEETING.

The annual meeting of the stockholders of the California and Oregon Land Company, will be held on Tuesday, January 14th, 1879, at 2 o'clock P. M., at the office of the Company, Room 6, No. 318 Pine street, San Francisco, for the election of a Board of Trustees, and the transaction of such other business as may properly come before the meeting. R. N. VAN BRUNT, Acting Sec'y.

Prompt Attention to Business.

AURORA, Nev., Dec. 7th, 1878.

MESSRS. DEWEY & Co., S. F.—*Dear Sirs:*—I acknowledge the receipt of my patent per express this morning, and am obliged for same. I do not know what to say to you regarding your prompt attention to business, but will say to my friends what I cannot say to you. Many thanks is what you will get from Yours truly, C. W. LANE.

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The advantage of this Retort over the OLD FLAT PATTERN is, that it can be filled full of Amalgam, thereby holding more than the old style, besides avoiding all danger of an explosion owing to the crown space in the cover which allows for the expansion. They are made extra heavy, WELL GROUND in the joints, and are furnished with a strong Norway clamp, having a wrought iron key which can be driven in or out of place by a single stroke of a hammer.

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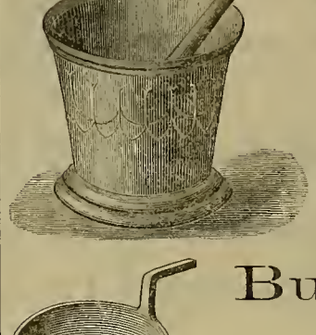
Weight each	10lbs	15	18	25	31	44	65



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GROUND INSIDE.

Size—Quarts	½	1	2	4	6	8	12	16
Hight—Inches	3½	5	6	7½	8½	9	11	12
Weight—Pounds	6½	9	16	22	37	43	72	86

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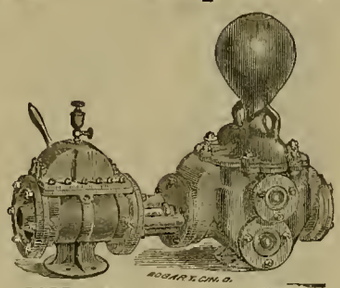

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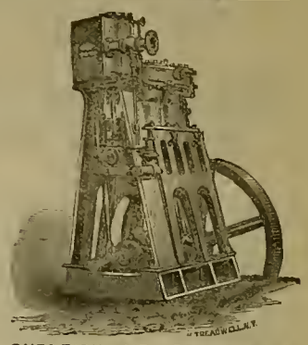

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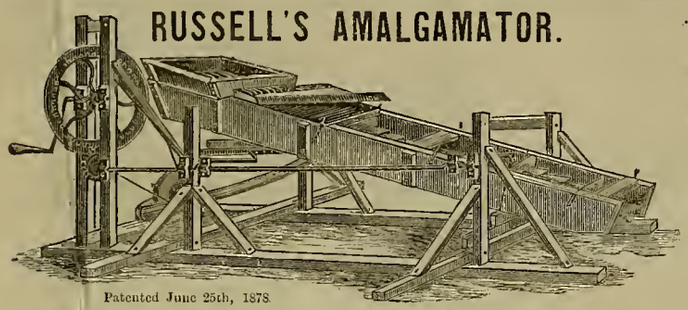

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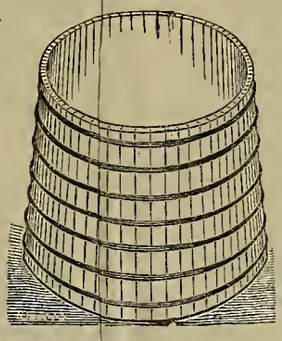

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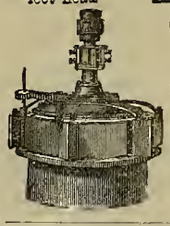

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